

## THE EVALUATION OF E-LEARNING READINESS AS A DISTANCE LEARNING MEDIA OF THE FIRST-SEMESTER BIOLOGY STUDENTS

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**Abstract:** Universitas Sulawesi Barat (Unsulbar) launched its primary Learning Management System (LMS) named E-learning of Universitas Sulawesi Barat or often called "E-learning Unsulbar" in 2020 (<https://elearning.unsulbar.ac.id/>). Implementing E-learning at Unsulbar is one of the university's efforts to maximize distance learning, especially during the COVID-19 pandemic. A study was conducted to evaluate E-learning readiness to measure the readiness of new students of the Biology Education Study Program towards the E-learning implementation. It is a quantitative descriptive study using a survey method adapted from a questionnaire developed by Akaslan and Law. The respondents were 77 new students from the biology education class of 2020 in the odd semester of 2020-2021. The measurement adapts three main stages, i.e., readiness (technology, people, institutions, content), acceptance, and training. The result showed that the readiness of new students for E-learning Unsulbar for technology and training factors were 3.1 and 3.3, respectively. It was categorized as not ready, which means that there needed to be more readiness of students' internet infrastructures and academics who need training in using E-learning Unsulbar. Meanwhile, the scores for the factor of people, institutions, content, and acceptance were 3.8, 4.2, 3.85, and 3.9, respectively, and categorized as ready to be implemented. This result is an evaluation material for the university in determining the right policy for implementing E-learning Unsulbar.

**Keywords:** *E-learning readiness, Distance Learning, New Students.*

### INTRODUCTION

The Coronavirus Disease 2019 (COVID-19) pandemic at the beginning of 2020 had a huge impact on various countries in the world, including Indonesia. According to the World Health Organization (WHO), this infectious disease is caused by a virus and was first reported to be discovered at the end of 2019 in Wuhan, China. Transmission between humans can occur through droplets released when an infected person coughs or sneezes. The easy and fast spread of the virus causes many people to be infected quickly. So that various efforts have been made to reduce the rate of increase in COVID-19 patients, such as avoiding crowds, using masks, social distancing and physical distancing, and regularly washing hands with soap after or before doing activities [1].

The Indonesian government, through the Ministry of Education, Culture, Research, and Technology, has issued a policy of learning and working from home (WFH) through the circular letter of the Minister of Education, Culture, Research, and Technology number 3 the Year 2020 regarding Prevention of COVID-19 in Education Units issued in mid-March. It was then followed up through the circular letter of the rector of Universitas Sulawesi Barat, number 216/197/UN55/HK/2020, concerning the extension of the WFH period in the Scope of Universitas Sulawesi Barat. This policy was further strengthened by the Circular Letter of the Dean of the Faculty of Teacher Training and Education, number 01/UN55.10/KP/2020,

regarding Efforts to Prevent and Overcome the Spread of COVID-19 in the Scope of the Faculty of Teacher Training and Education, Universitas Sulawesi Barat [2].

To the circular letter, the learning process at the school and university levels must be conducted online. Thus, lecturers and students must make various efforts and innovations to maximize this distance learning system. Sadikin and Hamidah [3] stated that using digital technology can enable students and lecturers to learn even though they are in different places. In addition, according to Rosali [4], through online learning, students are more convenient and allowed to learn or study as usual without being afraid of missing lecture materials as the schedules are more flexible. Anggraini et al. [5] explained that E-learning is one of the utilization of information technology in the learning process.

E-learning is all learning activities using electronic technology assistance, which can be applied in conventional and distance education [6]. Universitas Sulawesi Barat itself, as one of the New State Universities in West Sulawesi Province, continues to improve education quality, including during this pandemic. In mid-2020, Universitas Sulawesi Barat launched its primary Learning Management System (LMS) named E-learning of Universitas Sulawesi Barat or often called "E-learning Unsulbar" (<https://elearning.unsulbar.ac.id/>). E-learning Unsulbar could be easily accessed by lecturers and

students and began to be implemented in the odd semester of 2020/2021.

The success or failure of achieving educational goals through the implementation of online learning depends a lot on the learning process experienced by students. One of the psychological factors that affect these is readiness [7]. E-readiness is a condition of mental, physical, and material readiness to access technology and internet networks in learning [6]. The E-learning Readiness model is not limited to preparation before its implementation. It can also be done for organizations that have implemented E-learning so that the evaluation results can be used to make improvements in the next development period.

Based on this information, the researcher investigated the readiness of new Biology Education Study Program students to implement E-learning Unsulbar. The study is expected to provide information on what factors need to be improved that impact the successful implementation of E-learning Unsulbar. This information can also be used as material for consideration in formulating appropriate regulations to positively impact the lecture process's effectiveness during the COVID-19 pandemic.

## RESEARCH METHODS

This quantitative descriptive study uses a survey method conducted online [8] and carried out in the odd semester of 2020-2021. The respondents were 77 new students from the biology education study program, class of 2020. This study used an instrument adapted from the questionnaire

developed by Akaslan and Law [9, 10]. The questionnaire was designed to measure the extent to which students and universities are ready for E-learning by considering six main factors, namely technology, people, institution, content, acceptance, and training. Each item uses a Likert scale (5-1) where five indicates Strongly Agree, 4 indicates Agree, three indicates Neutral, two indicates Disagree, and one indicates Strongly Disagree. The Likert scale statement with a value of 1 indicates the lowest E-learning readiness, and 5 indicates the highest readiness. Because the score or readiness score is assigned a value of 1, 2, 3, 4, or 5, an average score of 3.40 can be identified as the expected level of readiness for E-learning. It is because the five scales contain four intervals and five categories with a ratio of 4/5 equal to 0.8, as shown in Figure 1.

Primary data collection in this study was carried out by distributing online questionnaires in the form of a google form to students of the biology education study program class of 2020. The subjects registered in E-learning Unsulbar for new biology education students were basic biology, basic physics, and philosophy of education. The data was obtained by filling out questions distributed to all respondents in the form of google forms. Data processing is done by grouping the questionnaire data according to the research variables, looking for the average value in each group of research variables, determining the level of readiness for each group of variables, and determining the level of institutional readiness. Table 1 contains statements used as an instrument of E-learning Unsulbar readiness.

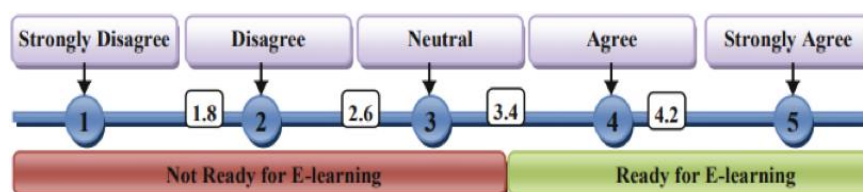


Figure 1. An assessment model to measure E-learning readiness [10]

Table 1. E-learning readiness questionnaire instrument

| Factor     | Sub Factor            | Indicator  |
|------------|-----------------------|--|
| Technology | Hardware and software | I have access to a computer connected to the internet at my residence. |
|            | Stability             | I am satisfied with the stability of internet access at my residence.  |
|            |                       | I am satisfied with the speed of internet access at my residence       |
| People     | Experience with ICT   | I use the internet as a source of information.                         |
|            |                       | I use email for communication with my lecturers or friends.            |
|            |                       | I use office software (ex., Microsoft Office) for my task.             |
|            |                       | I use social media sites (ex., Facebook, Twitter)                      |

|                             |                          |  |
|-----------------------------|--------------------------|--|
|                             |                          | I use instant messaging software (ex., WhatsApp, Line, Messenger)          |
|                             |                          | I use file hosting (ex., Google Drive, DropBox)                            |
| Confidence with ICT         |                          | I can operate the computer confidently.                                    |
|                             |                          | I can use any web browser (ex., Chrome, Mozilla Firefox) confidently.      |
|                             |                          | I use search engines (ex., Google, Yahoo) confidently.                     |
|                             |                          | I use digital file management tools (Ex. Rename, delete) confidently.      |
| Attitudes toward E-learning |                          | I have information about E-Learning.                                       |
|                             |                          | I have sufficient ICT competence to prepare assignments.                   |
|                             |                          | I feel ready for E-learning.   |
|                             |                          | I have enough time to prepare assignments in electronic format.            |
|                             |                          | I support using E-learning in my study program.                            |
| Attitudes toward others     |                          | I will like E-learning.  |
|                             |                          | My lecturer has sufficient information about E-learning.                   |
|                             |                          | My friend has sufficient information regarding E-learning.                 |
|                             |                          | My lecturer supports the use of E-learning in my department.               |
|                             |                          | My friends support the use of E-learning in my department.                 |
| Institution                 | University               | My lecturer will like E-learning.  |
|                             | Faculty                  | My friend will like E-learning.  |
|                             | Department/Study Program | E-learning implemented in my university                                    |
| Content                     | Theory                   | E-learning is implemented in my faculty.                                   |
|                             |                          | E-learning implemented in my department/study program                      |
| Acceptance                  | Perceived of Usefulness  | E-learning can be applied to the theoretical part of my course             |
|                             |                          | E-learning can improve the quality of my course                            |
|                             |                          | E-learning will improve the quality of my learning experience              |
|                             |                          | E-learning will improve the quality of my results.                         |
|                             |                          | E-learning will increase my productivity.                                  |
| Perceived Ease of Use       | Perceived Ease of Use    | E-learning will be helpful for my study.                                   |
|                             |                          | E-learning will be more effective than traditional learning.               |
|                             |                          | I'm easy to use E-learning.  |
| Training                    | Training personals       | My lecturer is easy-to-use E-learning.                                     |
|                             | Training Lecturers       | My friend is easy to use E-learning.                                       |
|                             | Training learners        | I don't need training in E-learning.                                       |
|                             | Improving Facility       | My lecturers can use E-learning without training on how to use E-learning. |
|                             |                          | My friend can use E-learning without training on how to use E-learning.    |
|                             |                          | My campus facilities are sufficient for E-learning.                        |

## RESULT AND DISCUSSION

This study aims to evaluate the readiness of new students in the biology education study program

in implementing E-learning Unsulbar (Unsulbar E-learning readiness). The measurement of E-Learning readiness is carried out by adapting the

three main stages by Akaslan and Law [9,10], i.e., readiness (technology, people, institution, content), acceptance, and training. Fariani [11] explained that the E-learning Readiness model is not limited to preparation before implementation but can be conducted for organizations that have implemented it. In this case, the organization can evaluate whether it is successful in implementing E-Learning or not. The results can be read from the re-measurement of the E-learning Readiness index. If the index has increased, it is fair to say that the implementation of E-learning is successful. The results of this evaluation can be used as the basis for improvements in the next development period. The questionnaire survey was given to all new students (class of 2020) Biology Education Study Program and obtained 77 students as respondents.

### **Technology Factor**

Akaslan and Law [9] stated that technology is a fundamental factor because E-Learning is a computer and internet-based system. Technology readiness consists of two components, namely hardware, and software. Hardware refers to the physical components, whereas software is the information aspect of technology. More than half of the respondents out of 77 respondents (51 people or 66%) do not have internet access at their residence, either through a computer or laptop. It indicates that most students need hardware that can be used for E-learning. Furthermore, respondents who have internet access at their residence filled out a questionnaire regarding technology variables, which consisted of the stability and speed of the internet at their place.

Table 2 shows the scores for items related to students' internet access at home, with an average score of 3.1 and classified as not ready. These results indicate that students may need help accessing E-Learning because of deficiencies in internet-supporting infrastructure (stability and speed of access); as stated by Iswanto [12] that there are still many areas in Indonesia, especially in remote villages that have uneven internet access. It later became one of the obstacles to implementing online-based learning in the COVID-19 pandemic era. In several big cities in Indonesia, especially among the economically well-off, internet-based learning can run well because of the support of the availability of devices, facilities, and infrastructure. The limited ownership of computer or laptop devices and internet connections are the main obstacles that impact the uneven implementation of online learning, especially in remote villages, which are generally middle to lower economic levels. Farida and Yuliana [13] added that owning a computer with internet access can increase student access to internet services for academic processes and academic administration services.

### **People factor**

People are another important component in measuring readiness because people implement E-learning. This factor relates to individual characteristics in the institution. The more skilled people working in the institution, the more likely they will have a successful E-learning implementation. It is therefore considered relevant to know individuals' self-reported competence, experience, confidence, and anticipation to deploy various ICTs for different purposes. The relevant skills, experience, confidence, and attitudes of the person concerned, namely researchers, lecturers, administrators, and strategists towards E-learning, can affect the integration of E-learning [9].

On the people factor, several things considered necessary to know are how to experience ICT, students' confidence in using ICT for the learning process, and their attitude towards E-Learning. As shown in Table 3, the three sub-factors are in the ready category. The Experience with ICT sub-factor with a score of 4.0 (ready) indicates that students have experience using various types of ICT (internet, email, office software, social media, instant messaging software). It will certainly support the readiness of students to use internet-based systems such as E-learning. In addition, the confidence in ICT and attitudes toward E-learning sub-factors, with a score of 3.8 (ready) each, indicates that students are familiar with and confident in using various ICTs. Devi et al. [14] stated that applying ICT tends to improve personal education skills and internet experience. Furthermore, Garad et al. [15] added that cognitive competence in using social media, educational applications, and electronic devices is the core of distance learning. Distance learning will remain difficult to implement without good knowledge and skills about this kind of technology.

### **Institution Factor**

The institution is an environment which in this case is the university with its faculties and departments (study programs). Institutions must support E-learning by providing good infrastructure, culture, incentives, models, and supporting resources [16]. Based on Table 4, the average score for the institutional factor is 4.2 (ready), which means that E-Learning has been implemented in institutions and students and institutions (lecturers and staff) are familiar with E-Learning implementation.

### **Content Factor**

Content is related to existing content's availability, format, interactivity level, reuse, and interoperability [17]. However, in this study, the object studied is the suitability of E-learning to improve the quality of learning and teaching at the theoretical level. Table 5 shows the average content

factor score is 3.85 (ready). It indicates that respondents think E-learning can be integrated into

theoretical aspects to improve the quality of learning in academic lectures.

Tabel 2. Rating scores of Technology Factor

| No. | Statement  | Average | Description |
|-----|--|---------|-------------|
| 1   | I am satisfied with the stability of internet access at my residence | 3.2     | Not Ready   |
| 2   | I am satisfied with the speed of internet access at my residence     | 3.0     | Not Ready   |
|     | Average  | 3.1     | Not Ready   |

Table 3. Rating scores of People Factor

| No. | Statement   | Average | Description |
|-----|---|---------|-------------|
| 1   | Student experience in using ICT for learning (Experience with ICT): internet, email, office software, social media sites, instant messaging software, and file hosting.   | 4,00    | Ready       |
| 2   | Students' confidence in using different ICT (Confidence with ICT): computer/laptop technology, web browser, search engine/search engine, and digital file management tools  | 3.80    | Ready       |
| 3   | Student attitudes towards E-learning (attitudes toward E-learning): information about E-learning, ICT competencies for E-learning, feeling ready for E-learning, having enough time for E-learning, supporting E-learning, and liking E-learning. | 3.80    | Ready       |
|     | Average   | 3.87    | Ready       |

Table 4. Rating scores of Institution factor

| No. | Statement   | Average | Description |
|-----|---|---------|-------------|
| 1   | E-learning implemented in my university               | 4,2     | Ready       |
| 2   | E-learning implemented in my faculty                  | 4,2     | Ready       |
| 3   | E-learning implemented in my department/study program | 4,2     | Ready       |
|     | Average   | 4,2     | Ready       |

Table 5. Rating scores of Content Factor

| No. | Statement  | Average | Description |
|-----|--|---------|-------------|
| 1   | E-learning can be applied to the theoretical part of my course | 3,90    | Ready       |
| 2   | E-learning can improve the quality of my course                | 3,80    | Ready       |
|     | Average  | 3,85    | Ready       |

#### Acceptance Factor

The Acceptance factor consists of two sub-factors: items related to perceived usefulness and perceived ease of use. Perceived usefulness is defined as the extent to which users believe using E-

Learning can support achieving specific goals or needs. Meanwhile, perceived ease of use is defined as the extent users believe E-Learning is easy to use [18]. Table 6 shows the assessment scores for the two sub-factors of acceptance, each at 3.8 (ready)

and 4.0 (ready), with an average of 3.9 (ready). It shows that respondents have a positive attitude towards E-learning because their responses indicated that they believed E-learning was easy to use and able to improve their learning which is the quality of the learning experience, the quality of their learning outcomes, and their productivity.

### Training Factor

To find out whether the institution's people need E-learning training before implementing. The respondents were asked to answer statements regarding the training factor. Table 7 shows that the assessment score for the training factor is 3.3 (not ready). This score indicates that the respondent, fellow respondents (other students), and their lecturers still need training before E-Learning is

implemented. As a new system, this certainly needs to be a concern for institutions that several aspects like this will be one of the factors that support the smooth running of distance learning using E-learning.

As stated by Pangondian et al. [19], educational institutions need more effort in improving the implementation of distance learning, one of which is by improving E-learning infrastructure and supporting students and lecturers with materials, workshops, or training to increase their knowledge. to adopt E-learning. Furthermore, Sulistyohati [20] explained that the socialization or training of E-Learning by the campus is considered necessary to be given to students to recognize and learn the E-Learning system implemented at the university.

Table 6. Rating scores of Acceptance Factor

| No.     | Statement  | Average | Description |
|---------|--|---------|-------------|
| 1       | Items related to perceived benefits: E-learning can improve the quality of the learning experience, quality of learning outcomes, and student productivity, is beneficial for learning, and becomes more effective than face-to-face learning. | 3.8     | Ready       |
| 2       | Items related to perceived ease of use: Students are easy to use E-learning, other friends are easy to use E-learning, and lecturers are easy to use E-learning  | 4.0     | Ready       |
| Average |  | 3,9     | Ready       |

Table 7 Rating scores of Training Factor

| No.     | Statement   | Average | Description |
|---------|---|---------|-------------|
| 1       | I don't need training in E-learning                                   | 3,2     | Not Ready   |
| 2       | My lecturers don't need training on how to use E-learning             | 3,3     | Not Ready   |
| 3       | My friend doesn't need training on how to use E-learning              | 3,0     | Not Ready   |
| 4       | Campus facilities are sufficient for the implementation of E-learning | 3,8     | Ready       |
| Average |   | 3.3     | Not Ready   |

### CONCLUSION

E-learning Unsulbar readiness measurement for new students of the Biology Education study program was carried out by analyzing six main factors, namely technology, people, institution, content, acceptance, and training. For the level of readiness of new students for Unsulbar's E-learning, the results obtained for technology and training factors were 3.1 and 3.3, respectively, and categorized as not ready. Meanwhile, the scores for the factor of people, institutions, content, and acceptance were 3.8, 4.2, 3.85, and 3.9, respectively, and categorized as ready. This result might certainly be an evaluation material for the university in determining the right policy

regarding the implementation of Unsulbar E-learning.

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