College Students' Perception of Electronic Learning During Covid-19 Pandemic in Indonesia: A Cross-Sectional Study

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COVID-19 has prompted higher education institutions at the world to relocate offline classes to online classes, and universities in Indonesia were no exception. Indonesia has already developed online classes, and there were challenges to utilizing it. This study indicates e-learning perceptions' in knowledge mastery, social competence, and media literacy abilities, also assesses college students' attitudes toward e-learning. The research methods used with a quantitative m odel, where the sample tested represented the student of 1137 respondents from 43 universities in Indonesia. The study's findings show a commonly weakness of e-learning was that respondents got a lack interaction with lecturers (57,6%). A mastery of technology is moderate (77.6%), the key reason students implement e-learning is the ease with which they may obtain study resources, e-learning technology enables quick access to information, it made students able developing a favourable attitude based on its utility, self-efficacy, the convenience of use, and student behaviour. It utilized as an evaluation tool by The Higher Education of Education and Culture of the Republic of Indonesia.

Keywords: perceptions students, socio-demographic, e-learning, pandemics covid-19

INTRODUCTION

The first case of coronavirus disease (COVID-19) in Indonesia confirm in early March 2020, and the pandemic has since spread to all parts of the country.(Statement, 2020) The spread of COVID-19 has had a significant impact on the education sector in Indonesia(Syah, 2020). To prevent the spread of COVID-19, the World Health Organization (WHO) recommends(Meinck et al., 2022) stopping activities that may cause crowds to gather. Therefore, the Indonesian government issued the social distancing policy, Circular Letter Number 2 Year 2020 about COVID-19 Prevention and Handling within the Ministry of Education and Culture, and Circular Letter Number 3 Year 2020 about COVID-19 Prevention in Education Units(Kemdikbud, 2020). These two rules describe how to optimize the function of School Health Enterprises or health service units at universities by coordinating with local health care facilities. Communication with the Health Office, Education Office and/or local Higher Education Service Institution to determine whether the Health Office has plans or preparations to deal with COVID-19. education units to provide food that has been cooked until cooked and to all members of the education unit not to share

food, drinks, or wind instruments. Then, avoiding direct physical contact amongst education unit participants.

E-learning is conducted due to the health regulation requirements, that mandate the avoidance of large gatherings(Yeo et al., 2021). Additionally, information technology is developing e-learning to attain educational objectives amid the Covid-19 pandemic(UNICEF, 2020). E-learning is the process of learning through the use of digital instruments. Learning management systems and remote education are two of the most often used agencies(Pratiwi & Rahman, 2021). On the other hand, hybrid experiences and collaborations are reshaping the e-learning landscape (Christopher R.WolfeElizabeth M.Cedillos, 2015). E-learning is the application of technology to the teaching and learning processes. It enables students to learn more successfully, but educators must continue to play their roles and implement their responsibilities to ensure that the learning process occurs (Luaran et al., 2014). Converting face-to-face classes to virtual classrooms requires both pedagogical and technological modifications (Chen et al., 2021). According to research, creating and utilizing a virtual system with personalized preferences results in increased academic activity(Lerner, 2016). While compared to traditional classes/activities, the proposed approach improves users' learning capacities and assists them in selecting classes when using multiple online educational resources adopted/suggested by the college to organize online classes. (Ali, S., Hafeez, Y., Abbas, M. A., Aqib, M., & Nawaz, 2021).

The determinants of e-learning perceived satisfaction are technical system quality, information quality, service quality, support system quality, learner quality, instructor quality, and perceived usefulness(Dimah Al-Fraihat, Mike Joy, Ra'ed Masa'deh, 2020). The role of educational technology in the transition away from face-to-face education, there are five challenges to effective online transition namely: integrating synchronous and asynchronous tools into seamless online delivery, overcoming barriers to technology access, improving online competencies for learners and faculty, overcoming academic dishonesty issues in online assessment, and privacy and confidentiality(Turnbull et al., 2021). A successful online implementation strategy includes e-learning training(Arkorful & Abaidoo, 2015) for lecturers and students, community formation and e-learning, and the development of techniques for incorporating face-to-face learning while online.

Technology is becoming an integral part of the higher education learning and teaching cycle that provide better learning options and it is a good moment to utilize it to facilitate and enhance learning at all educational levels, in all places, and for individuals from all backgrounds (Technological, 2017). It is pushing for greater access to education and training in some countries(Lopukhova & Makeeva, 2017). The challenges that traditional higher education is currently facing, such as budget cuts, and the gap between theoretical and practical training, have prompted many universities to seek alternatives(Marghescu et al., 2007). The solutions to these challenges provide novel approaches to traditional campus-based teaching, with virtual learning environments used for course administration, content storage, and additional resources. All situations stimulate positive attitudes and motivation (Hermida, 2020). As a result, there are issues with perception during e-learning activities into social competencies. There are several factors to consider, including a lack of variety in the form of e-learning; lecturers' unfamiliarity with e-learning technology, insufficient facilities, including an inadequate number of students with hardware facilities; and the environment's incompatibility with studying the courses offered virtually (Yekefallah et al., 2021).

Some students of Eötvös Loránd University (ELTE) expressed satisfaction with the platform provided by the college and the ease of access, while others expressed disappointment because of challenges faced, a lack of experience, or inadequate training[21]. Collaborative methods in online classes are becoming more popular. Students and lecturers must establish a positive relationship for students to be satisfied with the learning process (Rizvi & Nabi, 2021). The findings of this research indicate e-learning perceptions' importance in knowledge mastery, social competence, and media literacy abilities. The study assesses college students' attitudes toward e-learning during the ongoing COVID-19 and will be utilized as an evaluation material, one of them is by The Higher Education of Education and Culture of the Republic of Indonesia(Kemendikbud, 2020).

LITERATURE REVIEW

Higher education continues to implement new processes in its learning activities, and these new activities are judged using a process known as evaluation. Evaluation helps to arrange an educational program, assess its achievements and improve upon its effectiveness. Every education institution realizes and uses the evaluation of education because they want to improve and develop their educational programs(Tatum, 2012). Teachers or lecturers need to assess, evaluate and help students reach the best achievement(Brown, 2015). An effort to improve the quality of education is to provide consideration before a decision from the policy owner is made, and is useful in making the right decisions for programs that will be or have been implemented (Munthe, 2015).

Imelda (2020) proposed the description of dynamics of learning as part of the education segment during the Covid-19 pandemic that took place in Indonesia by referring to phenomena summarized through observations, interviews and document studies related to the implementation of online-based learning(Hawkins, 2002).

The education system has adapted its policy and implementation of many kinds of learning activities, including those that hold online (Wayne et al., 2020). As every update in the training method can generate new and future conditions, it must be able to adapt to changing conditions to achieve comprehensive learning success.(Imelda Wahyuni, 2020) This means that education in Indonesia has already changed from the start of the pandemic.

The article "Virtual Learning During the Covid-19 Pandemic, A Disruptive Technology on Higher Education on Indonesia" stated that because of its simplicity of use and accessibility, WhatsApp is the most popular online tool for students. Some students, however, depend on the government to provide fast internet access and better network cooperation with regions because they stay in rural areas. (Pramana, Cipta and Susanti, Ratna and Violinda, Qristin and Yoteni, Fransina and Rusdiana, Emmilia and Prihanto, Yohannes Johny Natu and Purwoko, Reza Yuridin and Rahmah, Nur and Hasnawati and Fakhrurrazi and Yendri, Okma and Arkiang, 2020), and this article is a pilot study.

The findings of Dian Cahyawati and Muji Gunarto's(Cahyawati & Gunarto, 2020) research are used in this study, which suggests students' perceptions of improvement need to be pursued by the components directly involved in learning, namely lecturers and students. Perceptions on aspects of technology, pedagogy, and content need to be considered during the implementation of learning. Students prepare physically and mentally to be able to adapt and participate in online learning. Physical preparation includes the preparation of devices and applications used for online learning and looking for a learning environment that can support online learning. Mental preparation includes developing several characteristics that can support the implementation of online learning, such as adaptability, independent learning, and responsibility. Some of these characteristics can be made into acronyms to make them easy to remember, namely "a'mantab(Cahyawati & Gunarto, 2020)" – adaptable, independent, tough, and responsible.

METHOD

Research Design

This study used a descriptive research design. This research is quantitative, which is a type of research that produces findings that can be obtained, using statistical procedures or other means of measurement(Sujarweni, 2014). Meanwhile, the notion of quantitative research, as the basis for the philosophy of positivism, is used to examine certain populations or samples, collect data using research instruments, analyze quantitative or statistical data, to test the hypotheses(Suryana, 2012). A hypothesis ensures the entire research process remains scientific and reliable. Though hypotheses are essential during the research process, they can produce complications with probability, significance, and errors. A hypothesis is an educated prediction based on observations(Dayanand, 2020). As a result, the researchers in this paper emphasize the significance of the hypothesis and its role in research methodology. Descriptive research involves gathering data that describe events and then organizing, tabulating, depicting, and describing the data collection(Technology, 2001).

Participants

The validity of this study uses content validity(Budiastuti & Bandur, 2018) that is, the questionnaire includes all the material to be measured [65]. The purpose of this research assesses college students' attitudes toward e-learning during the ongoing COVID-19. For this purpose, the researchers conducted a literature review related to this purpose. The statements in the questionnaire are arranged based on the parts of e-learning so that these items represent the entire theoretical basis of the research topic.

The measurement tool commonly used is a questionnaire. The design of the questionnaire for this study is divided into knowledge mastery, social competence, and media literacy abilities. The statements in the questionnaire are prepared based on each of these materials so these items can represent the entire theoretical basis of the research topic. The section this research is most focused on in the teacher-student interaction is research on teacher-student communication *via* social networks (Froment et al., 2017), The dominance of technology skills(Shishakly, 2021), and the authors' first publication(Pramana, Cipta and Susanti, Ratna and Violinda, Qristin and Yoteni, Fransina and Rusdiana, Emmilia and Prihanto, Yohannes Johny Natu and Purwoko, Reza Yuridin and Rahmah, Nur and Hasnawati and Fakhrurrazi and Yendri, Okma and Arkiang, 2020). This led to the design of a simple instrument, that was used on many college students. Section 1 is demographic respondent, section 2 is e-learning about knowledge mastery and section 3 is the perception of social competence and media literacy abilities.

The questionnaire was distributed randomly by researchers (lecturers) and lecturers (not researchers) to students. The results of the questionnaires come from 43 universities. The distribution of the questionnaire was completed using college email and the WhatsApp groups. Colleges located in regional representatives throughout Indonesia, 15 provinces were randomly selected. The provinces were Bengkulu, Central Java, Papua, East Java, DKI Jakarta, North Sumatera, West Sumatera, Gorontalo, East Nusa Tenggara, North Sulawesi, West Papua, West Java, West Nusa Tenggara, Riau, South Sumatera. Interestingly, many areas of university education are located in the provincial capital of Indonesia.

Regional representatives used probability sampling, a sampling technique in which you choose samples from a larger population using a method based on the theory of probability. Probability theory is the study of uncertainty(Dokuchaev, 2021).

There are the requirements for a consent form to participate in research (informed consent), this letter was prepared as a requirement for an ethical license from a research ethics institute in Indonesia. We selected four students to fill out the informed consent form, and they represented the respondents.

This questionnaire has special criteria for respondents, each respondent must be a student at a college. Each student was expected to complete this questionnaire one time. This study was performed only at colleges that had conducted e-learning and had been doing so for some weeks and the same questionnaire was supplied to each college.

All respondents have received information about the purpose of the study in a questionnaire on 1337 students participating. That information was provided during the introduction of the instrument. Respondent data is divided based on two groups of students, namely respondents who come from study programs in education and non-educational study programs.

The data obtained from this study were from a questionnaire with several informants. To determine the informant in this research, researchers applied the purposive sampling method to determine samples based on the recommendations of research targets set so that this technique with a population as a sampling representative(Sugiyono, 2016). In this study, the informants specified included Diploma, Bachelor's, Masters and Doctoral in higher education.

Ethical Consideration

Participation in this study was voluntary. The researcher/lecturer doesn't make all of the pupils participate in the instrument. When a respondent answered the form completely, they were said to have affirmed their consent. The participants were free to terminate their participation at any time and did not have to determine their reasons. All recorded questionnaires have been stored, and only the lead and the second researcher have direct access to the data. The results of these questionnaires are available to the reader through the data repository [63]. This study strictly follows the ethical agreements given and places

participants' welfare, privacy, and safety as top priorities(Moore et al., 2018). The ethics approval number is 153/PE/KE/FKK-UMJ/VIII/2021, this study was approved on August 5, 2021, by The Commission of The Health Research Ethics of The Faculty of Medicine and Health, University Muhammadiyah Jakarta

Data Analysis

This study analyses the collected data using Statistical Program for Social Science (SPSS) software (RRID:SCR_002865) (SPSS Version 24, IBM). Inferential statistics are used to compare the differences between the treatment groups after data from the SPSS software analysis is analysed. Inferential statistics use measurements from the sample of subjects in the experiment to compare the treatment groups and make generalizations about the larger population of subjects(Statistics, 2015). It indicates that this research can be applied to populations other than those involved in the study. Questionnaires and literature reviews were utilized as study methods. They are both documented. For our study, researchers who are lecturers were helped by other lecturers in the distribution of questionnaires. Proper planning is required to ensure that the questionnaire contains questions that are not only simple to understand but also simple to complete using relevant research methods(James & Researcher, 2008).

The Validity

The survey method generally refers to the process used to gather data. It influences the exchange of ideas and information between the researcher and participants(William, 2021). The survey results can also be used to make predictions about a certain social phenomenon, including the application of positive law in the context of social and state life(Adiyanta, 2019). A pilot study was used to ensure the validity of the questionnaire. Knowing the basic features of a survey is important in terms of acquiring new scientific information, clearly understanding the meaning of information submitted and evaluating the quality of this information accurately(Özmen & Sevinç, 2016).

Data Collection

The data collected in this study are primary data and secondary data. In this study, the data collection techniques used are as follows: Primary data is collected from a questionnaire containing written questions to a person or group of people to get answers or responses and information needed by researchers (Mardalis, 1995), and the questionnaire is the primary data in this study.

Secondary data is information that has already been collected and is publicly available(Reviewer : Guide, n.d.). Secondary data is study documentation. Study documentation is the method used to collect data or sources related to topics discussed in a study. Study documentation can be obtained from various sources, scientific articles, documentation books, websites, and libraries. Many articles and data from websites are used for this article for the background and discussion sections.

RESULTS

The questionnaire was disseminated randomly using an online form-Google document to collect primary data. Responses from 1337 students were obtained [66]. In terms of sample size, both classical test theory and theory item response require a precise sample size. As a result, the interpretation of these two theories is dependent on the user(Hidayati, 2002). According to these two ideas, regardless of the number of samples, users from a broad population may be represented by the sample and the findings of this study can be estimated.

The demographic information about the students, the device they used to access e-learning, platform studies, and the students' perceptions and attitudes regarding e-learning are shown below in Table 1.

The Characteristics of the Sample Respondents

This section covers data on college students in general. The gender, age group, course, and college students's questions are summarised in Table 1.

TABLE 1
DEMOGRAPHIC RESPONDENT

Variable	Categories	Total(n)	Percentage (%)
The gender	Male	417	31,2
	Female	920	68,8
The age	<19	331	24,8
	20-22	738	55,2
	23-25	146	10,9
	>25	122	9,1
Department	Education	952	71,2
	Non-education	385	28,8
The student of	Diploma-3 (Equivalent to an associate's degree)	67	5,0
	Bachelor	1185	88,6
	Master	78	5,8
	Doctoral	7	0,5
The academic year	1	40	3,0
	2	333	24,9
	3	187	14,0
	4	257	19,2
	5	77	5,8
	6	189	14,1
	7	131	9,8
	8	66	4,9
	>8	57	4,3

Table 1 summarizes the sample respondents' personal information, classified by gender, age group, students at the college, academic year, and current status. According to the table above, the majority (68.8%) of sample respondents were female, while 31.2% were male. 55.2% of respondents are aged 20–22, and 24.8% are aged under 19, also 9.1% are over the age of 25. The majority of respondents are affiliated with the education department (71.2%) the rest are associated with other departments (28.8%). The education level of most respondents is a Bachelor (88.6%), the remaining participants consisted of Diploma-3 (equivalent to an associate's degree) (5.0%), master's level (5.8%), and Doctoral level (0.5%). Finally, the characteristics of the semester with the highest response rate are as follows: the second semester accounted for 24.9% of responses and the remaining semesters account for 75.1%.

Students enrolled for this study at many universities around Indonesia, these include in Bengkulu, Jayapura, Surabaya, Jakarta and others area. The most prevalent group of students (7.6%) attend Sekolah Tinggi Filsafat Teologi Izaak Samuel Kijne Jayapura, The PGRI University of Semarang (7.1%), Musi Rawas University, Lubuk Linggau (5.3%), Universitas Prof. Dr. Hazairin, S.H. Bengkulu (2.4%), and University of Tadulako Palu (1.9%). The remaining 75.7% of the students were studying in many universities in Indonesia.

The demographics of respondents in this study illustrate that e-learning is a model for higher education to respond to the pandemic and spread in almost all big cities and several cities in Indonesia. Respondents are dominated by women as parties who are willing to respond to learning activities that have been undertaken so far. The majority of students are women in the first semester and are at the bachelor's level. Students in the first semester are students who have participated in e-learning since they first entered college.

The Advantages and Disadvantages of E-Learning

This section covers data about the advantages and disadvantages of e-learning Table 2 summarizes the data.

TABLE 2
THE ADVANTAGES AND DISADVANTAGES OF E-LEARNING

Variable	Total (n)	Percentage (%)
The advantages of e-learning		
Independent and structured learning	132	9,9
Learning while working	132	9,9
Getting a recording of every lesson	47	3,5
Interactive class	3	0,2
Low budget	32	2,4
A Conducive and comfortable environment	14	1,0
Easy to access learning material on online	705	52,7
The disadvantage of e-learning		
Minimum interaction students	113	8,5
Minimum interaction with teachers	770	57,6
The study from home and not convenience	44	3,3
Low motivation learning	75	5,6
Low disciplines	21	1,6
Technical problems when learning takes place	305	22,8
There is social isolation	9	0,7

The advantages of e-learning as determined by the analysis indicate that most respondents responded in favour of online sources of material, totalling 705 respondents (52.76%), while self-directed and organised learning, and studying while working, are perceived advantages. The most prominent disadvantage of e-learning, according to 770 respondents (57.6%), include a lack of interaction with lecturers and technological challenges during studying. This indicates that e-learning was the best alternative for obtaining materials available online and the flexibility to access learning and other activities.

The Perception of E-Learning

According to the analysis results shown in Table 3, This section covers data about the perception of e-learning.

TABLE 3
PERCEPTION OF E-LEARNING

Question	Total (n)	Percentage (%)
Perception of the speed of receiving of learning with lecturers		
Unhurried	67	5,0
Slow	227	17,0
Normal	681	50,9
Fast	299	22,4
Expeditious	63	4,7
There are wider and more diverse interactions		

Question	Total (n)	Percentage (%)
Forcefully disagree	58	4,3
Disagree	138	10,3
Normal	516	38,6
Agree	476	35,6
Very Agreeable	149	11,1

The lecturer's material updates are more comprehensive		
Forcefully disagree	48	3,6
Disagree	145	10,8
Normal	525	39,3
Agree	494	36,9
Very Agreeable	125	9,3

The collaboration and interaction between students are better		
Forcefully disagree	108	8,1
Disagree	294	22,0
Normal	522	39,0
Agree	317	23,7
Very Agreeable	96	7,2

Increasing student interest in being able to access other online materials		
Forcefully disagree	57	4,3
Disagree	114	8,5
Normal	452	33,8
Agree	510	38,1
Very Agreeable	204	15,3

Increasing students' independence and skills in using media		
Forcefully disagree	35	2,6
Disagree	73	5,5
Normal	266	19,9
Agree	635	47,5
Very Agreeable	328	24,5

Increasing students' experience with many platforms		
Forcefully disagree	28	2,1
Disagree	42	3,1
Normal	243	18,2
Agree	658	49,2
Very Agreeable	366	27,4

Improving students' media/platform skills		
Forcefully disagree	29	2,2
Disagree	40	3.0
Normal	276	20,6
Agree	647	48,4
Very Agreeable	345	25,8

Improving social competence in students		
Very effective	73	5,5
Effective	211	15,8
Normal	529	39,6
Ineffective	418	31,3
Very ineffective	106	7,9
Overall impression of e-learning		
Very interesting	95	7,1
Interesting	177	13,2
Average	474	35,5
Not attractive	454	34,0
Very unattractive	137	10,2

Perception of the speed of learning with lecturers is normal (50.9%). In wider and more diverse interactions, 38.6% of students are normal (unconvinced), then, 39.3% of respondents had doubts about updating lecturer materials. 39% of students were still doubtful about collaborative working and interaction with other students during e-learning. Respondents agreed their interest in accessing other online materials and activities had increased (38.1%), increasing their independence and abilities in using media (47.5%), next by increased experience with many platforms (49.2%) and improved media/platform skills (48.4% of respondents). Some of the students included in this survey had doubts about their development in social competence (39.6%) and had a bad impression of e-learning (35,5%).

The majority of students' had doubts about the speed of receiving of learning with lecturer, wider and diverse interactions, updating lecturer materials, the collaboration working and interaction between students, increasing of interests and participation, development in social competence and the impression of e-learning. Although the majority of respondents agreed that there was an increase in students' interest in accessing other online materials, an increase in independence and skills in using media, an increase in the experience of using multiple platforms, and an increase in media/platform skills and impression of e-learning

Media Electronic Learning

This section covers data about electronic media used for learning. The following table summarizes the data.

TABLE 4
MEDIA OF ELECTRONIC LEARNING

Variable	Total(n)	Percentage (%)
The mastery of technology		
Low	52	3,9
Average	1038	77,6
High	247	18,5
The use of e-learning before to pandemic		
Ever	465	34,8
Never	872	65,2

Variable	Total(n)	Percentage (%)
The electronic platform		
Zoom	688	51,5
Google Meet	163	12,2
Google Classroom	263	19,7
The Campus Learning	118	8,8
The Campus Application	3	0,2
Other	102	7,6

According to Table 4 above, the majority of respondents have a moderate mastery of technology (77.6%), while a minority has poor knowledge (3.9%), and high mastery (18.5%). For the characteristics of the use of e-learning, most of the respondents had used e-learning before the pandemic (65.2%), while the rest had used e-learning (34.8%). The e-learning platforms used by the majority of respondents were Zoom (Zoom, USA) (51.5%), Google Meet (Google, USA) (12.2%), Google Classroom (Google, USA) (19.7%), Campus Learning (Infinite Campus Inc, USA) (8.8%), Campus Application (m-learning/m-campus) (0.2%), and other platforms (7.6%). One question allowed answers to be written by respondents regarding the use of different e-learning platforms, responses included: WhatsApp, Edmodo, Youtube, Ruang Guru, Quipper Sekolah, Email, Schoology, Moodle, Webex and Telegram.

Students are familiar with e-learning technologies, although the majority of respondents have never used e-learning before the pandemic. The favorite platforms are Zoom and then Google Classroom with 51.5% and 19.7% of students choosing these respectively.

DISCUSSION

As the COVID-19 pandemic lockdown affected nearly every element of society and daily life, people had to relearn how to structure communication and contact differently(Maison et al., 2021). Face masks, particularly, muffle sounds and cover facial expressions that ease comprehension during live communication(Mheidly et al., 2020). We investigated how students' early perspectives of e-learning changed during the COVID-19 in this study. Our research issues emphasize how to manage challenges in these uncommon contexts and what aspects contribute to their development. Our statistical analysis found a statistically significant relationship between participants' sociodemographic variables and e-learning difficulties. This study had a range of participants but the two most common groups were: 68.8% of respondents being female and 52.2% being aged between 20 and 22.

According to a review of e-learning in education, there are four significant barriers to e-learning education, development, and implementation, including a skill shortage, educator time constraints, inadequate infrastructure, poor communication, and attitude (O'Doherty et al., 2018). Additionally, it has been shown in[49] that personal issues were the primary impediment to undertaking e-learning. Another study stated that the independent variables that significantly affected student ratings of these barrier factors included: gender, age, ethnicity, type of learning institution, self-rating of online learning skills, the effectiveness of learning online, online learning enjoyment, prejudicial treatment in traditional classes, and the number of online courses completed(Muilenburg & Berge, 2005). Another study found a similar result: boundaries between students and teachers were classified into four categories: individual, institutional, cultural, and technical(Jokiaho et al., 2018). Moreover, it is established that students' characteristics and behavioral characteristics contributed to online connection and engagement(Purarjomandlangrudi et al., 2016). The findings of this study demonstrate that personal aspects play a crucial role and influence e-learning.

According to our analysis's findings, 50.9% of students were able to understand new topics at a normal speed using e-learning. 38.1% feel that there is an increase in student interest in accessing additional online

materials. Network difficulties occur for around 4.3% of participants, but learning motivation influences approximately 29% when studying online at 39.3% when learning using materials. 30.1% of students experienced limited communication from lecturers. Students engaged in e-learning with interest and activity grew in skills and experience while using media more than 38%. However, 39.6% of students stated that they doubted an increase in social competence due to e-learning. Students who indicated that e-learning was fascinating were in the minority, accounting for only 7.17%. Additionally, Bakar and colleagues emphasize that the primary barrier to communication is conceptual understanding, followed by complex issues (Bakar et al., 2020). We hypothesized that this condition might be influenced by students' knowledge and literacy regarding course themes and information communication technology-related difficulties, given that roughly half of the participants were freshmen or first-year students. The findings of this study corroborate those of another Indonesian scholar who stated that 3% of students had challenges and a lack of time to converse with lecturers(Syafril & Novrianti, 2021). The lack of interaction between students and teachers may result in social isolation and a lack of communication, which frequently results in mental health problems such as anxiety or negative thoughts (Ismail & Ismail, 2021). Still, this study did not examine mental health issues associated with e-learning in the educational system.

This study about students' perception of the e-learning process during the Covid-19 reveals that students are willing to have e-learning rather than offline learning because they enjoy studying far from the lectures while understanding the material can be done in their leisure time. They feel that they have freedom in dealing with time and location when they join a class. This study found that pupils acquire a favorable attitude toward the technology of e-learning while also becoming aware that the utility, self-efficacy, and convenience of e-learning also have a significant impact.

According to the other research, COVID-19 is widening Indonesia's education gaps. In 2020, the pandemic resulted in the immediate closure of 530,000 schools and a rapid shift to distance learning for 68 million students. The pandemic brought forward many digital learning innovations and investments in education technology (EdTech), but it also widened existing inequalities in education for many children (UNICEF, 2020). Additionally, the strategies used by the teacher to increase students' interest in learning were to provide students with an understanding of the importance of learning, to make learning material brief, clear, and interesting, to use simple and interesting media, and to conduct regular and continuous evaluations(Sutarto et al., 2020).

There are moments when students must concentrate on a task, undertake active learning, self-feedback, collaboration in realizing dreams, provide a manner of having interaction between learners and teachers, establish reciprocity and effective cooperation among students, and comprehend any differences in learning style(Zhang Helena Addae et al., 2020).There are seven aspects that contribute to students' perceptions about online and face-to-face learning environments: technology, course, instructor, communication, learning, satisfaction, and preferences(McArthur Baker & Unni, 2018). Another fact revealed by researchers states that course structure, learner engagement, and teacher presence are three points that may have a big impact on students' perceptions in an e-learning environment(Gray & DiLoreto, 2016). In our study there was the correlation between sociodemographic characteristics and student perceptions of e-learning, we discovered that the students with negative attitudes toward e-learning, were usually in the age categories <19 or 20-22, male, civil engineering students, and first-year students.

According to one study, gender is a major element influencing learners' views of e-learning(Ashong & Commander, 2012). However, in contrast, that study reported that male students have more favorable perceptions than female students. Due to the imbalance of proportion, based on gender, among student participants who were predominantly Female (68.8%, n=920), we assumed that it contributed to students' perceptions overall in our study. However, this study shows no correlation between socio-demographic characteristics among participants and students' barriers and perceptions about e-learning during pandemics. We identified several factors that may have influenced the study's findings, including the large sample size, gender imbalance among participants, and the possibility that participants completed the questionnaires without acknowledging or comprehending the quiz, as the answer option provided five options: very agreeable, agree, regular, disagree, and significantly disagree.

CONCLUSION

The study of how students' perception has been changed after they got involved in the e-learning process during the Covid-19 era was the focus of this research. According to the findings of this study, e-learning is a feasible option for learning. Besides the freedom to follow the online classes, not in the same place, situation, and environment, students could study at any time. The characteristics of using technology during e-learning include fast access, ease of use, personal self, and a sense of comfort. The advantage of e-learning is it is easy to access learning materials online.

In contrast to previous studies (Abbasi et al., 2020), this study discovered that e-learning has grown in popularity in Indonesia in recent years, as students increasingly communicate with one another and with instructors via e-learning tools. Additionally, students have embraced digital technology for learning in the absence of face-to-face interaction. As a result, suitable actions enhance online education quality to assist students' learning throughout the Covid-19 pandemic. We assumed that our study contributed to general students' perceptions. However, this study's result indicates no correlation between participants' sociodemographic characteristics and students' barriers and perceptions about e-learning.

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