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Users Experience Analysis of the Zoom Meeting Application

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Abstract: This research aimed to analyze the User Experience analysis of the Zoom Meeting application according to the perspectives of lecturers and students during online learning in the new normal era because the Zoom application is considered to have numerous outstanding features. The population in this research were 2 lecturers and 123 students of the Bachelor of Elementary School Teacher Education Study Program in the 2021/2022 academic year in Bali. The purposive sampling technique was used along with the questionnaire and in-depth interview. As a result, the attractiveness, clarity, efficiency, and stimulation aspects scale got the average positive result from the questionnaire because the value obtained was more than 0.8. Furthermore, the average questionnaire scale was neutral for the accuracy and novelty aspects because the values obtained were from -0.8 to 0.8. Therefore, the accuracy aspect has the lowest value compared to other aspects. It was also verified from the data obtained from the in-depth interview results, which showed various problems and obstacles experienced by users in terms of the accuracy of the Zoom Meeting application when used as an online learning medium, i.e., difficulties in conducting disciplinary assessments and conducting lectures that required practical skills. Although Zoom has many benefits for online learning, it still has several limitations that must be addressed by lecturers, students, and Zoom developers.

Keywords: user experience; usability; online learning; Zoom meeting application

INTRODUCTION

Online learning is a form of education that involves technology in its implementation (Moore et al., 2011). Furthermore, (Fitriyani et al., 2020) state that online learning is an educational system separated from learning activities, namely synchronous and asynchronous. Online learning will continue to develop along with technological advancements (Anugrahana, 2020). Additionally, education with online systems is an effective tool for students to learn without limits (Mustofa et al., 2019). The advantages of online learning are flexible time and cost-saving transportation (Handayani, 2020). There are four aspects related to online learning, namely: 1) improving student interaction with instructors, 2) more flexible interaction, 3) reaching students widely, and 4) facilitating material delivery (Tony Bates, 1997). However, the drawbacks of online learning in Indonesia include complaints about internet network instability, reaching 38%, one-sided interactions at 18.31%, and decreased concentration at 23.12% (Handayani, 2020). Preparing an online learning system is crucial to anticipate unexpected situations such as spreading infectious diseases, natural disasters, and regional conflicts (Aras Bozkurt & Ramesh Sharma, 2020).

In Indonesia, to prevent the spread of Covid-19, human contact is limited, and one of the measures taken in the field of education is the implementation of online learning systems (Patricia Aguilera-Hermida, 2020). Online education has been viewed as an option that potentially serves a specific group of older students with more family, financial, and work responsibilities than on-campus students (Hussein et al., 2020). Recently, online learning activities have been conducted massively through online

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technology, including Zoom Meeting. This application has many features and advantages, such as high-resolution video and audio, conversation recording, security, and lightweight storage capacity.

This research examines online learning using the Zoom Meeting application for lecturers and students in the Bachelor of Elementary School Teacher Education Study Program in the 2021/2022 academic year in Bali. The Elementary School Teacher Education program has a paid Zoom Meeting Education account with the Zoom Education version, which the institution facilitates from March 2020 to July 2022. Seven lecturers actively used the Zoom Meeting application in teaching during the pandemic. With the online learning system through the Zoom Meeting application, they hope to achieve the learning objectives as expected during the Covid-19 pandemic. New experience lecturers and students gain virtual discussions, dialogues, demonstrations, and practical question-and-answer sessions using only the Zoom Meeting application. Of course, the learning experience is not a habit for lecturers or students as it is usually done in class. Some courses require practical skills, including at least 12 courses and skills courses and 96 skills-based courses.

User experience is the experience that users have when interacting with a product or service (Biduski et al., 2020). User experience involves examining issues that may arise simultaneously (Al Qudah et al., 2020). There are 6 criteria for creating a good user experience: findability, accessibility, desirability, usability, credibility, and usefulness. This research aims to understand users' interactions with the system, identify difficulties encountered, and perform an easy and fast usability assessment by focusing on the users' perspective. The advantage of this method is that respondents can easily understand and quickly determine whether the Zoom application is practical or not when used as an online learning medium. The usability used in the Zoom Meeting application research is inquiry. The inquiry focuses on obtaining user data through surveys, interviews, and observations (Handarini & Wulandari, 2020).

LITERATURE REVIEW

Online Learning

Online learning is a form of distance learning that does not require face-to-face interaction (Handarini & Wulandari, 2020). Online learning does not demand that teachers or students attend class physically, as learning can be accessed through the internet and software tools as support. Online learning can be effective because it is rich in feedback (Naserly, 2020). Learners can collaborate formal learning activities with self-directed learning. Online learning models can also be tailored to meet the needs of students to receive the same quality of teaching. At least 3 things can make online learning successful: first, technology; second, the characteristics of the teacher; and third, the characteristics of the student (Andrianto Pangondian et al., 2019). Online media is software that helps devices function as hardware in carrying out their function as an integrated communication medium (Romli, Syamsul, M., 2012). It is stated that online media can be divided into two types: synchronous online communication and asynchronous online communication.

Zoom Meeting Application

Zoom Meeting is an online meeting application with a screen-sharing concept that can support communication needs with many people without direct contact. Zoom provides a face-to-face interaction facility through online video conferences that can accommodate up to 100 participants for the free version and 500 to 1000 participants in one meeting on the paid version account, depending on the size of the package used (Kasman & Hamdani, 2021).

The Zoom Meeting application is often used as a long-distance communication medium that combines online meetings through audio, video, and mobile collaboration with features such as telephone calls, webinars, presentations, and many more. Zoom Meeting can be categorized as an online learning medium that can be used as one type of teaching and learning that allows teaching materials to be delivered using the internet (Monica & Fitriawati, 2020). The Zoom Meeting application is one of the applications that can be used for virtual learning. The Zoom Meeting application can connect students with educators using video to deliver the learning process effectively. The advantages of the Zoom Meeting application are that it is available on various system devices, including MacOS, Windows operating system, Linux, and IOS and Android smartphones. Another advantage of Zoom Meeting is its high-resolution video and audio features, support for presentation features, scheduling features, the ability to record video conference activities, and team chat features. The disadvantages of the Zoom Meeting application are high data usage, limited language options in the application, and too many application packages options that need to be considered when choosing a Zoom Meeting package.

User Experience

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User experience encompasses all aspects of user interaction with a company, service, or other products (Nielsen & Molich, 1990). User experience is simply a user's experience with a product or service in the real world (Khakim & Sharif, 2018). User experience is the individual perception and response resulting from using and anticipating of a product, system, or service (Henim & Sari, 2020). The alignment between user needs and the features provided by the product can provide a good user experience. It then determines whether the product is valuable or not. Next, users will feel pleased if the product is easy to find and use the first time. Lastly, the product should be easy to use and thus can accomplish or do what the user wants (Munthe et al., 2018). User experience consists of four elements: usability, valuable, adaptability, and desirability (Wiwin, 2019).

Definition and Concept of Usability

Usability is a measure of the quality of user experience when interacting with a product or system, whether it is a website, software application, mobile technology, or other user-operated equipment (Nielsen & Molich, 1990). Meanwhile, according to (Dawood et al., 2021), usability is the extent to which a product can be used to achieve specific goals with effectiveness, efficiency, and satisfaction. In (ISO, 2018), usability is defined as the extent to which a product can be used to achieve user satisfaction.

Usability Evaluation

Usability evaluation is a process that involves users of a product learning and using the product to achieve user comfort aspects such as efficiency, effectiveness, and user satisfaction with a particular system (Utami et al., 2020). According to (Dawood et al., 2021), the importance of usability evaluation in the system or product development phase is to produce a better product than the previous one and to meet the needs and expectations of system users. Usability evaluation methods are divided into two methods: expert-based inspection and user-based testing. The inspection method is carried out by using usability experts to identify usability problems by following guidelines, heuristics, or tracing. Through the testing method, usability problems can be found by observing users a product or system.

The User Experience Questionnaire

The User Experience Questionnaire (UEQ) is a measurement that provides a quick assessment of user experience (Rauschenberger et al., 2013). It is designed with a scale that can handle comprehensive impressions of user experience. The UEQ has a questionnaire format that supports respondents in expressing their feelings, impressions, and attitudes that arise when interacting with a product as quickly as possible. UEQ (Adinegoro et al., 2018) is a tool that can help in processing survey data related to the user experience that is easy to apply, reliable, valid, and can be used to complement data from other evaluation methods with subjective quality assessments. The primary purpose of using UEQ is to provide a quick assessment by users that can be well-received and complete regarding the intended perceptions, such as the product's impression, the feelings experienced by users while using the product, and the behavior that arise when using a product (Schrepp, 2017). The UEQ has 26 elements with 6 scales consisting of attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty aspects.

METHOD

The population of this research consisted of active lecturers and students of the Bachelor of Elementary School Teacher Education Study Program in the 2021/2022 academic year in Bali. The sample size was determined using non-probability sampling techniques (Malhotra, K., 2009), which suggested a minimum sample size of 5 times the number of variables. In this research, there were 26 variables. Thus, the questionnaire sample size was 26 x 5 = 130. For the in-depth interview, the researcher involved two lecturers as informants, one with the longest tenure or senior lecturer and one with the newest or junior lecturer, and 6 students consisting of one coordinator per semester and three students randomly selected from each semester 2, 4, and 6. The selection of informants was based on specific considerations and criteria.

The data collection technique for the questionnaire with lecturers and students was conducted online. The questionnaire was created using Google Forms and distributed via instant messaging on WhatsApp. The in-depth interview was conducted face-to-face.

The questionnaire used in this research was the User Experience Questionnaire (UEQ), which was accessed on the official UEQ online platform. The UEQ has been translated into 19 languages, including Bahasa Indonesia. Its reliability and validity have been investigated in several previous studies involving

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11 usability tests with 144 participants and online surveys with 722 participants. These studies indicated that the UEQ has high reliability, as estimated by the Cronbach-Alpha coefficient for internal consistency.

The UEQ analyzes user experience based on 6 scale aspects: attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. These 6 aspects were further elaborated into 26 items, each item consisting of a pair of opposing terms with a scale range of 1 (one) to 7 (seven) marked with circular dots in the middle. The dots between the two opposing terms represent the gradation of the opposing terms. Respondents expressed their agreement with the statement by selecting the dot closest to their impression. The dots were then transformed into a range of values, with negative terms assigned the lowest value of -3 and positive terms assigned the highest value of +3.

The in-depth interview was conducted using a guideline to facilitate and focus the questions asked. The researcher created an in-depth interview instrument to reinforce the questionnaire results. The researcher designed some questions given to informants based on their experience with using the Zoom Meeting application as an online learning media concerning the 6 scale aspects tested.

RESULT

This research presented the results of questionnaires filled out by faculty members and students who were the population. The recapitulation of the questionnaire score was input into the User Experience Questionnaire Data Analysis Tool. After the data was transformed, the average scores for each scale aspect could be calculated.

The questionnaire was distributed online to semester 2, 4, and 6 students of the Elementary School Teacher Education Program and lectures that used the Zoom Meeting application in online learning. Feedback from respondents was directly obtained through Google Forms. The data were further processed using the UEQ Data Analysis Tool according to the weighting for each item to obtain the average based on the UEQ scale. After the data was transformed, the average values for each aspect of the scale could be calculated. The results of calculating the average values for each scale aspect for the Zoom Meeting application analysis were attractiveness with a value of 1.082, clarity 0.898, efficiency 0.946, dependability 0.431, stimulation 1.025, and novelty 0.621. More detailed information can be seen in Table 1.

Table 1. Average Scores for Each Scale Aspect

Scale	Average	Std. Dev.	N	Confidence	Interval Confidence	
Attractiveness	1.082	0.964	130	0.166	0.916	1.248
Perspicuity	0.898	0.994	130	0.171	0.727	1.069
Efficiency	0.946	1.030	130	0.177	0.769	1.123
Dependability	0.431	0.576	130	0.099	0.332	0.530
Stimulation	1.025	1.008	130	0.173	0.852	1.198
Novelty	0.621	0.881	130	0.151	0.470	0.773

The UEQ standard interpretation was that the product evaluation result was neutral if an aspect had a value between -0.8 and +0.8. An aspect greater than +0.8 indicated a positive evaluation, while a value less than -0.8 indicated a negative evaluation. From the standard interpretation measuring the 6 user experience aspects of the Zoom Meeting application as an online learning medium, it was found that the attractiveness, clarity, efficiency, and stimulation aspects were in the positive impression evaluation. Meanwhile, the dependability and novelty scale aspects were in the neutral impression evaluation.

In addition to obtaining averages for each aspect of the scale and looking at the standard interpretation of each aspect of the user experience scale, a benchmark test provided by UEQ was also conducted to determine the adequacy of the Zoom Meeting application for user experience. In the UEQ Data Analysis Tool, the average values for each aspect were already linked to the existing benchmark data set. This data set contains data from 20,190 people from 452 studies on various products (business software, web pages, web stores, and social networks).

The average results of the five aspects of the scale measurement showed that the stimulation aspect received a comparison in the “Above average” category. The attractiveness, clarity, efficiency, and novelty aspects were compared with the “Below average” category, and the accuracy aspect was compared with the “Poor” category. These comparisons are explained in Figure 1.

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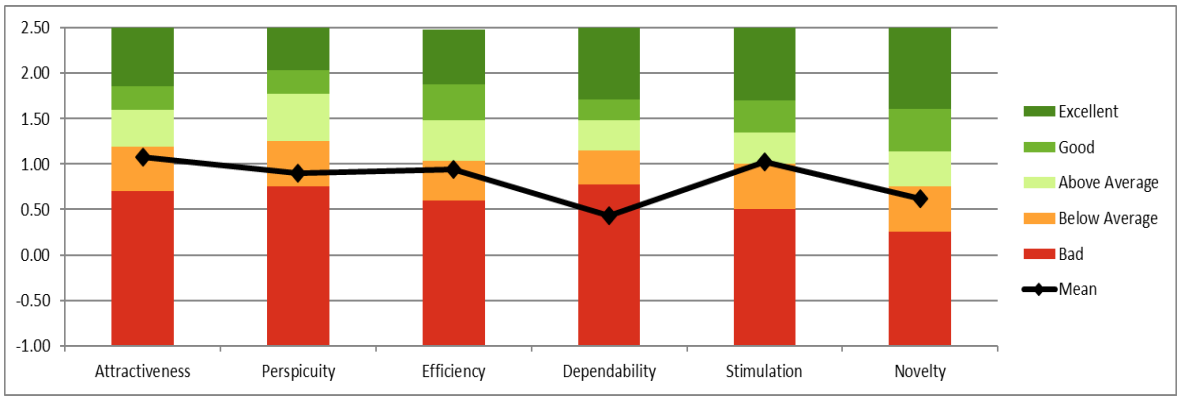

Figure 1. Zoom Meeting Benchmarks Chart

Table 2. Results Category Benchmark Zoom Meeting

Scale	Average	Comparasion
Attractiveness	1.08	Below Average
Perspicuity	0.90	Below Average
Efficiency	0.95	Below Average
Dependability	0.43	Bad
Stimulation	1.02	Above Average
Novelty	0.62	Above Average

Based on Table 2. a comparison of attractiveness, clarity, perspicuity, efficiency, and novelty fell into the “Below Average” category. It indicated that the average comparison values of attractiveness, perspicuity, efficiency, and novelty aspects with the UEQ dataset are lower than 50% of the data set in the UEQ dataset and fall within the higher range of the 25% UEQ dataset used as a comparison interval scale. The stimulation scale aspect fell into the “Above Average” category in comparing values. It showed that the average comparison value of the stimulation scale aspect with the UEQ dataset was smaller than 25% of the UEQ dataset. The average stimulation aspect was higher than 50% of the dataset used as a comparison interval scale. As for the accuracy scale aspect, it fell into the “Bad” comparison value category. It is where the average value of the accuracy scale aspect is within the 25% average comparison value of the lowest evaluated result.

In-Depth Interview Result

This research conducted an in-depth interview with 2 lecturers and 6 students as informants, using a guide to reinforce the questionnaire results. Some of the prepared questions were related to the user experience of the Zoom Meeting application when used as an online learning medium. The interview results found various problems and challenges for Zoom Meeting users, such as limited time issues when using it, discipline and readiness issues in using Zoom Meeting for online learning, and the most common complaint was the accuracy of using Zoom Meeting for online learning. This problem was because discussions and lectures require skills and direct practice in several courses.

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Figure 2. In-Depth Interview with Lecturer

Figure 3. In-Depth Interview with Student

DISCUSSION

The analysis of user experience with the Zoom Meeting application, tested through 6 different aspects, revealed that the "dependability" aspect had the lowest average score; among all 6 aspects. Based on these findings, the "Dependability" issue should be addressed by the developers of the Zoom Meeting application by adding various features that could improve user comfort, mainly when used as a medium for online learning. In addition, institutions and course instructors should also strive to address any shortcomings in dependability in the courses they teach and maximize the aspects that received higher average scores in order to achieve the desired learning outcomes amid the Covid-19 pandemic.

Below is an explanation of each aspect of the user experience scale for the Zoom Meeting application from the perspective of professors and students when used as a medium for online learning. Table 3. presents the results showing the average UEQ measurements for each questionnaire item.

Table 3. The Average of UEQ Measurement for Each Item

Item	Mean	Variance	Std. Dev.	No.	Left	Right	Scale
1	1.5	1.2	1.1	130	annoying	enjoyable	Attractiveness
2	1.4	1.3	1.1	130	not understandable	understandable	Perspicuity
3	0.3	3.1	1.8	130	creative	dull	Novelty
4	0.3	2.9	1.7	130	easy to learn	difficult to learn	Perspicuity
5	0.9	2.9	1.7	130	valuable	inferior	Stimulation
6	1.1	1.7	1.3	130	boring	exciting	Stimulation
7	1.3	1.3	1.2	130	not interesting	interesting	Stimulation
8	1.0	1.6	1.3	130	unpredictable	predictable	Dependability

9	0.3	2.5	1.6	130	fast	slow	Efficiency
10	-0.2	2.3	1.5	130	inventive	conventional	Novelty
11	1.4	1.5	1.2	130	obstructive	supportive	Dependability
12	1.0	2.4	1.6	130	good	bad	Attractiveness
13	1.1	1.6	1.2	130	complicated	easy	Perspicuity
14	1.3	1.3	1.1	130	unlikable	pleasing	Attractiveness
15	1.1	1.5	1.2	130	usual	leading edge	Novelty
16	1.3	1.6	1.2	130	unpleasant	pleasant	Attractiveness
17	-1.3	1.4	1.2	130	secure	not secure	Dependability
18	0.8	2.2	1.5	130	motivating	demotivating	Stimulation
19	0.7	1.7	1.3	130	meets expectations	does not meet expectations	Dependability
20	1.3	1.5	1.2	130	inefficient	efficient	Efficiency
21	0.7	2.1	1.5	130	clear	confusing	Perspicuity
22	1.4	1.5	1.2	130	impractical	practical	Efficiency
23	0.8	1.8	1.4	130	organized	cluttered	Efficiency
24	0.6	1.7	1.3	130	attractive	unattractive	Attractiveness
25	0.8	2.1	1.4	130	friendly	unfriendly	Attractiveness
26	1.3	1.7	1.3	130	conservative	innovative	Novelty

The Attractiveness aspect scored 1.082, which is in the positive evaluation score range and received the highest score compared to other aspects. There are 6 items included in the attractiveness aspect category, and among those items, 1 question in the questionnaire received a neutral interpretation result. The attractive-unattractive statement obtained an average item score of 0.6, and the user-friendly-unfriendly statement obtained an average item score of 0.8. The interview results with the lecturer indicated that when conducting online lectures using Zoom Meeting, the lecturer had to be assisted by family or students in preparing the course. It was because the lecturer was not very proficient in technology. The senior lecturer with the most extended work experience also stated that they needed the opportunity to utilize the Zoom Meeting features during lectures, even only activating the audio feature. In contrast, students are more proficient from the student's perspective, and some students already have experience using the Zoom Meeting application.

The Perspicuity aspect scored 0.861, which is in the positive evaluation score range. This score is slightly above the neutral evaluation zone, from -0.8 to 0.8. 2 statement items received scores below 0.8. The easy-to-learn-difficult-to-learn statement obtained an average item score of 0.3, and the clear-confusing statement obtained an average item score of 0.7. Both statements are in the neutral evaluation zone. In interviews with students and lecturers, they agreed that not all courses are suitable for online learning using Zoom Meeting. Students stated it took more work to understand and practice directly for Balinese language, Mathematics, and Physical Education courses. According to the students, offline learning is excellent and essential for theory and practice.

The Efficiency aspect scored 0.946, also in the positive evaluation score range. There were 4 items included in the efficiency aspect category, and there is 1 statement item that received an average item score below 0.8. The fast-slow statement obtained an average item score of 0.3 and is in the neutral evaluation category. The interview with the professors revealed that conducting online lectures using Zoom Meeting makes it very difficult to see students' preparedness, whether in terms of attendance or completion of assignments. Moreover, the accounts used by the program have a time limit for each session, which limits the ability of professors to use the program simultaneously.

Furthermore, professors mentioned that students often do not display clear identities during online lectures and do not activate audio and video features, making it difficult to determine whether they are actively participating and following the lectures. The interviews with students stated that due to the pandemic, learning online is automatically less conducive, effective, and efficient because there are too many distractions at home. Not all students have a special place to attend online lectures at home, and limited signal strength and equipment often become obstacles to learning.

The Dependability aspect obtained a score of 0.431, which falls within the neutral evaluation score range. This aspect has the lowest score compared to other categories. There are 4 items in the dependability aspect, and 2 of them, namely the safe-unsafe statement, obtained the lowest average score of -1.3, which falls within the negative evaluation category. At the same time, the meet expectations-do did not meet expectations statement obtained an average score of 0.7, which falls within the neutral evaluation category. The interviews with senior and junior lecturers indicate that several courses require skills or practical work that cannot be conducted online using Zoom Meeting, thus requiring other tools or media such as different applications or sometimes replacing them with assignments. For example, they created independent practice videos and visited campus for practical work with special permission and strict health protocols. Interviews with student informants confirm that some courses are challenging to learn without direct practice or engagement with the material, such as Balinese language, Physical Education, and Mathematics, where such courses cannot be sufficiently replaced with additional assignments.

The Stimulation aspect scored 1.025, with 4 items in this aspect falling in the positive evaluation range. Only 1 statement, "motivating-not motivating," received a neutral score of 0.8. The aspect of Stimulation obtained a score of 1.025, with 4 statements categorized as tending towards positive results. Only one statement, the motivate-not-motivate statement, is considered neutral, with a score of 0.8. An interview with a lecturer stated that he still monitors the students' discipline in online classes, such as how they dress appropriately for the class. In the teaching process, various techniques prevent monotony and boredom, including ice-breaking, end-of-class discussions/reflections, and encouraging students to be more independent in online information. Results of interviews with students indicate that students should participate in the learning process properly because it is their obligation. Some students even look for specific locations to get good signals and lighting conditions for better online learning.

The novelty aspect obtained a score of 0.621, which is in the neutral evaluation range. There are 4 items in the dependability aspect, and 2 of them received evaluation scores below 0.8, namely the creative-monotonous item with an average score of 0.3 in the neutral evaluation score range and the innovative-conventional item with an average score of -0.2 in the negative evaluation score range. An interview with a senior lecturer stated that online and face-to-face learning was equally good to implement regarding knowledge transfer. However, for education in general, activities such as transferring values, norms, and morals cannot be done online using Zoom Meeting. In online learning, we also cannot see the gimmicks and expressions of the participants. The results of the student interview stated that they hoped the lectures would be held in person, as there was nothing significantly new in terms of demonstrations and discussions.

CONCLUSION

The conclusion of this research is a user experience analysis of the Zoom Meeting application from the perspectives of lecturers and students in online learning during the new normal era; in terms of usability aspects, using the User Experience Questionnaire (UEQ) technique indicates that the accuracy aspect of obtaining evaluation scores is the lowest. It is supported by the results obtained from in-depth interviews with lecturers and students. Thus, the implication of using the Zoom Meeting application for online learning from the perspectives of lecturers and students during the new normal era is that this application is unsuitable for courses, especially those that involve practicum.

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