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MEASUREMENT OF ONLINE LEARNING IN HIGHER EDUCATION IN INDONESIA DURING COVID-19 PANDEMIC

By

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ABSTRACT

The Covid-19 pandemic has been going on for a year and now education in Indonesia, including at the higher level, is carried out online. Now is the time to carry out a comprehensive measurement of the online learning communication climate.

The purpose of this study is to measure the E-Learning Educational Atmosphere of Higher Education in Indonesia during the Covid-19 Pandemic with E-Learning Educational Atmosphere Measure (EEAM). The EEAM is a measuring tool that, in terms of instrument content and construct validity, has proven good internal consistency and instrument reliability. The EEAM consists of 40 items covering six factors, including program effectiveness, teaching quality, ethics and professionalism, support from students, safety and comfort, and awareness of regulations. This research applied the descriptive method, where data was collected through an online survey. A hundred and sixty-two students filled out the questionnaire. The results showed that the educational atmosphere was categorized as good.

Keywords: communication patterns, covid-19 pandemic, online learning, educational atmosphere

INTRODUCTION

Education in Indonesia, from preschool to primary to higher (Atsani, 2020), has been facing the pandemic and conducting home studying for a year. This year is the time to evaluate how education has been going on. Colleges evaluate their academic environment to improve learning outcomes. The learning experience in an e-learning environment is different from that of a face-to-face (Ananga & Biney, 2017). Thus, it is necessary to research with a specific, valid, reliable instrument to evaluate not only academic scores but also the perceptions of the overall learning experience of the students.

Learning is a social process in which an individual not only achieve academic scores but also social competence and personal growth (Shahriari-Namadi et al., 2018). The process of an institution, such as a university, is a key factor for realizing educational goals and provides good circumstances for achieving better learning outcomes by controlling variables.

Measuring the learning communication climate is important because educating is one of the two basic functions of a university. The importance of quality education from a future perspective is to create a good environment to provide educational services required by students, which include content, availability, speed, flexibility, timeliness, and the like so that in addition to the process, the results also reflect quality standards. The lack of generally accepted quality metrics, and the strong state pressure on scientific outcomes, creates room for innovation in education and the subsequent broad development and application of such educational models, which substantially contributes to the improvement of the quality of education. The measurement (quantification) of the quality of education is a key element to improve it (Misut & Pribilova, 2015).

A measuring tool called 'E-learning Educational Atmosphere Measure' (EEAM) was formulated and tested by Atekeh Mousavi, Aeen Mohammadia, Rita Mojtahedzadeha, Mandana Shirazib, and Hamed Rashidic. In terms of instrument content and construct validity, the measuring instrument has proven good internal consistency and instrument reliability. The EEAM consists of 40 items covering six factors, including program effectiveness, teaching quality, ethics and professionalism, student support, safety and comfort, and awareness of regulations, which account for 68.53% of the variance. The content validity ratio is more than 0.51 and the content validity index score of all questions is above 0.81. Retest-test reliability was 0.85 ($p = 0.001$) and Cronbach's alpha was 0.943 (Mousavi et al., 2020).

Evaluating the educational atmosphere in the context of e-learning or blended learning with EEAM can provide input to universities and ministries of information, where it will be useful for building an effective education system to not only deal with the pandemic but also to implement digital education which will be inevitable in the future.

This research is entitled "Measuring the E-Learning Educational Atmosphere of Higher Education in Indonesia during the Covid-19 Pandemic with E-Learning Educational Atmosphere Measure (EEAM)". The ultimate goal of this research is to publish this paper, which analyzes the e-learning communication climate in higher education in Indonesia during the Covid-19 Pandemic with EEAM, in a Q4-Scopus-indexed journal. In addition, the results of this research will recommend factors to improve and those to maintain in e-learning in the digital era.

Measuring the learning climate is important and cannot be underestimated. To evaluate the performance or success or failure, time, and resources in educational settings, several quantitative measures such as score allocation, number of credits, participation rate in certain activities, pass rate, standardized test scores, and proficiency are identified. Other valuable subjects and learning outcomes can be used. The results of this measurement will be a valuable recommendation to improve the quality of graduates (Clayton, 2007).

Previous research entitled Impact of Class Atmosphere on the Quality of Learning (QoL) shows that the learning communication climate affects the achievement of learning objectives (Ofoghi et al., 2016). In addition, the results of another study show that student satisfaction in online learning must be evaluated regularly to potentially increase the achievement of learning outcomes (Strong, 2012).

Previous research that became the basis of this research is that of Mousavi et al (Mousavi et al., 2020). Their research, which developed EEAM, describes 6 dimensions of learning climate measurement, which has been tested for reliability. Besides EEAM, there is

another measuring tool called VLE. Virtual Learning Environment (VLE) is defined as a type of Information System (IS) that enables educational institutions to manage their educational resources and supports conventional classroom and distance education. (Awang et al., 2018). However, VLE is not as comprehensive as EEAM in evaluating online learning because it comprises 53 questions. Another measuring tool is DELES, which stands for The Distance Education Learning Environments Survey. This study did not apply DELES because it only focuses on psychosocial conditions (Walker & Fraser, 2005).

This research was conducted during the e-learning period in the Covid-19 pandemic. The series of the research include (1) providing a reliable translation of EEAM into Indonesian, (2) collecting and analyzing research data, (3) preparing a scientific article to publish in a journal, (4) providing recommendations based on the evaluation of e-learning communication climate in higher education in Indonesia during the Covid-19 pandemic.

The formulation of the research problem is "What is the climate of e-learning communication in universities during the Covid-19 pandemic based on e-learning educational atmosphere measure?" Based on this, the research has the following objectives: 1) To measure the effectiveness of e-learning programs at universities during the Covid-19 pandemic; 2) To measure the quality of e-teaching at universities during the Covid-19 pandemic; 3) To measure the application of ethics and professionalism in e-learning at universities during the Covid-19 pandemic; 4) To measure the supports from students for e-learning at universities during the Covid-19 pandemic; 5) To measure the safety and comfort of e-learning at universities during the Covid-19 pandemic; 6) To measure the awareness of regulations of e-learning at universities during the Covid-19 pandemic.

A. METHOD

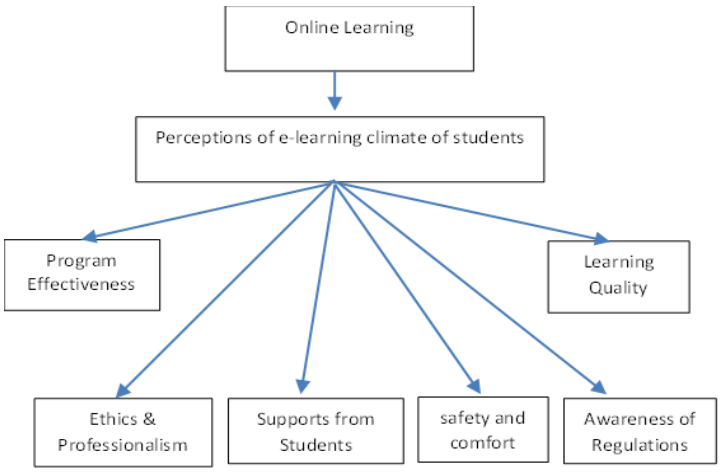
This research applied an exploratory survey method and the technique of data collection was a questionnaire (Neuman, 2014). This research aimed at creating patterns with extensive data. Therefore, the samples were students all over Indonesia. Two hundred and twenty-four students filled out the questionnaire. A quantitative measurement tool was used for obtaining an accurate measurement of the effectiveness of communication. All types of learning communication were analyzed for finding the effectiveness. Furthermore, source triangulation was applied by comparing information from various sources.

This research was conducted to reveal the e-learning climate at universities in Indonesia during the Covid-19 pandemic. Online research was conducted on students. The online questionnaire was distributed to the followers of Ira Mirawati's Instagram and TikTok accounts. Ira Mirawati is a content creator concerning education for university students. The requirements for filling out the questionnaire were explained in videos to get appropriate characteristics. All active students in semesters 1, 3, 5, and 7 are allowed to fill out this questionnaire.

Data collection techniques applied in this research are as follows: Online survey. The measuring instrument of the survey is a questionnaire. The survey is a data collection technique that is done by giving a set of written questions to respondents to answer. The form of the questionnaire was a rating scale, where a question is followed by a rating column, for example, from strongly agree to strongly disagree. Data analysis involves grouping data based on variables and types of respondents, tabulating data based on variables, presenting data for each variable, calculating for problem formulation, and calculating for testing the proposed

hypotheses.

The following is the framework of this research:



Picture 1. *Research Framework*

B. RESULTS AND DISCUSSIONS

The first dimension of the learning climate is 'program effectiveness', which includes: what students have learned; career preparation; the possibility of learning academic-related skills; the improved skills to deal with people in cyberspace; the attractiveness of resources, clear assignments, and contents, proper evaluation, and student satisfaction.

The second factor explored in this research is the 'quality of teaching', which includes the online teaching skills of the lecturers such as utilizing different virtual teaching methods, providing appropriate and timely feedback, assignments and activities, and covering courses in the LMS. 'Ethics and professionalism' is the third dimension of this study, which includes observations of copyrighted and intellectual property resources, observations of cultural and social issues, relationships that govern the educational environment, responsiveness and availability of teachers, and increased learning motivation. 'Support for learners' is the fourth dimension measured in this study. This includes support for the best and weakest students, providing academic counseling, accountability of technical and educational staff, access to feasible digital libraries, flexible administrative processes, and taking into account student concerns about how services are provided to them.

The fifth factor is 'safety and comfort, which includes providing an easy-to-use LMS and appropriate content for student learning styles, and making them feel no loneliness and comfortable when they ask questions. The sixth factor of this research is 'awareness of the regulations'. This includes awareness of regulations and administrative processes, the existence of clear educational and research guidelines, and the reputation of virtual education.

The respondents of this research are students of the 7th semester (38,8%), 5th semester (25,4%), 3rd semester (18,8%), and 1st semester (17%). A total of 56.3% are students of social and humanities, 41.5% of exact sciences, 2.2% of arts and sports. Fifty-nine point eight percent of respondents are students of state universities and 40.2% of private universities. A total of 49.8% are students of study programs accredited grade A, 43.9% grade B, and the rest grade C.

In terms of facilities for online learning, 44,6% live in areas with a good signal strength

for Internet access, which is the stable one even though with low speed, and 40,2% live in areas with fickle signal strength, and thus their Internet access is sometimes good and sometimes bad. There are 13.8% who live in areas with very good Internet, which is stable and high-speed. The remaining 1.3% live in areas with poor Internet access. The majority (75%) of the students have more than one device for online learning. They generally have a PC and smartphone.

To measure the effectiveness of the program, 9 questions were asked to the respondents. The results are presented in the following table (SA is strongly agreed, A is agreed, N is neutral, D disagrees, and SD is strongly disagreed:

Table 1. *The effectiveness of online learning*

Statement	SA	A	N	D	SD
Course resources and contents are intriguing and motivational for learning.	32	58.4	8.4	4.2	0
I have the possibility of learning academic meta-skills (such as writing a proposal, working with academic software, etc.).	37.3	47.6	10.2	3.6	1.2
Course contents and activities are understandable and tangible.	13.3	51.2	30.7	3.6	1.2
Teachers well-evaluate the students in various courses.	15.7	5.2	20.5	6	1.8
I can study and do my assignments and activities easily.	12	51.2	27.1	9	0.6
Upon studying this program, my skill to interact with others in cyberspace has increased.	23.5	36.7	19.9	15.1	4.8
I have learned what I needed to learn in this program.	16.9	56.6	21.1	5.4	0
This program will prepare me for my future job.	22.3	50	18.7	7.2	1.8
I am satisfied with this virtual education program.	7.2	35.5	28.9	21.1	7.2

Next, we determine the minimum, maximum, and interval distance index values using the following formula:

Maximum score = Highest score x Number of questions

Minimum score = Lowest score x Number of questions

Interval = Maximum value – Minimum value

Interval distance = Interval result: Number of categories

Categorization of respondents' answers using the ideal score, so that the largest value is obtained from = maximum score (5) x number of questions. While the lowest score is obtained from = minimum score (1) x number of questions.

After the interval distance is known, the interval distance for each category can be determined. Then, the data obtained from the questionnaire are classified into categories according to the location of the interval distance. The calculation is as follows (the maximum score for each question is 5, the lowest score is 1, the number of questions is 37 items):

Maximum Score = Maximum score x Number of Questions = 5 x 9 = 45

Minimum Score = Minimum score x Number of Questions= 1 x 9 = 9

Interval = Maximum value – Minimum value

= 45 – 9 = 36

Interval distance = Interval : Number of categories

= 36: 3 = 12

The score intervals are obtained to determine each category: 9 to 20 as low, 21 to 32 as a medium, and 33 to 45 as high. The result shows that 72,3% high, 25,9% medium, and 1,8% low.

To measure the quality of teaching, 7 questions were asked. The results are shown in the following table:

Table 2. *The Quality of Teaching*

Statement	SA	A	N	D	SD
Teachers hold e-teaching skills.	16.3	51.8	23.5	7.2	1.2
Teachers give me comprehensive and proper feedback for my assignments, activities, and messages.	13.9	56.6	20.5	7.8	1.2
The timing of delivering course resources and activities during the semester is appropriate for me.	12	51.2	27.7	8.4	0.6
Teachers take into account students' views on the presentation of the courses and activities.	18.7	54.8	18.7	7.8	0
Teachers utilize LMS for their teaching.	52.4	41	5.4	0.6	0.6
Teachers utilize available educational facilities for better e-teaching.	28.9	57.2	11.4	2.4	0
Teachers apply different methods (such as chat rooms, group assignments, etc.) to encourage group activities and engage students in a virtual environment.	34.3	57.2	5.4	3	0

The score intervals for this aspect are 9 to 17 as low, 18 to 26 as a medium, and 27 to 35 as high. The result shows that 69,6% high, 29% medium, and 1,4% low.

To measure ethics and professionalism, 7 questions were asked. The results are presented in the following table:

Table 3. *Ethics and Professionalism*

Statement	SA	A	N	D	SD
Teachers help raise my motivation for learning.	12.7	50	28.3	9	0
Teachers have a good and up-to-date academic skills.	24.1	59	13.3	3	0.6
The copyrighted and intellectual property of scientific resources and contents are respected.	33.1	51.8	12	2.4	0.6
Teachers are responsive and always there for me.	19.9	47.6	20.5	10.2	1.8
Teachers seek to make sure of my learning.	14.5	54.2	23.5	6.6	1.2
Cultural issues and social etiquette are observed in the educational environment.	21.1	62.7	12	3.6	0.6
Relationships in educational settings are treated with respect and courtesy.	36.7	58.4	3.6	1.2	0

The score intervals for this aspect are 9 to 17 as low, 18 to 26 as a medium, and 27 to 35 as high. The result shows that 69,6% high, 28,1% medium, and 2,2% low.

To measure campus support for students, 9 questions were asked. The results are as follows:

Table 4. *Campus Support for Students*

Statement	SA	A	N	D	SD
The educational administrative staff and authorities are well-responsive.	18.1	52.4	19.9	6.6	3
Technical support staff and authorities are well-responsive.	18.1	52.4	19.9	6.6	3
I have access to a feasible digital library.	13.9	43.4	25.9	11.4	5.4
If necessary, I can get access to an academic advisor.	24.1	52.4	19.3	3	1.2
Good supports are available for top students.	26.7	44.6	15.1	3.6	0
Good supports are available for poor students.	18.1	38.6	28.9	11.4	3

Course plans are clear and available.	29.5	56	12	1.8	0.6
Given the virtual feature of the program, there is sufficient flexibility in administrative processes (e.g. number of units per semester, maximum permitted duration of the program, etc.).	29.5	56	12	1.8	0.6
Students' views on the program delivery and educational services are considered important.	31.9	54.8	11.4	1.2	0.6

The score intervals are obtained to determine each category: 9 to 20 as low, 21 to 32 as a medium, and 33 to 45 as high. The result shows that 79,5% high, 20,1% medium, and 0,4% low.

To measure student safety and comfort, there are 4 questions and the results are as follows:

Table 5. *Student Safety and Comfort*

Statement	SA	A	N	D	SD
I'm comfortable when asking my questions.	19.8	53.9	20.4	5.4	0.6
Content types and activities suit my learning style.	10.8	48.5	27.5	12	1.2
I can easily work with LMS.	25.1	52.7	17.4	3.6	1.2
I'm not lonely in my learning environment.	12.6	35.3	25.7	20.4	6

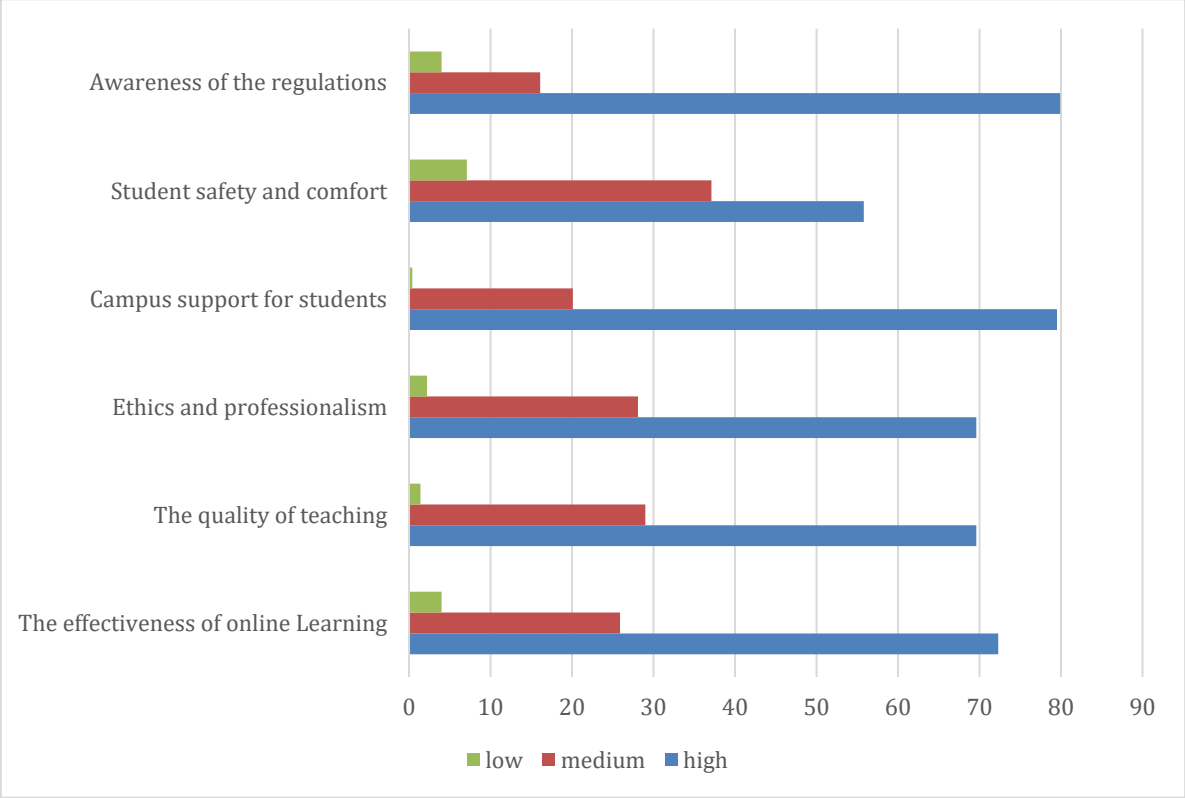
The score intervals are obtained to determine each category: 4 to 9 as low, 10 to 14 as a medium, and 15 to 20 as high. The result shows that 55,8% high, 37,1% medium, and 7,1% low.

To measure awareness of the regulations, 3 questions were asked. The results are as follows:

Table 6. *Awareness of the regulations*

Statement	SA	A	N	D	SD
A good place for e-learning exists in my society.	18	48.5	22.8	9	1.8
I have been aware of educational regulations and administrative processes.	20.4	61.1	15	3.6	0
There are clear guidelines and style sheets for using educational and research facilities and systems.	18.6	60.5	17.4	3	0.6

The score intervals are obtained to determine each category: 3 to 6 as low, 7 to 10 as a medium, and 11 to 15 as high. The result shows that 79,9% high, 16,1% medium, and 4,0% low.



Picture 2. *The Online Learning Climate of universities during the Covid-19 pandemic*

Discussing the educational atmosphere cannot be separated from the effectiveness of communication. The effectiveness of communication is how a communication process can achieve results in accordance with the goals or expectations (Woldy, 2015). To measure the effectiveness of communication, it is necessary to measure the basic elements of communication as a system. online learning climate is strongly influenced by instructional communication (Kaufmann et al., 2016).

The elements are: 1) Message Sender. The message sender is the transmitter or the place where the communication process begins. Without sending messages, communication will not occur. A message sender can be an individual, group, or community who has a message and aims to convey it to a message receiver. in EEAM the senders of the message are lecturers, administrative staff, and fellow students; 2) Message. The message basically contains information with a specific purpose for the benefit of both sender and receiver. It is also related to an individual, group, or organization and may have positive or negative values based on the interests of the sender and receiver. It can be conveyed verbally or non-verbally, even through modern communication media through a certain channel. in EEAM, messages are not only learning materials but also non-academic things such as support, motivation, etc; 3). Channel. Channel is a tool or path to convey a message from sender to receiver. Channels in online learning in Indonesia are virtual face-to-face media such as zoom and google meet, virtual conversation groups (WhatsApp groups), email, and learning management systems; 4) Message Receiver. A message receiver is the one who receives a message and interprets it for a specific purpose. The receiver determines the meaning of the message and the feedback. the recipient of the message at first glance does seem to be a student. but in learning communication, the position is equal. at the same time, the lecturer must act as the recipient of the message. they also have to understand the condition of the students. Thus, a conducive climate will be created; 5) Feedback. The ability of a receiver to respond to a message shows

the level of his understanding. This will determine the feedback for the sender. It may be appropriate or biased as desired. To build a conducive learning climate, universities must provide as many feedback channels as possible and follow up on any feedback that comes in.

Student involvement in online courses can be more ambiguous and comprehensible than in face-to-face (FtF) classrooms. Without regular FtF interactions, Lecturers may feel unable to accurately assess and respond to student involvement (Cole et al., 2021).

Online learning can be a lonely experience. Social existence and interaction are some suggestions for combating student loneliness from peers and teachers (Kaufmann & Vallade, 2020). A suitable environment for online learning in Indonesia shows that universities can create virtual interactions between students and prevent them from feeling lonely. One reason for students' good ratings for online learning environments is that universities, in general, have prepared themselves for the digital age before the pandemic. The rise of online learning and the demand for quality education is driving universities to seek innovative approaches to provide students with more interactive, engaging, and authentic learning experiences (Parker & Herrington, 2015).

C. CONCLUSIONS

The results show that the learning climate in Indonesia is in a good condition in all of its components. These include the effectiveness of online learning programs, the quality of online teaching, the application of ethics and professionalism, supports from students, safety and comfort, and the awareness of regulations of online learning at universities during the Covid-19 pandemic.

LIMITATION AND STUDY FORWARD

In the future, research needs to measure the effect of online learning in achieving learning objectives. Also, research needs to measure the experience of the lecturer.

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