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Student perception of online learning activities during COVID-19 pandemic: Psychological constraints and factors

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ABSTRACT

COVID-19 pandemic has brought many changes to our lives. One of the prominent changes is the offline learning model changed to online. This change may have an impact on the effectiveness of the learning process and students' understanding of the knowledge conveyed by the lecturer. So, a further analysis needs to be done. In this study, students' perceptions of online learning during the pandemic were explored. The goal was to find out what students think and feel while participating in online learning during pandemic so that in the future lecturers are able to create or choose the more effective learning models for their classes. This research was conducted using the phenomenological method on several students' majoring in health science who were undergoing school from home (SFH). Data collection was carried out using the depth interview method by telephone and WhatsApp chat according to the flexibility of the participants' time. The finding of this research showed that e-learning programs carried out during the pandemic actually put more mental pressure on students' and decrease their learning motivation, especially in early days of the program. This happened due to the lecturer and university lack of readiness in carrying out the program.

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1. INTRODUCTION

The COVID-19 pandemic has caused several changes in our daily and school routines which started to lock down and implement the e-learning program. In this program, all learning activities are being transferred online whether it is a theoretical or practicum class in the laboratory. The COVID-19 pandemic has become a threat to people around the world, one of which is applied science students who need applicable learning such as practicum. Practicum is a practical learning activity which usually carried out in the laboratory with specific tools and materials that are not easily accessible outside the laboratory [1].

During online lectures, the limited accessibility of teaching material and other laboratory equipment is certainly an obstacle for students to take part in practicum. However, due to the demands of university achievements on students' skills and competencies, practicum still has to be carried out even with the e-learning model. However, is it possible to run a practicum with e-learning methods? Before answering this question, it is necessary to understand the definition of e-learning and what factors support or suppress the success of e-learning.

E-learning is an education based on modern methods of communication that refers to the use of technology such as computers and its networks, various multimedia materials, search engines, electronic libraries, websites, and so on [2]. These facilities that are used in e-learning methods will support the learning

and teaching process whether it is held on-site or at a distance. The use of information and communication technology in education has created a new learning model that does not require physical presence. So, it is very possible that in this day and age, learning activities can be held anywhere other than the classroom [3].

Online learning certainly has many differences from offline learning. According to several researchers, many factors affect the effectiveness of online learning such as administrative problems, social interaction, academic skills, technical skills, students' motivation to participate in learning activities, time and support for learning, technical problems, costs, and internet access [4]–[6]. As well as the effectiveness of the design and arrangement of multimedia materials for the learning process [7]. In Indonesia, the factors discussed often have a negative impact on the learning process and cause a decrease in the quality of e-learning.

In Indonesia, e-learning during the pandemic has not followed a well-thought-out design path yet. Some institutions suddenly had to change their pre-made learning plans and were confused and overwhelmed to adapt, especially for those who were unfamiliar with technology. Therefore, it is better if a comprehensive analysis of several things such as learning objectives, design of learning materials, evaluation of learning process outcomes, and so on are done before carrying out e-learning teaching. Hence, the online teaching and learning process can be held with more focus.

This is in accordance with the expression of Adams, Tan, and Sumintono regarding readiness which turned out to be the main factor in the successful implementation of e-learning [8]. The readiness of students, lecturers, and technology is the most significant aspect of readiness in this context. Likewise, the attitude of each individual in e-learning activities, especially students, is the key to determining whether the e-learning process is successful or not [9], and according to Asian Pacific Economic Cooperation and McConnell, it is electronic readiness [10].

Several studies on e-learning readiness have been carried out by considering certain patterns to study the level of readiness of organizations or universities in all aspects [10]–[15]. Based on Zhao *et al*. research, it has been shown that e-learning has a positive impact on student's academic achievement [16]. Mahmoodi explained that the use of e-learning in the teaching and learning process of physiology enhances student learning and creativity. Likewise, Zare found that the learning and remembering abilities of students who were taught using the multimedia method had higher points than students who were taught using the traditional method [1], [17], [18]. However, what about practicum which is carried out using an e-learning method, will the given result show the same positive value and effectiveness as the previous research?

According to the literature, there are three types of environments or learning settings that are carried out namely, learning in the classroom, laboratory, and outdoors (in the field) [6]. The essence of a science classroom learning environment (SCLE) has been recognized by many researchers and teachers over the last two decades. However, the specific criteria for a science learning environment will depend on many factors, such as student needs and the characteristics of the program used.

Online teaching and learning activities can contribute to the science learning environment and lead to better science education standards through proper design and effective use of technology. However, these findings are expressed based on normal learning conditions where there are no limitations in accessibility, mobility, and social interaction. This is different from e-learning which is carried out during the pandemic and lockdown situation. In addition, most of the research that has been done related to e-learning models has been carried out through questionnaires, surveys, literature studies or literature reviews, and experiments [10], [19], [20]. Therefore, to fully understand the meaning of e-learning for applied sciences students, this study will conduct in-depth observations by using a qualitative phenomenological approach.

2. RESEARCH METHOD

The theoretical framework of this research is the study of phenomenology with two models (symbolic interaction and personal and social constructivism). Thus, the focus of the research is on the personal and socio-cultural meanings that participants attach to the world around them. The qualitative methodology was chosen for this study because it allows the researcher to explore the inherent meaning of constructs such as e-learning as well as to capture the contextual understanding of the relationship between e-learning and student understanding.

Prior to data collection, this study was approved by the participants involved by signing a statement of willingness to participate in the research process from beginning to end. It was given to participants after the interview process was completed. This is intended so that participants can freely talk about their experiences following e-learning.

The participants involved in this study were students majoring in health sciences at 1st and 2nd semesters from a university in Yogyakarta who were undergoing practicum with an e-learning model. Data collection was carried out using the depth interview method by telephone and WhatsApp chat according to the flexibility of the participants' time. Each participant was asked to tell the dynamics of the online lectures that they underwent during the six weeks of lectures.

To find out the participants' perceptions of e-learning, the researcher asked the participants about their definitions of e-learning. The researchers also added several questions to understand how e-learning affects participants' understanding and what difficulties are experienced during e-learning. The questions asked to the participants are: i) How are your online lectures?; ii) What do you think about e-learning learning?; iii) What media and learning models do your lecturers use?; and iv) Are you able to follow the lesson well?

Furthermore, the qualitative data collected were analyzed using thematic analysis following the guidelines developed by Barun and Clarke [21]. This flexible approach produces rich and detailed records. All interview data, both audio and written (WhatsApp chat) were transcribed verbatim. This transcript was first filtered and organized according to various sections and subsections based on the questions asked. The main themes or patterns that have been compiled are reanalyzed and resolved through the process of removing and combining several themes into the main theme [22].

3. RESULTS AND DISCUSSION

In this section, the results of the interviews will be presented in which four main themes were identified and further divided into several sub-themes Table 1. The table shows some of the participants' perceptions of some things such as the meaning of e-learning, the effect of e-learning to their learning process and mental condition, the constraints in e-learning that have to be faced and going through by them, and the coping strategy of the participants. Through this data, it can be seen that it turns out that students have problems while participating in online learning which should be a concern of the teachers or school. Unfortunately, the results of the interviews did not show any problem solving by the teachers or all of the parties concerned.

Table 1. Participant's perspective on e-learning

Main theme	Sub-theme
The meaning of e-learning	Online learning
	Boring
	More tasks
Effect of e-learning	Decreased learning motivation
	Feel depressed
	Confusion in understanding the material
	Overwhelmed or feeling information overload
	Less or no feedback
	Longer study time
Constraints in e-learning	Signal
	Technological stutter
	Learning models and media
	The unpreparedness of teachers and students in conducting e-learning
Coping strategy	Repeat the material that has been given
	Active in self-discovery
	Actively asking, reading, and taking notes

3.1. Meaning of e-learning

In the interview process, participants were asked about their subjective definition of "e-learning" and almost all of the participants described the concept with the same keywords as seen in Table 1. This shows that participants' understanding of e-learning is not much different from one another. When asked "What do you think e-learning means?" the category of answers that most often appears is about learning using the internet and how this learning model makes them bored more quickly.

E-learning does have an understanding that learning carried out with this model relies more on electronic media than conventional media. Most of the participants also agreed that during e-learning, the approach used by lecturers was student-centered learning [23] and thus the tasks assigned to students became more numerous. For example, one participant stated:

> "*During e-learning, I get bored faster because usually to fill class time, lecturers only provide journals and students are asked to do reviews. Put forward the result of the review collected within 1x24 hours which means the lecture time is longer than when face to face*."

3.2. The effect of e-learning on the learning process

When asked about how e-learning affects their learning process, participants respond in various ways. However, most of them think that e-learning has a negative impact on their learning process such as decreased learning motivation. They start to feel overwhelmed because during the learning process the lecturer only explained the subject matter from PowerPoint slides or reviewed journals so students can not be focused on the learning itself. There is also no feedback from lecturers after completing assignments and exams which making students in a 'floating' position with the understanding they have gained. Last but not least, in students' opinion, during e-learning, the lecture time is longer than offline lectures cause students do not have more time to self-learned and review the subject matter at home. In the interview process, one participant revealed that:

> "*E-learning lectures reduce my break time because I have to complete assignments given by the lecturer as if this lecture was held for one full day*."

In addition, the e-learning model that is not well-prepared causes participants to experience difficulties. Lecturers do not even provide modules or guidebooks as learning references. So, when the materials provided are taken from journals that participants are asked to analyze personally, what happens is that the information they get becomes overloaded because participants cannot sort out the important parts that are considered relevant to the lecture. Consequently, participants only attend lectures as a requirement for academic administration (fulfilling the attendance list as an exam requirement).

3.3. Constraints in e-learning

Participants revealed that one of the biggest obstacles in the implementation of e-learning is the less supportive internet network. Limited skills in operating electronic devices turn out to be a problem that is often encountered in e-learning too. Not only lecturers, but even students also experience these obstacles. With this unpreparedness (in terms of skills), the models and learning media used by lecturers are certainly not relevant, such as forcing a practicum report to be made even though practicum activities are not carried out in e-learning. In addition, this unpreparedness is also an obstacle for students to attend lectures. Because in e-learning activities, we use a student-centered learning approach. Consequently, when there is no guidance from the lecturer in sorting the information learned, students will become overwhelmed in pursuing material and attending lectures.

One participant said that he was someone who was a 'technological stutter.' Even when the lecture will be held using the Zoom application, he has to ask his classmates first about how to access the application. Likewise, his ignorance of the operation of google classroom made it difficult for him to collect assignments which resulted in delays in collecting assignments which of course ended in reducing his grade point average (GPA). These kinds of obstacles then reduce the effectiveness of e-learning during the pandemic.

3.4. Coping strategies

Participants who acknowledged that there were obstacles in understanding lecture material during e-learning revealed several things that they ultimately had to do to catch up with the learning process. Either due to signal constraints, models and learning media used, or personal unpreparedness in participating in e-learning. Including seeking understanding by self-study (surfing the internet), rereading the material given by the lecturer, and making personal notes.

3.5. Psychological approach: researcher analysis

The results showed that most of the participants felt that learning with the e-learning model took more time for lectures. According to their explanation, e-learning lectures that were conducted as a substitute for offline practical lectures and theoretical lectures during the pandemic provided more assignments than lecturer explanations. Especially during online practical learning where students are not even given learning modules or guidebooks to study. The ongoing learning is considered not to improve students' practical skills but instead focuses on journal analysis that should be developed in theoretical lectures.

Often in the lecture process, the teacher will provide reading journals as learning material. Then to ensure that students have read the material presented, the teacher will give assignments such as reviews or summarizing material based on the journals that have been given. In addition, the results of interviews with participants also show that the cause of the ineffectiveness of this e-learning model is the teacher's unpreparedness in e-learning activities. The lecture materials that should be delivered during e-learning are not prepared properly which increases the number of student assignments. For example, in an interview, one participant said:

> "*For the theoretical lecture, we were divided into several groups and asked to make PowerPoint slides according to the distribution of the material in each group. Then, we were asked to make questions that our friends from other groups would later answer. There was no prior explanation from the lecturer, suddenly they were asked to make PowerPoint slides*."

This reduces participants' interest in participating in online learning. So that it has an impact on their understanding of the subject matter.

According to them, during e-learning, it is not the understanding the students get. However, the burden and pressure to complete assignments and fulfill academic requirements attendance as a condition for taking the exam as stated by one of the following participants:

> "*Sometimes we study until 6 pm. Well, if our discussion time doesn't appear on the WhatsApp forum or classroom, the lecturer immediately gets angry. So yeah… like it or not, understand it or not, in the end, all we think about is 'the important thing is that I'm present.*"

Given the various limitations in implementing e-learning during this pandemic, it is not surprising that participants' meaning of e-learning is different from the theoretical meaning of e-learning.

During the pandemic and the change in learning methods from conventional to e-learning, students certainly face extraordinary challenges in the adaptation process. Therefore, a researcher in the cognitive field suggests that students find and create a learning model that suits them to understand and internalize what is happening in this new learning environment [24]. This is because each individual has different learning styles so the most effective learning strategies or learning methods for each individual are also different [25], and of course, it is impossible for teachers to meet the needs of each participant.

This argument is supported by the results of several studies which suggest that there are students who prefer a structured learning environment to a flexible learning environment online learning. However, on the other hand, some researchers argue that the existence of mutual support feedback that occurs between teachers and students allows learning activities and participation in group discussions with teachers without distinguishing certain students who are more active. So that it has a positive effect on student motivation. It is appropriate as stated by Bates who believes that, "the problem in distance learning is not technology, but learning objectives including how and where learning should be carried out" [26].

In this paper, the researcher emphasizes both teachers and students to ask themselves "Are we forgetting the main goal of teaching and learning due to technological innovation?" so that e-learning lectures which in previous studies showed a positive influence on students' academic performance gave negative results in this study. However, the researcher also stated that the difference in the results of this study could be due to limitations that arise as a result of the pandemic. So, the readiness of students and teachers' mental, and technical skill, and teaching strategies becomes very influential on the success of learning.

Another approach used to explain this phenomenon comes from the point of view of the characteristics of students. The performance of students when conducting distance learning with technology e-learning is strongly influenced by their learning style preferences. This is justified by Buchanan who stated that, "distance learners who are usually mature individuals with various types of work, are characterized (among other traits) by autonomy, persistence, independence, self-direction, and flexibility" [27]. Since this research participants are 1st and 2nd-semester students of the university, they likely find it difficult to follow the e-learning lesson. Assumed that they still do not have much knowledge related to university courses and their personality is not yet independent in learning. So, it is natural if they find it difficult to follow this suddenly happened e-learning with all the limitations.

Buchanan and several other researchers mention that certain characteristics in a student, lead to the success of distance learning [28], [29]. Previous researchers also define self-motivation, organizational skills, and the ability to concentrate as the ideal qualities that an online learner should possess [27]. Adult individuals who have the highest probability of completing distance learning (online) have several important characteristics such as tolerance for ambiguity, need for autonomy, and flexibility [30]. In addition, Cigdem found that students' characteristics significantly affect learners in some dimensions of online learning readiness, especially the computer/internet self-efficacy dimension and online communication self-efficacy. To be successful at online learning students have to change their ability in these two dimensions [31]. On the other hand, those who are more likely to drop out of school tend to prefer structured activities, face-to-face lectures, and opportunities to interact with instructors, often not being able to follow distance learning e-learning well.

Looking at the results of participant interviews, it can be said that the characteristics inherent in participants are not strong enough to be able to take online lectures well. Especially because of their relatively young age (19 years) where at that age a person's motivation to learn is strongly influenced by

many factors [32], one of which is environmental factors. When the teacher cannot provide a learning model that fits their learning style, motivation will decrease as expressed by one participant:

> "*Well, if he doesn't want fewer lecture hours, why doesn't he just use the Zoom application to study? So, he explained, we were listening. Instead of making an unclear question and answer session like that*."

In addition, the impact of the pandemic can certainly be used as an additional factor that affects participants' learning motivation.

Unfortunately, however, the facts show that there is little research done on learners' learning styles about flexible learning programs, and how it affects their performance. According to some research, independent people tend to be intrinsically motivated and enjoy individual learning, while field-dependent people tend to be extrinsically motivated and enjoy cooperative learning [32]. Social isolation, lack of nonverbal cues, and information overload are also often associated with weaknesses of online learning [33], [34], so it can be a challenge in the learning process.

If this problem is not addressed immediately, post-pandemic education will likely experience a setback. This means that students who cannot keep up with the lesson during the pandemic will find it difficult to keep up with the post-pandemic learning. The impact resulting from e-learning that cannot be followed properly by students includes knowledge gaps, decreased students' ability in practical learning, and the possibility of increasing stress because they cannot understand the learning material and are constantly given assignments and exams.

As stated by Forde and Brein in their research that, the potential challenges posed by the teaching of technology-enabled practical skills identified are, inaccessibility and inequality of online learning, digital illiteracy among lecturer, technological challenges, lack of engagement with preparation materials inhibits practical learning, lack of lecturer–student interaction, negative attitude towards online learning, and lack of skill match. Then, the identified opportunities presented by digital technologies are facilitating higher-level learning, the ability to practice in a safe environment, effective use of class time, a diverse variety of learning materials, and promoting autonomous learning [21]. However, there is a possibility that students who cannot follow e-learning well will experience knowledge gaps and experience stress, which must be investigated further so that it can be addressed immediately.

As a suggestion from the researcher, it may be possible to control the development of students' feelings and abilities during e-learning through the pandemic period. If some students are identified as having difficulty participating in e-learning over time, it may also be possible to provide special assistance or extra study time to the related students. Hope that even though the learning process is carried out remotely, the progress of student learning remains under control so that it does not cause problems in the future post-pandemic.

Apart from that, it is also possible to develop several computer programs that allow remote practicum learning to be carried out with a note that students' needs are still considered during practicum learning. For example, students need information about the layout of the laboratory and how to use the equipment. The rest, practical learning carried out in the laboratory is more functioned to hone students' skills. So, it is not only students from exact departments or applied majors who can learn about practical learning. However, other students who do not have direct access to the laboratory can also learn the ins and outs of the laboratory and the use of its tools. It can also reduce the risk of accidents when students who still do not understand how to work in the laboratory have to work in the laboratory like some new university or college students.

4. CONCLUSION

The COVID-19 pandemic has the potential to reduce student performance during e-learning. This is because the pandemic conditions have indirectly imposed intolerable limits for both teachers and students such as difficulty in accessibility to university facilities which results in poor mental conditions stress, and ultimately reduces motivation to learn and or teach. Thus, the online learning process becomes less effective and has a negative impact on the academic achievement of students. One of the factors that can be reliable for students in catching up with material during online lectures is learning style. By understanding their respective learning styles, at least students can control the learning process for themselves so that they do not just depend on the e-learning process itself.

However, e-learning can have a negative impact on students such as the emergence of knowledge gaps and the emergence of feelings of stress. According to the results, some students have felt excessive pressure during e-learning which ended up with an overwhelming feeling because of too much information and

assignments that were given, and feeling tired and stressed. If it is not followed up immediately, it is feared that after the pandemic ends there will be a decline in student competence.

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