

The Effect of University Students Readiness in Online Science Learning toward Learning Motivation

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ABSTRACT

The purpose of this study was to determine the effect of student readiness in online class on learning motivation. The population in this study were all 4th semester students with a sample of 80 students who were taken purposively. This research was conducted at Ahmad Dahlan University (UAD) in Yogyakarta. The time of this research was carried out for four months, namely from March to June 2021. The method used in this study was quantitative with a survey research design. The results of this study explain that the UAD PGSD Department students are ready to participate in online science learning during this pandemic, but it still has an impact on their enthusiasm or motivation to learn so that improvements are still needed from all parties to create a better online learning atmosphere. Improvements that can be made are in the form of providing online training or workshops for lecturers and students, improving e-learning management, providing education and motivation from lecturers to students regarding the positive side of e-learning, as well as increasing lecturer innovation so that e-learning implemented is more attractive to students. In addition, in the implementation of online-based learning, it is necessary to pay attention to the principles of learning, both for content and other activities prepared for online learning must be able to represent learning in the classroom, so that it becomes a challenge for lecturers in preparing online learning.

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1. INTRODUCTION

Various countries in the world, including Indonesia, are currently being hit by the Coronavirus Diseases 2019 (COVID-19) pandemic. According to the World Health Organization (WHO), Covid 19 is an infectious disease caused by a new type of coronavirus. Coronavirus was first discovered in Wuhan, China, in December 2019 (World Health Organization, 2020). With the COVID-19 outbreak that hit

Indonesia, it had an impact on various fields, one of which was education. This situation makes us aware that education scenario planning is an urgent need for academic institutions (Rieley, 2020). To deal with the problem of the COVID-19 outbreak, the government issued regulations limiting all indoor and outdoor activities in all sectors in order to reduce the spread of COVID-19 in Indonesia, including education. Based on the Circular Letter of the Minister of Education and Culture of the Republic of Indonesia Number 4 of 2020 explaining the implementation of education policies in the emergency period of the spread of COVID-19, in the Circular it is explained that the learning process is carried out at home through online or distance learning is carried out to provide a learning experience that is enjoyable, meaningful to students. Thus the teaching and learning process which was originally carried out face-to-face must be replaced with online or distance learning from their respective homes to reduce the spread of COVID-19. Likewise, the lecture process at various universities must also be held online. Rapid technological developments make distance education easy (McBrien, Cheng, & Jones, 2009).

Online or distance learning is an alternative in education to reduce the spread of COVID-19. According to Dickson & Galyen in (Sadikin, Ali & Hamidah, 2020), online learning can be interpreted as learning that utilizes the internet network with accessibility, connectivity, flexibility and the ability to bring up various types of learning. Most of the terms online learning have in common the ability to use a computer connected to a network that offers the possibility to learn from anywhere, anytime, and in any way C. In online learning, lecturers and students can carry out learning using various applications such as Zoom meeting, Whatsapp, Google meet, etc. The use of technology from the online learning system during the COVID-19 pandemic is a choice that must be made in the implementation of teaching and learning activities in universities. In the midst of the current spread of the covid virus, an online learning platform is needed where (a) video conferences with at least 40 to 50 students allow, (b) discussions with students can take place, (c) internet connection is good, (d) lectures can be accessed on mobile phones. not only on laptops, (e) the lecture process can be recorded for re-watching, (f) assignments can be taken (Basilaia, Dgebuadze, Kantaria, & Chokhonelidze, 2020). But in reality in the field, the process of learning from home becomes a serious obstacle, especially for students from economically disadvantaged groups and the conditions of the area where they live. E-learning users can face many technical difficulties that hinder and slow down the teaching-learning process from home (Favale et al., 2020).

We have to admit, the presence of technology in today's era of globalization brings changes to human life, in this era also humans seem to give space as freely as possible to the swift waves of globalization that enter through increasingly easy technology and information (Faiz, 2021). One of the things that can be felt when the COVID-19 pandemic has an impact on the joints of life in various fields, one of which is in the field of education. This condition requires people to stay home, whether it's studying, working, worshipping, or doing other activities. However, in order for the education process to continue and comply with government policies, the solution is to conduct online learning, namely e-learning learning (Sati et al., 2021). To make e-learning effective in these difficult times, we need to focus on using technology more efficiently, namely the use of technology that has minimal procurement and maintenance costs but can facilitate the educational process effectively (Dhawan, 2020). Aydin and Tasci (Setiaji & Cahya, 2020), stated that in the implementation of e-learning readiness, there are four factors as determinants, namely technological, innovation, human, and self-development factors. Readiness is the overall condition of a person who makes him ready to respond/answer in a certain way to a situation (Effendi, 2017). Willingness to respond or react. Willingness arises from within a person and is also related to maturity, because maturity means readiness to carry out skills (Jamal, 2020). This readiness needs to be considered in the learning process, because if students learn and there is readiness, then the learning outcomes will be better (Susanto, 2018).

Based on the results of the researcher's initial interview with one of the PGSD science lecturers, Ahmad Dahlan University Yogyakarta, information was obtained that there were still students' unpreparedness in participating in online learning. This can be seen from the number of students who often complain about the extravagance of internet quota packages. Then there are also many students who come from outside the island of Java who complain about the lack of quality internet access in their

area which causes difficulties in participating in online learning due to lack of signal. The unpreparedness of students in facing this online learning technology will have an impact on their enthusiasm or motivation to learn. E-learning can help in providing education in times of crisis but it still needs to be further developed by ensuring that no student is further deprived of education because of their location, social class, ethnicity, and so on (Dhawan, 2020).

2. METHODS

The approach used in this research is a quantitative approach with a survey research design. The survey in this study will be applied by collecting information about the effect of the readiness of PGSD students at Ahmad Dahlan University in online science learning on learning motivation. The sample in this study amounted to 80 students consisting of classes 4A and 4B which were taken purposively. Data collection techniques are questionnaires and unstructured interviews. This research was conducted at Ahmad Dahlan University (UAD) in Yogyakarta. The time of this research was carried out for four months, namely from March to June 2021. The population in this study were all 4th semester students at UAD who took the Elementary Science Learning Materials course, the samples in this study were taken by purposive sampling, namely classes 4A and 4B which were practice and research classes from researchers.

This study uses a questionnaire instrument with 25 statement items and there are four indicators that are measured, namely, the skill of using a computer/smartphone as the first indicator. This first indicator relates to the ability to operate computer hardware and software, operate smartphones, and solve problems on computers and smartphones. The second indicator is an understanding of e-learning technology related to understanding the concept of e-learning and habits in using the internet for independent study. The third indicator is the readiness to receive learning materials through e-learning which includes statements related to the hardware owned by students, available internet connections, and experiences of receiving e-learning in the past. The fourth indicator is the positive attitude of students towards computer and internet technology related to changes in students' attitudes, perceptions, motivations, and self-confidence about e-learning. Details of the questionnaire statements for each indicator can be found in Table 1.

Table 1. Questionnaire statements of science learning readiness of PGSD UAD students

Indicator	Question
Skills in using a computer or smartphone	1. I am able to operate Microsoft Office software including Microsoft Word, Power Point and Excel.
	2. I can perform file operations between file storage media (Flashdisk, CD, DVD, or Harddisk).
	3. I am able to type using a computer fluently.
	4. I am able to operate computers and smartphones skillfully.
	5. I know how to solve problems on computers and smartphones both in terms of hardware and software.
	6. I am used to using my computer/smartphone to support learning.
Understanding of e-learning technology	7. I understand the concept of online learning.
	8. I am able to use internet services (web browser, search engine or email).
	9. I understand the procedures for implementing online learning.
	10. I am used to communicating or discussing online with friends in class via WhatsApp, Line, etc. applications.
	11. I master LMS (Learning Management System) such as besmart, Edmodo, Google Classroom, etc.

	12.	I understand the procedures for using video conferencing facilities for online learning purposes such as skype, google meet, zoom, etc.
	13.	I am able to take advantage of online learning features which include downloading materials, online discussions, uploading assignments, answering quizzes, online exams or asking online questions.
Readiness to receive learning materials through e-learning	14.	I have a computer/smartphone equipment.
	15.	I have an adequate internet connection to carry out online learning.
	16.	I have an online learning account.
	17.	I prepare myself by studying before e-learning begins.
	18.	I download and study all the course materials contained in the e-learning.
Attitude towards ICT	19.	E-learning activities can increase my interest in learning.
	20.	E-learning increases my learning motivation.
	21.	E-learning makes it easier for me to access lecture materials.
	22.	E-learning improves the quality of communication with lecturers and students.
	23.	E-learning makes it easier for me to understand the lecture material and assignments given by the lecturer.
	24.	E-learning increases my confidence in learning.
	25.	E-learning increases the effectiveness of time in learning.

In measuring the level of student readiness, the data resulting from filling out the questionnaire in the form of ordinal data was first converted to interval data using interval successive analysis method. This is done because the ordinal data in the questionnaire is qualitative data or not numbers, so statistical calculations cannot be carried out. The first step is to calculate the frequency of student responses from each answer choice. The second step is to calculate the proportion by dividing each frequency by the total number of respondents, amounting to 80 respondents in this study. The next step is to calculate the cumulative proportion value by adding the proportions sequentially for each value. The third step is to calculate the scale value by finding the mean or average value of each indicator. After the scale value is found, the last step is to calculate the scaled value. All these steps can be calculated using the help of Microsoft Excel and SPSS.

Each statement item on each indicator in the questionnaire will be analyzed after the data from filling out the questionnaire is converted into interval data. The data analysis uses the Aydin and Tasci model (Setiaji & Cahya, 2020) regarding the readiness of e-learning implementation. The level of student readiness in the implementation of online learning can be described by a rating scale as shown in Table 2.

Table 2. E-learning readiness assessment scale

Scale	Category
> 4,2	Ready
3,4 – 4,1	The application of e-learning can be continued
	Ready
2,6 – 3,3	Needs a little upgrade
	Not ready
< 2,6	Needs a little upgrade
	Not ready
	Needs a lot of upgrades

3. FINDINGS AND DISCUSSION

Table 3 below is the result of the analysis of filling out the questionnaire by students from each indicator after the data is converted into interval data.

Table 3. Results of questionnaire analysis

Indicator	Scale	Category
1	5,41	Ready
2	6,76	Ready
3	4,48	Ready
4	5,21	Ready

By referring to the e-learning readiness scale of the Aydin and Tasci model (Setiaji & Cahya, 2020), as shown in table 2, the analysis of student readiness for online science learning obtains a ready category on all indicators.

Indicator 1, namely computer/smartphone skills, obtained an average scale of 5.41. This scale is included in the ready category and its application can be continued. In more detail, Figure 1 shows the scale of each item in indicator 1.

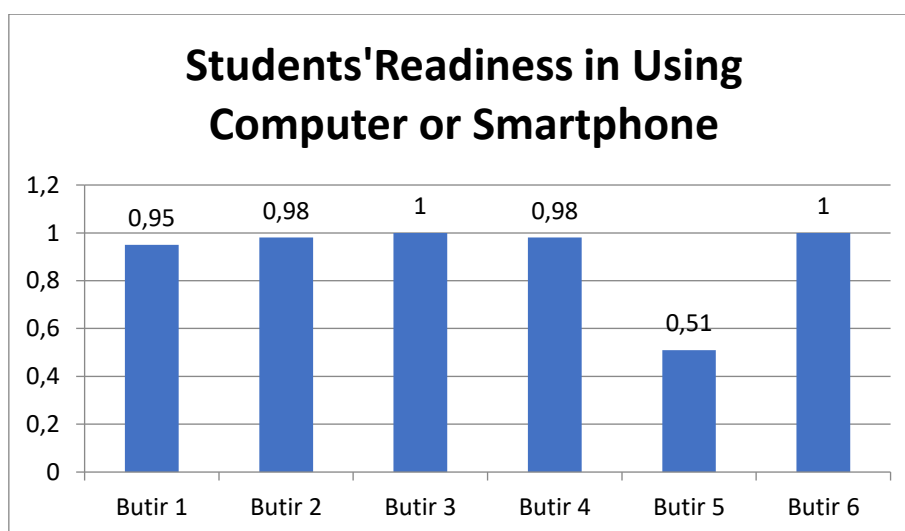


Figure 1. Student readiness results indicator 1

In general, the results in indicator 1 show that PGSD students are ready to use computers, laptops, or smartphones. These results are indicated by the scale value of each statement item obtained an average scale of 5.41. Students' answers to the online learning readiness questionnaire show that in general students are skilled in operating computers and smartphones, both in software such as Microsoft office, as well as hardware such as storage on drives. They have the ability to type and have experience in using ICT in learning. These characteristics are the hallmarks of the millennial generation, which is an active and technology literate generation.

The results of student readiness on indicator 1 have the lowest score of 0.51 on statement item number 5, namely "I know how to solve problems on computers and smartphones both on the hardware and software side". At this point, most of the UAD PGSD students do not know how to repair a computer or smartphone, both on the hardware and software side if there is damage. In this case, it can be judged that students have followed the times of technology but do not have problem solving skills. This is still said to be reasonable because not everyone has special skills in repairing computers, laptops or smartphones and only certain people who are experts in their fields have these special skills.

Overall, the results of students' online learning readiness in indicator 1 have been declared ready and their application can be continued, but it would be better if all parties continued to improve their skills in using computers or smartphones according to indicator 1. The increase was aimed at creating a better online learning atmosphere even better in the current pandemic situation. By knowing the potential of existing students, lecturers or educational institutions can take policies to develop student skills related to using computers before carrying out online lectures. The policy can be in the form of training or workshops related to technical repair of computers or smartphones. This is in line with the statement from (Fujiawati & Raharja, 2019), which states that online learning must be supported by the availability of content prepared by educational institutions or lecturers who are directly involved in learning. Given the situation and conditions during the current pandemic, of course, training or workshops for these students must also be carried out online which can be accessed on their respective computers or smartphones wherever they are.

Indicator 2, namely understanding of e-learning technology, obtained an average scale of 6.76. This scale is included in the ready category and its application can be continued. In more detail, Figure 2 below shows the scale of each item in indicator 2.

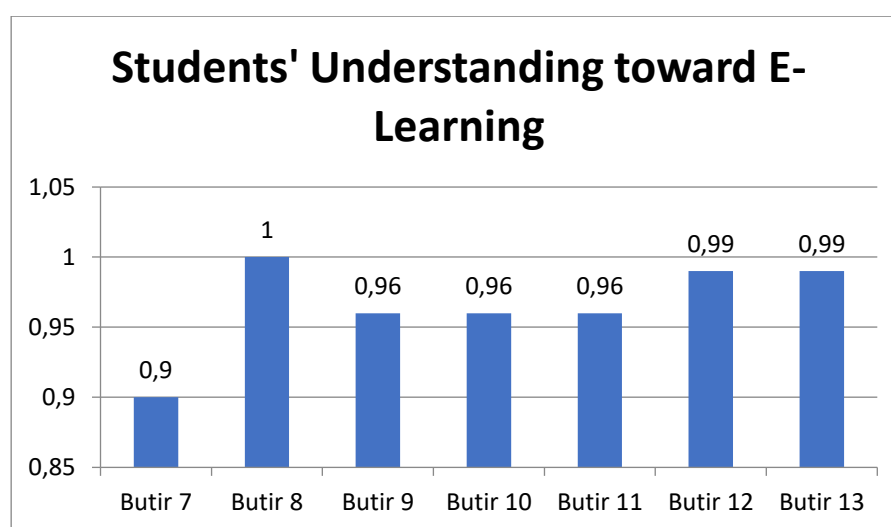


Figure 2. Student readiness results indicator 2

Based on the results in Figure 2, student readiness in indicator 2 is stated in the ready category. Indicator 2 states an understanding of e-learning technology. Based on filling out the learning readiness questionnaire, it shows that the students already understand about the internet network and are accustomed to using it in social media. Students are familiar with learning management systems (LMS) such as Google Classroom and can take advantage of its features to support lectures. The students also have experience in accessing learning resources at LMS. Then the students have understood how to use video conferencing which can be used in online learning during a pandemic.

The results of student readiness in indicator 1 have the lowest score of 0.9 on statement item number 7, namely "I understand the concept of online learning". At this point, most of the UAD PGSD students do not understand the concept of online learning that is currently being implemented. In this case, students are still confused in understanding the concept of online learning because they are still used to the concept of offline or face-to-face learning which they used to live long ago. Therefore, the concept of online learning is new and requires good adaptability from students to be ready to undergo online learning. This is in line with the statement from (Wannemacher, 2006), which states that the effectiveness of e-learning is largely determined by good adaptability. In line with the previous expert's explanation, (Fujiawati & Raharja, 2019), stated that in participating in online learning, students must understand and be able to practice basic ways of applying e-learning to communicate online. Good adaptation for students can be done by getting used to the use of e-learning which will directly increase

the ability to understand current online learning procedures. (Fariani, 2013), suggested that students are not confused about the different e-learning procedures, it takes a good management and human resource capacity improvement. With good and clear SOP management, the procedures for implementing e-learning will be easier for students to understand.

Indicator 3, namely the readiness to receive learning materials through e-learning, obtained an average scale of 4.48. This scale is included in the ready category and its application can be continued. In more detail, Figure 3 shows the scale of each item in indicator 3.

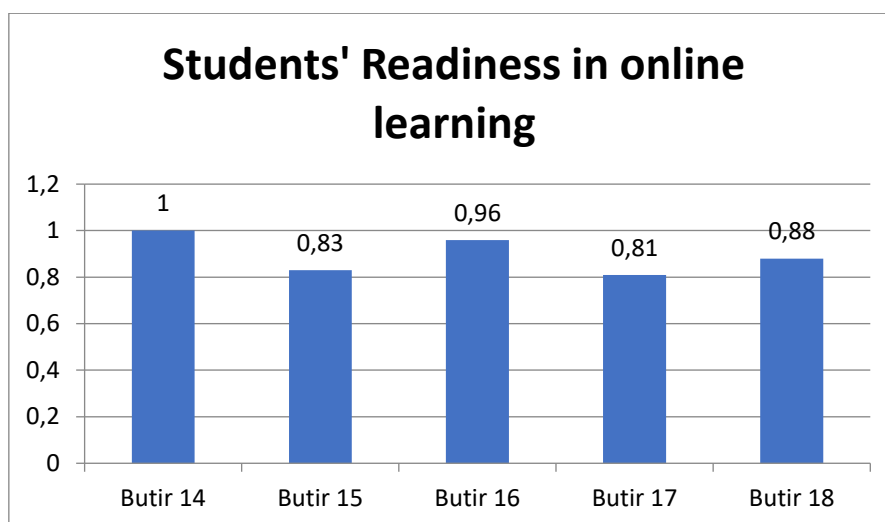


Figure 3. Student readiness results indicator 3

Based on the results in Figure 3, student readiness in indicator 3 is stated in the ready category. Indicator 3 states the readiness of students to receive learning materials through e-learning. Based on the completion of the learning readiness questionnaire, it shows that the students are ready to receive learning materials through e-learning. This can be assessed from the statements of students who already have computer/smartphone equipment. Students also have an adequate internet connection to carry out lectures online and have an online learning account. Besides that, students also prepare themselves by studying before e-learning starts and downloading and studying all the lecture materials in e-learning. UAD PGSD students can download and study all course materials in Google Classroom.

The results of student readiness on indicator 3 have the lowest score of 0.81 on statement number 17, namely "I prepare myself by studying before e-learning begins". At this point, most of the UAD PGSD students have not prepared themselves by studying before the online lectures begin. This happens because of the lack of control from the lecturer. If the control of the lecturers is tightened in online learning today, the preparation of students beforehand will be better. Lecturers are also asked to provide more time for students either in small groups or individually (Oh & Park, 2009). There are many features of the LMS that lecturers can use to control student preparation before online lectures begin. This is in line with the opinion (Zhafira et al., 2020).

which states that lecturers and students must utilize the available resources for the success of this online learning model. Lecturers can provide initial assignments that students must do before the lecture begins. The assignments are designed in such a way that students need to find prerequisite information first.

Indicator 4, namely the positive attitude of students towards computer and internet technology, obtained an average scale of 5.21. This scale is included in the ready category and its application can be continued. In more detail, Figure 4 shows the scale of each item in indicator 4.

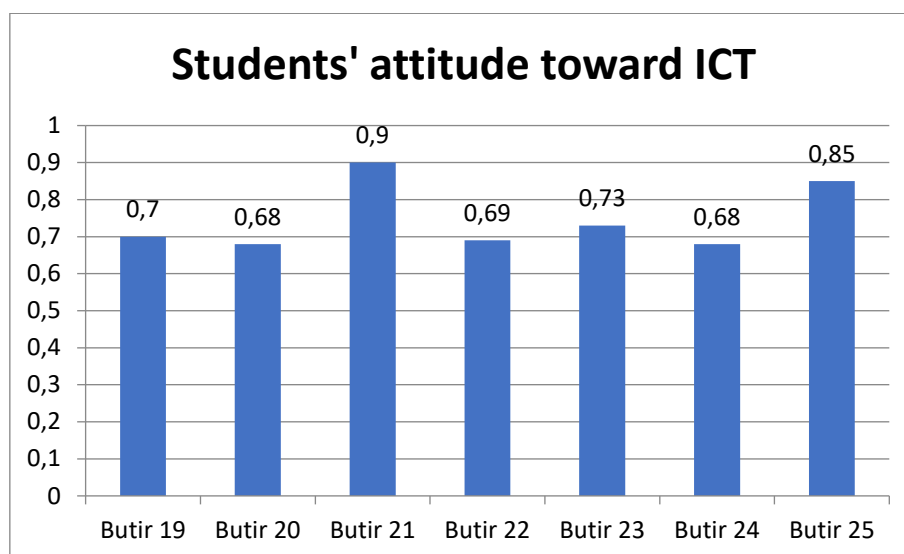


Figure 4. Student readiness results indicator 4

Based on the results in Figure 4, student readiness in indicator 4 is stated in the ready category. Indicator 4 states students' attitudes towards ICT. Based on filling out a learning readiness questionnaire, it shows that students are ready for ICT, this can be judged from students' statements that e-learning increases learning motivation and makes it easier to access lecture materials. Students also stated that e-learning improves the quality of communication and makes it easier to understand lecture material and assignments given by lecturers. And e-learning increases students' confidence and increases time effectiveness in learning.

The results of student readiness on indicator 3 have the lowest score of 0.68 on statement number 20, namely "E-learning increases my learning motivation" and the same score also on statement 24, namely "E-learning increases my confidence in learning". In point number 20, the majority of UAD PGSD students have not felt that e-learning increases their learning motivation. In this case, it is necessary to provide motivation and innovation by lecturers to students and need to be further improved in the current online learning situation. By providing learning motivation, students who have intrinsic motivation are able to learn with higher learning outcomes under any conditions compared to those who are not given learning motivation (Purwanto, 2016). Students' behavior and skills that come from within are the determining factors for learning success and can also be assisted by external factors or external encouragement to increase learning motivation by changing learning styles to be more comfortable to do (Fath & Sugito, 2021). This is so that online learning can be more attractive to students and increase student interest in taking online lectures today. Learning motivation also results in lecturers and students having reciprocal pedagogical relationships, which can increase student concentration, so that applications that support the learning process, and the use of interactive media and teaching materials can be used to the maximum (Dharma & Sudewiputri, 2021).

In point number 24, the majority of UAD PGSD students have not felt that e-learning increases their confidence in learning. Whereas technically the use of e-learning in lectures can increase student confidence. This can be proven by the freedom of students in asking material that is still considered difficult directly to the lecturer without having to feel ashamed of their friends. Therefore, it is very necessary to provide education by lecturers regarding the benefits of e-learning being able to be a solution so that the role of e-learning can be optimal.

4. CONCLUSION

Based on the results of the analysis and discussion, it can be concluded that UAD PGSD Department students are ready to learn science online. This is described in each indicator of the results

of student readiness. Although UAD PGSD students are declared ready for online science learning, it still has an impact on their enthusiasm or motivation to learn so that improvements are still needed from all parties to create a better online learning atmosphere. Improvements that can be made are in the form of providing online training or workshops for lecturers and students, improving e-learning management, providing education and motivation from lecturers to students regarding the positive side of e-learning, as well as increasing lecturer innovation so that e-learning implemented is more attractive to students. student. In addition, in the implementation of online-based learning, it is necessary to pay attention to the principles of learning, both for content and other activities prepared for online learning must be able to represent learning in the classroom, so that it becomes a challenge for lecturers in preparing online class.

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