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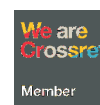
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# Online learning during the covid-19 pandemic: a survey study on student perceptions

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## ABSTRACT

The COVID-19 pandemic has changed the higher education system. Initially, the learning process was conducted offline, where students engaged in face-to-face interaction. However, due to the pandemic, the learning system shifted to an online format. This study aims to determine student perceptions of online learning during the COVID-19 pandemic, assessed in terms of the following aspects: preferred learning media in online learning, knowledge or understanding, social competence, media usage skills, and obstacles encountered in online learning. This research employed a descriptive quantitative research. This study invited 187 students of the Faculty of Teacher Training and Education to fill an online survey administered through Google Forms. The online survey method was used for data collection purpose. Data analysis revealed that the online learning platform students preferred most was WhatsApp, as it allowed them to save internet quota. Students' understanding of lecture materials during online learning was still lacking, their social competence did not increase, but their ability to use technology during online learning increased. The most dominant obstacles were technical problems, particularly network problems and limited internet quota. However, students still preferred offline learning to online learning. Therefore, in learning, lecturers should be able to combine both modes of learning, and provide online learning that can minimize internet data usage.

## Keywords:

Learning media  
Online learning platforms  
Obstacles  
Student preferences  
Student perceptions

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## Introduction

The emergence of the COVID-19 pandemic (Coronavirus Disease 2019) has changed teaching systems at all levels of education, including in higher education. Many Higher Education institutions are switching to distance learning, where classes are held online (Aguilera-Hermida, 2020; Ali, 2020; Crawford et al., 2020; Huang et al., 2020; Kaspar et al., 2024; Lumanaj & Osmanaga, 2024). Students were initially accustomed to face-to-face learning, meeting directly with their lecturers, but now they must adapt to the online learning system. Students must be able to adapt existing lectures to suppress the spread of the COVID-19 virus. A World Bank report noted that several countries have implemented different learning systems because physical schools were closed due to COVID-19 (Yarrow et al., 2020). It means that all parties must be able to adapt to the situation to achieve the expected learning objectives optimally.

Online learning is a form of internet use that can increase the role of students in the learning process (Saifuddin, 2018). The term "online" is an acronym for "on the network". Thus, online

lectures are a type of internet-based learning. There are different types of online learning used by universities depending on the availability of online platforms and the readiness of the universities. Several requirements for implementing online lectures include (a) the organizer of online lecture activities, (b) a positive mindset of lecturers and students regarding the internet's primary function, (c) the design of a learning process system accessible to all students, (d) a process evaluation of a series of student learning processes, and (e) feedback mechanisms from the organizer (Mustofa et al., 2019). Multiple applications/platforms can be effectively used in online learning activities, including apps, websites, social networks, or learning management systems (LMS). The various platforms available are used to help facilitate learning through material delivery, assessment, or simply assignment collection (Fuady et al., 2021).

Several factors influence the success of online learning. One of them is technology, specifically network settings that must allow for synchronization and asynchronization exchange, students must have easy access (e.g. remote access), and the network should require minimal time for document exchange (Pangondian et al., 2019). The study by Ali (2020) revealed that in addition to resources, staff readiness, confidence, accessibility, and student motivation play an important function in ICT-integrated learning. However, some students sometimes struggle with internet connectivity depending on their geographical location. Moreover, for students who live on the outskirts of villages, internet connection is sometimes difficult (Mardhiah, 2022). This will, of course, also impact students' perceptions, interests, and motivation in online learning.

Nugroho (2015) stated that increasing the role and activeness of students in using various media and technologies for the success of online lectures is greatly influenced by perception. Etymologically, the term "perception" comes from the English word "perception" and the Latin "percipare", which means "to receive" or "to take" (Sobur, 2003). According to Leavitt & Zarkasi (1992), perception is a person's assessment or interpretation of a person's perspective on translating something captured by the sense organs. Research on perception is carried out to find out the responses, acceptance, or views of a particular community or group towards something.

Previous studies on the perception of online learning have been conducted by several researchers such as Aguilera-Hermida (2020), Cranfield et al., (2021), and Ningsih (2020) examined students' perceptions in the Educational Technology Study Program at the University of Baturaja towards online learning during the COVID-19 pandemic, which was seen from the online media that students were most interested in online learning. Aguilera-Hermida (2020) explored student perceptions of the adoption, use, and acceptance of emergency online learning. The factors analyzed were attitude, affect, and motivation; perceived behavioral control (ease of technology use, self-efficacy, and accessibility); and cognitive engagement. Cranfield et al., (2021) investigated and explored higher education students' perceptions of emergency e-learning during the COVID-19 pandemic. In the study, students' experiences at universities in three countries were evaluated along four dimensions: (1) the home learning environment, (2) engagement, (3) participation preferences, and (4) impact on learning skills.

Previous research demonstrated that many factors were studied by researchers to see students' perceptions of online learning. However, only a few studies have examined student perceptions at universities located in districts, particularly among students who live in rural areas with limited internet connectivity. The present research is slightly different from previous studies in that it discusses the perceptions of students of the Faculty of Teacher Training and Education towards online learning as seen from the aspects of the most preferred learning media, knowledge or understanding, social competence, media usage skills, and online learning barriers. This is due to the fact that researchers need information from students about online learning to improve learning at the Faculty of Teacher Training and Education in the following semester, so that all lecturers and study programs as a whole can get a reference for the implementation of online learning in the future. During the online learning process, valid data on students' perceptions regarding readiness, barriers, and implementation of online learning during the COVID-19 pandemic have not yet been fully identified. It is therefore crucial to understand students' digital needs, the challenges of learning in their home

environments, and the importance of providing access to study spaces for those who are not fortunate enough to have a comfortable study space at home.

Based on the description, it is necessary to study students' perceptions of online learning during the COVID-19 pandemic. The research results are expected to be a reference for implementing the online learning. Thus, it is hoped that the results are intended to provide valuable considerations for related parties regarding the implementation of online learning. Specifically, it is necessary to examine students' perceptions of online learning during the COVID-19 pandemic in terms of their preferred online learning media, knowledge or understanding, social competence, media usage skills, and obstacles to online learning. The results of this study are expected to serve as a reference for the implementation of future online learning. Thus, the outcomes are expected to be taken into consideration by relevant parties regarding the implementation of online learning.

## Method

This study employed a descriptive quantitative design using a survey method. The research used a survey method approach with a descriptive nature to describe the circumstances or phenomena that occur (Arikunto, 2010). The respondents consisted of 187 students of the Faculty of Teacher Training and Education, at one of the private universities in Rokan Hulu Regency, who had implemented online learning during the odd semester 2020/2021. Participation was voluntary and anonymous. Data were collected through an online questionnaire (Google Form). The instrument was constructed by the author and also adapted from previous studies. The indicators measured in this study included student perceptions of online learning during the COVID-19 pandemic, including the most desirable aspects of online learning, knowledge or understanding, social competence, media usage skills, and barriers to online learning. The questionnaire consists of four sections. In the first section, students are asked to enter demographic data (age, gender, year of entry, and study program). The second section asks about platforms commonly used in online learning. The third section contains the most preferred learning platform, knowledge or understanding, social competence, and media usage skills. The last section is about barriers to online learning and asks students' perceptions whether online or offline learning offers more advantages or disadvantages. Data collection used a closed questionnaire method. However, two questions allow students to respond freely. Questions regarding aspects of skills in the use of online media and social competence use 4 scales: Strongly Agree, Agree, Disagree, and Strongly Disagree. Content validity or reliability testing for instruments was used in this study. Data analysis was carried out in two stages. First, data from the questionnaire results were analyzed by calculating percentages using Excel. In addition to percentages, some questionnaire results were explained descriptively; responses to open-ended questions were transcribed, coded, and categorized within each question to determine similarities in answers. Second, conclusions were made from the data obtained.

## Results and Discussion

### Profiles and Demographic Information

A total of 187 students completed the questionnaire. Detailed descriptions of respondents are presented in Table 1. Table 1 explains that the most respondents were female students. The respondents are a representation of students from the Faculty of Teacher Training and Education who have studied using the online system in the odd semester of 2020/2021.

Student perceptions assessed in this survey included the most preferred learning platform or media, student understanding during online learning, skills in using online learning media/platforms, and social competence, advantages, disadvantages, and obstacles during online learning. The research results based on data analysis are presented as follows. The platforms used in implementing online learning (more than one answer is allowed) are presented in Figure 1.

Table 1. Student Demographic Table

Students Demographic Details (n=187)		
Gender	N	%
Male	34	18
Female	153	82
Age		
>25 years	2	1
23-25 years	10	5
20-22 years	121	65
17-19 years	54	29
Year of Study		
2020	83	44
2019	68	36
2018	19	10
2017	17	9
Study Program		
Biology Education	52	28
English Education	24	13
Physics Education	26	14
Social Studies Education	29	16
Mathematics Education	38	20
Sports and Health Education	18	10

Platforms used in online learning (more than one answer is allowed)

187 responses

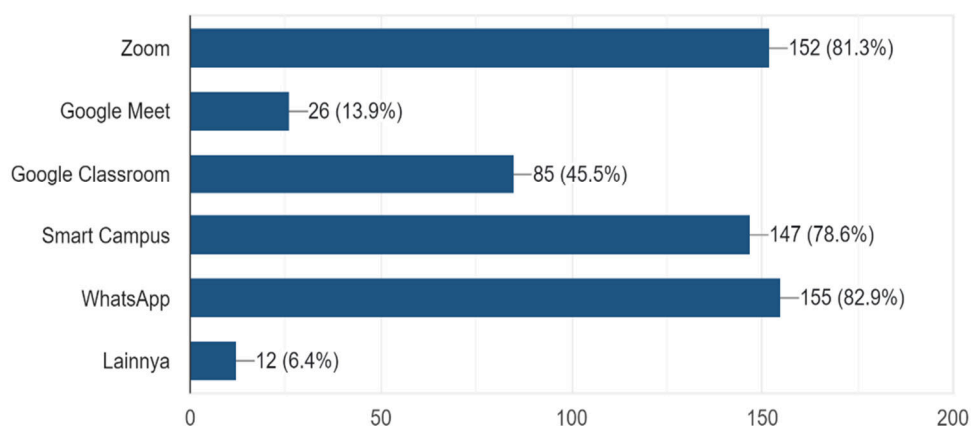
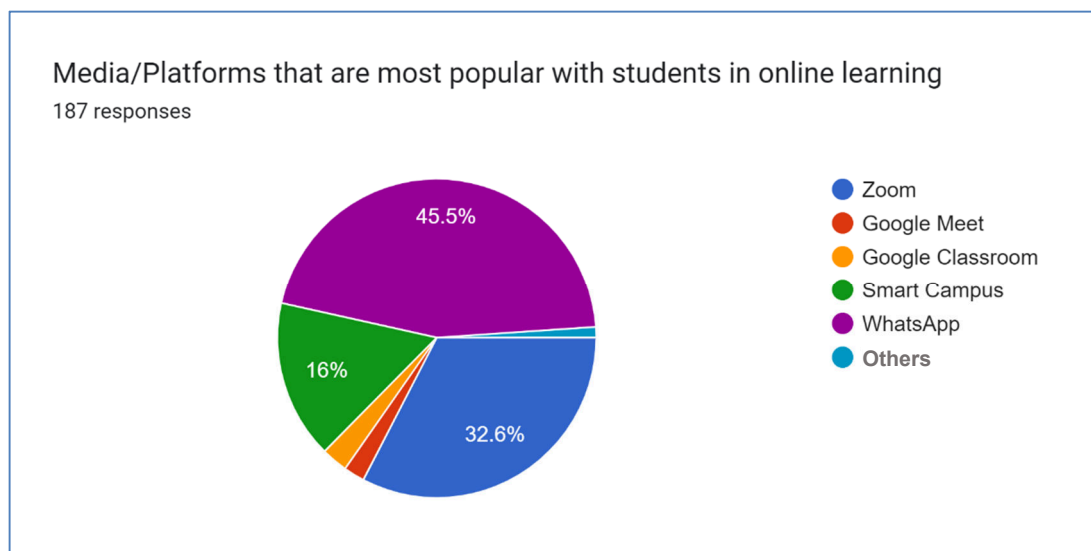


Figure 1. Platforms Used in Online Learning

Figure 1 shows that the platforms most widely used in online learning were WhatsApp, Zoom, Smart Campus, Google Classroom, and Google Meet. In addition, 6.4% of students answered using other platforms, including YouTube, Discord, Telegram, Kahoot, Google, and Edmodo. Many platforms used in online learning showed that lecturers used various online media. A research finding by Shenoy et al. (2020) showed that during the lockdown period, ISBR Bangalore Business School had undergone a technology adoption process, in which students engaged with various online learning modes.

### The most popular online learning media/platforms in online learning

The platforms of interest to students can significantly affect the learning process. Respondents' answers regarding the most platforms popular in online learning are presented in Figure 2.

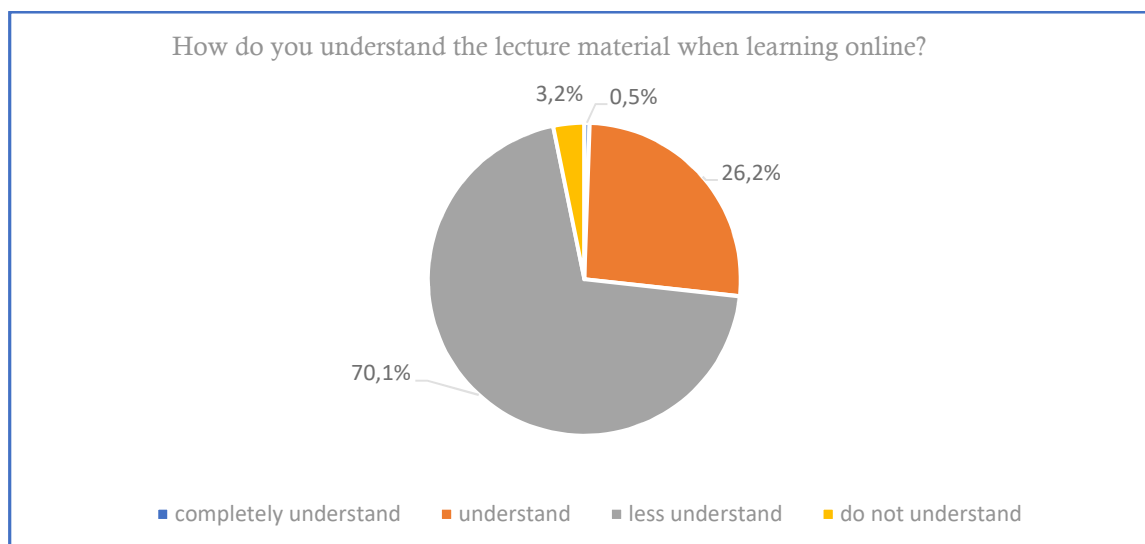


**Figure 2** The Most Platforms Popular in Online Learning

As shown in Figure 2, the media/platform students were most interested in online learning was WhatsApp (45.5%). The following most popular platforms were Zoom (32.6%), Smart Campus (16%), Google Classroom (2.7%), and Google Meet (2.1%). The remaining 1.2% of students answered other platforms. Another answer was that no media was most popular with students because the network was less supportive. The most popular platform with students was WhatsApp. This aligns with the research results by Anhusadar (2020), stating that students preferred learning using WhatsApp Groups. However, this finding contrasts with Ningsih (2020), who reported that informal media such as WhatsApp is the second most preferred choice for students. WhatsApp is the dominant application because it is easy to access and also consumes a small or cheap quota.

### Students' Understanding during Online Learning

The next questionnaire item concerns students' understanding of lecture material during online learning. The results of students' responses are presented in Figure 3.



**Figure 3** Students' Understanding of Lecture Material During Online Learning

Figure 3 shows that 70.1% of students less understood the lecture material and 26.2% understood the lecture material. Based on this percentage, it can be said that more than 70% of students less understood the lecture material when learning online. Some students said that they did not



understand the material because of the limited interaction between students and lecturers. In addition, unstable network connections hindered their ability to follow lessons effectively. The instability of the internet network prevented students from fully participating in the learning process, which contributed to their difficulty in understanding the material presented. These findings are consistent with Kusmaharti & Yustitia (2020), who found that students were less than optimal in understanding concepts during online learning. This contrasts with offline learning, where students can easily interact with lecturers and other students to discuss course material.

### Skills in using online learning media/platforms

The next question was whether online learning increased students' independence and skills in using online learning media/platforms. Students' responses are presented in Table 2.

**Table 2.** Students' Ability to Use Online Learning Platforms

Aspects	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)
Online learning increases my independence and skills in using online learning media/platforms	10.2	71.1	17.1	1.6
Online learning can enhance the learning experience with various platforms/media	13.4	73.8	11.8	1.1
Online courses help me better understand the use of technology	18.7	72.7	7	1.6

Table 2 shows that more than 70% of students agreed that online learning improved their independence and skills in using online learning platforms, improved their learning experiences using various platforms/media, and increased their understanding of technology. This shows that students had a positive perception of the increasing ability of students to use technology during online learning. This is in line with the findings of Lumanaj & Osmanaga (2024) that one of the reasons students preferred online courses is because they could improve technical skills.

### Social competence

The next indicator is student perception related to social competence. The following table presents student perceptions of online learning seen from the Social Competence aspect.

**Table 3.** Students' Social Competence

Aspects	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)
Student collaboration and interaction are better in online learning	1.1	24	63.1	11.8
I feel comfortable communicating actively with lecturers online	3.21	32.62	56.15	8.02
My communication skills have improved since participating in online learning	3.21	44.92	46.52	5.35

According to Table 3, most students disagreed that online learning improved their social competence. Specifically, 63.1% of students disagreed that student collaboration and interaction were better during online learning. Likewise, in the comfort aspect of communicating actively with lecturers during online learning, 56.15% did not feel comfortable communicating online with lecturers. This showed that over 50% of students felt uncomfortable communicating with lecturers online. For the improvement of students' communication skills during online learning, more students disagreed that their communication skills improved during online learning. However, the difference between students who agreed and those who disagreed their communication skills have improved since online learning was not significantly different. This is in accordance with the results of research by Baczek et al., (2021) who investigated medical students' perceptions of online learning that students thought online learning was less effective than face-to-face learning in terms of improving skills and social competence. Lumanaj & Osmanaga (2024) stated students preferred online courses

because they improved technical skills, dedicated more time to homework, and preferred email for questions. However, social interaction did not increase compared to classroom learning. Students suggested blended learning for inclusivity, especially for those with financial, health, or work constraints. Ultimately, students prefer classroom learning for future teaching.

### Obstacles to online learning

The students were also given two open-ended questions about the obstacles they experienced during online learning and how to address them. 88.77% of students experienced problems with the network or connection and internet data packages. The results of this study are in accordance with the results of Nambiar's research (2020), in which 55.7% of students reported technical problems such as poor network connectivity, power outages, broadband problems, poor audio and video quality, problems with applications, being disconnected between classes, and difficulties logging in again as the main problems. In addition, 23.3% of students reported difficulty concentrating during online classes, experiencing more distractions at home, and lacking a structured learning environment, which made it more difficult for students to focus during classes. When students were asked about the obstacles experienced during online learning, the most common student answers were less supportive/less stable networks and limited internet quotas. This is in accordance with the results of Anhusadar's research (2020), which identified insufficient data and internet packages as barriers to online lectures. This is also in line with the results of Yanti's research (2021), which highlighted inadequate internet connectivity as one of the main obstacles to online learning.

According to Curelaru et al., (2022) and Volery & Lord (2000), some of the key factors affecting the effectiveness of online learning are technology-related, such as access, navigation, and internet connection, online learning platform design, and accessibility to synchronous and asynchronous learning materials. Other obstacles students faced included minimal interaction with lecturers, minimal interaction with fellow students, frequent technical problems during learning, unsupportive home learning environments, low discipline, social isolation, reduced motivation to learn, and financial difficulties in purchasing internet data packages, especially among students in rural areas with economically disadvantaged backgrounds.

To overcome these obstacles, students reported several strategies. Before doing online learning, students looked for a place where the internet network was not problematic or stable and comfortable, for example looking for a network outside the village or outside the area where they live. Some students went to campus to access the internet or studied at a friend's house with Wi-Fi; saved quota usage only for essential purposes only; studied independently or in groups if they did not understand the material presented; and collaborated with peers when working on tasks they did not understand. These responses indicate that when faced with obstacles or constraints in online learning, students immediately sought solutions to ensure they could continue participating in online learning. This demonstrates that students remain enthusiastic in implementing online learning. Currently, inadequate internet access, network problems, lack of electronic devices, and poor network infrastructure are the most prominent issues in developing countries (Adnan, 2020; Chandrasiri & Weerakoon, 2022; Meng et al., 2023; Muthuprasad et al., 2021; Rahman, 2021).

Furthermore, when asked whether online learning had more disadvantages or advantages, 79.68% of students answered that it had more disadvantages, 12.30% of students stated that it had more advantages, and 8.02% of students stated that both online and offline learning had advantages and disadvantages. Chandrasiri & Weerakoon (2022) stated that students' negative perceptions towards online learning are driven by the lack of electronic devices and poor internet connections. When asked which learning students liked most, the students' responses are presented in the Table 4.

**Table 4.** The learning system that students liked most

The learning system	Percentage (%)
Online learning	7.5
Offline learning	50.8
A mix of online and offline learning	41.7



Table 4 shows that the highest percentage related to the learning system most preferred by students was offline learning as much as 50.8%. Only a few students liked online learning. This is in accordance with the results of Nambiar's research (2020), which reported that 87.1% of students preferred classroom teaching method over online teaching mode, while only 12.9% preferred online classes. Similarly, Zhang and Chen (2023) stated that participants preferred offline to online learning. Zhang & Chen (2023) added that the acceptance and use of online learning are influenced by the didactic organization design of online learning. Likewise, Ningsih's (2020) research found that most students (93.5%), preferred offline, face-to-face learning to online learning.

Based on the results of this study, the lack of effectiveness of online learning is due to inadequate internet access, especially in areas where students live on the outskirts of the city. This situation affects students' understanding of the material provided during online learning. For students who live on the outskirts of villages, internet connection is sometimes difficult (Mardhiah, 2022). Another contributing factor is the lack of social interaction, which is a key factor that reduces the effectiveness of online learning. Therefore, it is important to improve social interaction during the implementation of online learning activities. These findings indicate that the effectiveness of online learning design greatly influences the acceptance and use of online learning media.

Online learning often has a significant impact on students' social context. Many students reported that their social interactions are drastically reduced due to face-to-face limitations, be it social interactions with lecturers or social interactions with other students. Geographical and local conditions also determine students' perceptions. Students who come from areas with good internet access tend to have a more positive online learning experiences due to the smooth access to materials and communication. In contrast, students in areas with limited infrastructure or weak internet signals often experience technical difficulties that make them less like online learning and feel online learning is less effective. Furthermore, the platform most widely used among students was WhatsApp, which they considered to be easier and cheaper in terms of data usage. This suggests that future online learning should account for internet connections and combine multiple digital platforms.

This survey had limitations. The small sample may not fully represent the majority of students who take online classes. Furthermore, this study was limited to students in one faculty only. Therefore, further research needs to be done on how students perceive online learning at the university level.

## Conclusion

Based on the analysis and discussion of students' perceptions of online learning, it can be concluded that the most preferred online learning platform among students was WhatsApp (45.5%). Students favored this platform because it required less internet quota. Students' understanding of lecture material during online learning was limited (70.1%), their social skills did not improve during online learning, although they agreed that their skills in using online learning media had improved. The main weakness of online learning was technical problems, particularly poor network support and limited internet quotas. Nevertheless, most students (50.8%) preferred offline learning, face-to-face classes over online learning. Although the sample size is too small to be generalized to a larger population of students in the Faculty of Teacher Training and Education, this information can provide a general picture of the common problems students encounter during online learning. The implementation of online learning into the curriculum requires a well-thought-out strategy and a more active approach.

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