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Teachers' Readiness for e-Learning During the COVID-19 Pandemic: A Case Study of High School Geography Teachers

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ABSTRACT
This study aims to analyze the readiness of Geography teachers in e-learning during the Covid-19 pandemic in high schools throughout Tanah Bumbu Regency. This study uses a quantitative descriptive method through a survey with data analysis techniques using the Aydin and Tasci model by calculating the average score of each question and the total average of all questions. Readiness to implement e-learning based on Aydin and Tasci's model is measured from four readiness factors, namely human factors, self-development factors, technology factors, and technology factors. Data collection through surveys through Google Forms. The sample of this research is all management and members of the Geography MGMP. The results of the study show that the level of readiness of Geography teachers in implementing e-learning during the COVID-19 pandemic is in a ready category but still needs to be improved. Factors that can be improved include knowledge about e-learning, experience using e-learning, and the availability of facilities and infrastructure to support e-learning.

***Keywords*:** *Readiness, COVID-19, Geography teacher, Aydin and Tasci model.*

1. INTRODUCTION

The COVID-19 pandemic has swept across the world and been named a global health crisis. One of the countries that feel the impact of this virus is Indonesia. The spread of COVID-19 caused by the corona virus not only has an impact on social and economic life [1],[2]. However, it has a huge impact on the world of education. Not a few countries issue lockdown or quarantine policies that affect school institutions. As a result, children and adolescents do not attend school until the specified time as the government tries to slow the spread of COVID-19.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) noted that about 300 million students in the world are affected by the COVID-19 pandemic. The most worrying impact is the long-term effects. Because students will automatically feel a delay in the educational process that they undergo. With the hampering of the education process due to the closure and delay of study time, it is necessary to prepare concrete solutions.

One alternative form of learning that can be implemented during the COVID-19 pandemic is online learning. Online learning is learning that uses an internet network with accessibility, connectivity, flexibility, and the ability to bring up different types of learning interactions [4],[5]. In its implementation, online learning requires the support of mobile devices such as smartphones, tablets, and laptops that can be used to access information anywhere and anytime. But online learning is not a common learning system in Indonesia, because so far learning is done face to face. When newly implemented, most teachers and students are not yet familiar with online learning systems. Teachers are required to deliver the material well so that students understand the material like learning in the classroom. In this case, students' learning achievement is expected not to decrease during the online learning process. The requirements necessary for online learning to be carried out properly, namely: (1) good classroom design or online learning model; (2) good interaction or communication between teachers and students; and (3) rapid technological development [7],[8]. Related to the development of technology, of course, it must be coupled with the ability of teachers and students to utilize the technology. Therefore, online learning requires teachers to have readiness in their implementation. A teacher who is ready to learn in any condition will be able to improve the quality of the

teacher. In addition, the readiness possessed by teachers in the learning process will have a major influence on the success of education in schools and can improve students' learning outcomes [10],[11].

Teacher readiness is related to the maturity of attitude and willingness to carry out teaching skills. Readiness needs to be considered in the learning process to improve student's learning outcomes better. The development of e-learning requires an analysis of e-learning readiness (ELR) [12]. This study uses the E-learning readiness (ELR) Model Aydin & Tasci using four factors namely technological factors, human factors, innovation factors, and self-development factors [13]. This model was chosen because it can be used before or after the application of e-learning. Analysis of the results of these readiness factors will obtain an e-learning readiness score which will be known factors that are ready to be maintained and factors that are still weak to be improved as the next e-learning development step [14].

2. LITERATURE REVIEW

2.1 Online Learning

The Industrial Revolution 4.0 is the state of the 21st-century industry at a time of massive change in various fields through a combination of technologies that reduce the barriers between the physical, digital, and biological worlds. As presented [15],[16], the Industrial Revolution 4.0 was born in Germany in 2011. Now various industries are starting to touch the virtual world, in the form of human connectivity through machines, devices, sensors, and data better known as the Internet of Things (IoT). The impact of the Industrial Revolution 4.0, namely with the 'digitization of the system', requires educators and learners to be able to quickly adapt to existing changes. System Learning that was originally based face-to-face in the classroom, it is not impossible that it will be replaced by a learning system that is integrated through the internet (online learning). Online learning connects learners with learning resources (databases, experts/instructors, libraries) that are physically separate or even far apart but can communicate, interact or collaborate (directly/synchronously and indirectly/asynchronously). Online learning is a form of distance learning/training that utilizes telecommunications and information technology, such as the internet, CD-ROOM (directly and indirectly).

Online learning is essentially distance learning (PJJ). Distance learning is a system that has been around since the mid-18th century. From the beginning, distance learning has always used technology for the implementation of learning, ranging from the simplest technology to the latest. In short, the history of the development of distance learning can be grouped based on the dominant technology it uses. [19] groups distance learning generations into five (5) generations, namely: (1) correspondence model, (2) multimedia model, (3) e-learning model, (4) flexible learning model, and (5) smarter flexible learning model (The Intelligent Flexible Learning Model).

2.2. Teacher Readiness

Teacher readiness is a situation that shows a sense of readiness both physically and mentally in the form of knowledge and skills possessed in carrying out their profession as a teacher to achieve the goals that have been set before. A teacher who will do an activity must have readiness that is with sufficient ability both physical, mental and equipment or facilities and infrastructure that exist.

According to Bandura, explaining readiness consists of three parts: (a) Emotive Attitudinal Readiness or readiness of attitudes and emotions consisting of: (1) emotional readiness assumed as responsibility to perform a task; (2) enthusiasm for a task, (3) willingness to adapt to the task at time, (4) comfort and independence in carrying out the task, and (5) appreciate the intrinsic value in a task, (b) Cognitive Readiness or cognitive readiness consists of: (1) having cognitive skills and critical thinking that are important to perform the task, (2) conscious of strengths and shortcomings, (3) already making connections between tasks performed with reality in the field, (4) aware of self-worth and willingness to carry out tasks, and (5) able to integrate concepts and tools from various scientific disciplines, (c) behavioral readiness consists of: (1) willing to carry out partnership functions with their colleagues in work and facilitators, and (2) adept at managing time to achieve goals in accordance with their duties [20].

Some components of readiness for the use of e-learning are (1) readiness of affairs (2) technological readiness (3) readiness of training (4) cultural readiness (5) human readiness (6)

financial readiness [21]. E-learning readiness proposed [22] uses eight categories in readiness assessment, namely (1) psychological readiness that considers the perspective of the influence of e-learning initiatives, This factor is an important factor that must be considered and has the highest opportunity for sabotage of the implementation process (2) sociological readiness considering the interpersonal aspects of the environment with the program to be implemented (3) environmental readiness that considers the operation of large forces on stakeholders, both in organizations and outside the organization (4) human resources readiness that considers the availability and plan of human resource support systems (5) financial readiness that considers the size of the budget and the allocation process (6) technological skills readiness that considers technical competencies to be observed and measured (7) equipment readiness that considers the appropriate equipment ownership (8) content readiness that considers learning content and learning goals.

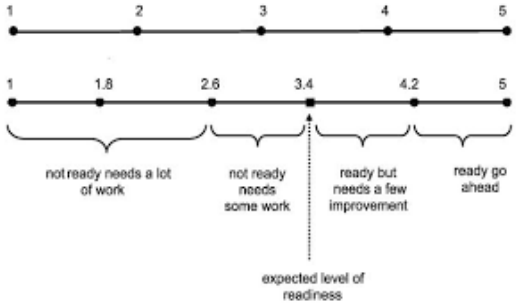
E-learning readiness assessments can also use the model proposed [23], this model is widely used in developing countries with four factors namely technology, innovation, human, and self-development. This e-learning readiness model can be used to determine the level of e-learning readiness in organizations or schools. The description of the ELR factors studied in this study is (1) technological factors (2) innovation factors (3) human factors (4) self-development factors.

3. METHOD

This study uses a descriptive method with a quantitative approach through research surveys. The instrument in this study uses an e-learning readiness instrument developed by Aydin & Tasci which has been adapted to research needs. Respondents found 11 Geography teachers from 8 senior high schools in Tanah Bumbu Regency. This study uses google form media which contains written questions given to respondents. This is because the research was carried out in a pandemic situation.

Data analysis in this study used the ELR Aydin & Tasci model. The rating scale uses a Likert scale (1-5). The scores used in the assessment are 5, 4, 3, 2, and 1 for each question. After knowing the assessment by the respondents, a total score will be obtained, then the final average of each question is calculated. The average score of each question in one factor and the total average score of all questions will be assessed using the Aydin & Tasci ELR model rating scale [13].

Figure 1. Assessment model of e-learning readiness by Aydin & Tasci [13]



4. RESULT AND DISCUSSION

The results of research on teacher readiness using the ELR Aydin & Tasci model are grouped into four factors, namely human, self-development, technology, and innovation will be described as follows:

4.1 Human Readiness Factor

The human readiness factor has 15 questions which include: teacher and student knowledge of e-learning, experience and teaching ability using e-learning, as well as cooperation between students and teachers in the teaching and learning process with e-learning. The results of the ELR scoring score with the Aydin & Tasci model in table 2 showed ELR score = 4 > 3.4. This score indicates the readiness factor of self-development is categorized as ready but requires a slight improvement in e-learning-based learning. In the human readiness factor based on the question items analyzed, several things must be improved including the following: (1) geography teacher knowledge about online learning by socializing and teacher training in operating e-learning, (2) Utilization of more varied learning applications so that students are more excited in learning.

Table 1. ELR score results of human readiness factor

Question	Number of scores	Average score	Average overall score
Q1	47	4.3	4
Q2	42	3.7	
Q3	44	4	
Q4	45	4.1	
Q5	41	3.7	
Q6	49	4.5	
Q7	47	4.3	
Q8	31	2.8	
Q9	45	4.1	
Q10	46	4.2	
Q11	39	3.5	
Q12	48	4.4	
Q13	44	4	
Q14	48	4.4	
Q15	47	4.3	

Knowledge of Geography teachers at The High School in Tanah Bumbu Regency regarding *online* learning needs to be leveled by socializing about e-learning and teacher training in operating e-learning. Through socialization and e-learning training is expected to add to the expertise and experience of geography teachers in organizing e-learning-based learning. In line with the opinion [24] that the implementation of training for geography teachers can improve knowledge, skills, and expertise following academic development.

4.2 Self-Development Readiness Factor

The self-development readiness factor has 9 questions which include: confidence in carrying out e-learning, managing time in managing *e-learning*, quota assistance for the application of e-learning. The results of the ELR scoring score with the Aydin & Tasci model in the table showed that the ELR score = 3.9 > 3.4. Then the readiness factor of self-development is categorized as ready but requires a slight improvement in e-learning-based learning. In the readiness factor of self-development based on the question items analyzed, several things must be improved including the following: (1) experience in operating online learning, (2) confidence in the application of online learning, and (3) Increased quota assistance in the application of online learning for teachers and learners.

Table 2 ELR score results of self-development readiness factors

Question	Number of scores	Average score	Average overall score
Q1	36	3.3	3.9
Q2	44	4.0	
Q3	44	4.0	
Q4	47	4.3	
Q5	47	4.3	
Q6	45	4.1	
Q7	42	3.8	
Q8	43	3.9	
Q9	39	3.5	

Improving self-development can be done by participating in various training through webinars on online learning media. In addition, increased confidence in the use of online learning also needs to be done to improve the process and learning outcomes online. This is in line with research [25] if the application of online learning is done without confidence, then the learning process will not work well. Budget planning and quota assistance during online learning are also very important for the sustainability of online learning. Adequate allocation of funding support such as the provision of internet network infrastructure, and the development of e-learning applications can provide maximum results in online applications [25]. Improvements in the self-development of geography teachers are expected to be able to be adapted in geography learning in high schools in Tanah Bumbu regency for the next.

4.3 Technology Readiness Factor

The technology readiness factor consists of 9 questions that include *the* availability of hardware (laptop/notebook/hp) and access to the internet network, the ability to utilize technology, and a positive attitude towards the use of *e-learning* technology. The results of the ELR scoring score with the Aydin & Tasci model on the table showed that the ELR score = 4.1 > 3.4. Then the readiness factor of self-development is categorized as ready but requires a slight improvement in e-learning-based learning. In the technology readiness factor based on the question items analyzed, several things must be improved including the following: (1) increased availability of communication devices (e.g.: HP/laptop/PC) and adequate internet network access in the

application of online learning, (2) improvements in the ability to use technology such as basic computer capabilities (able to access the internet, able to edit files, etc.) and basic internet (having an email account, being able to search, can download, etc.).

Table 3 ELR Score Results of Technology Readiness Factor

Question	Number of scores	Average score	Average overall score
Q1	50	4.5	4.1
Q2	44	4.0	
Q3	44	4.0	
Q4	47	4.3	
Q5	47	4.3	
Q6	45	4.1	
Q7	42	3.8	
Q8	43	3.9	
Q9	39	3.5	

Improvements in the availability of communication devices that must be prepared such as HP/laptop/PC and adequate internet network access. This is in line with research [25][26] that the readiness of technological factors is supported by the presence of communication devices and the ability to use computers and the internet. Improvements must be made because not all students have adequate communication devices and poor network access in some areas in Tanah Bumbu Regency, this results in online learning which cannot run optimally. In addition to the availability of communication devices, the expertise of teachers in operating applications on online learning also needs to be improved by following training on *e*-learning.

4.4 Innovation Readiness Factor

The innovation readiness factor has 9 questions that include the ability to adapt updates, openness to renewal, and obstacles/obstacles in the application of *e*-learning. The results of the ELR scoring score with the Aydin and Tasci model in the table showed that the ELR score = 3.5 > 3.4. Based on the ELR score obtained, the self-development readiness factor belongs to the ready category but requires a slight improvement. In the innovation readiness factor based on the question items analyzed, several things must be improved, among others: (1) improvement of teachers' ability to adapt and attitude of openness in receiving learning updates, (2) improvements in teachers' ability to minimize obstacles that occur in online learning.

Table 4 ELR Score Results from Innovation Readiness Factor

Question	Number of scores	Average score	Average overall score
Q1	45	4.1	3.5
Q2	43	3.9	
Q3	35	3.2	
Q4	25	2.3	
Q5	39	3.5	
Q6	32	2.9	
Q7	36	3.3	
Q8	47	4.3	
Q9	47	4.3	

The ability of teachers to adopt an attitude of openness in receiving learning renewal can be improved by boldly trying to apply online learning in the school environment. Improvements in the ability of teachers to minimize obstacles that occur in online learning. This can be enhanced by the many teaching experiences using online learning. So, the teacher has been able to overcome the obstacles that will occur next. An increase in the tendency to use online learning for teachers.

Table 5 ELR Geography teacher's final score results at high school in Tanah Bumbu Regency

ELR Factor	ELR Score	Category
Human Readiness Factor	4	Ready, but it needs a little improvement
Self-Development Readiness Factor	3,9	Ready, but it needs a little improvement
Technology Readiness Factor	4,1	Ready, but it needs a little improvement
Innovation Readiness Factor	3,5	Ready, but it needs a little improvement
Average ELR Factor	3,9	Ready, but it needs a little improvement

Based on the results of the final ELR score seen from human factors, self-development, technology, and innovation were obtained by 3.9. This score shows the level of readiness of geography teachers in e-learning during the COVID 19 pandemic in High Schools in Tanah

Bumbu Regency falls into the ready category but requires a slight improvement on each factor.

The main aspect of the application of online learning in schools is the teacher. Teachers are a very important element in the application of online learning [27]. Teachers have an important role in transferring knowledge to learners through e-learning [28]. In line with the opinion [29] that teachers play an important role in determining the success of the learning process for students, although there are some components of the teacher that still need to be improved, the teacher must be prepared with various learning conditions and student conditions, including the development of life in the community.

Some aspects of teacher readiness in the application of online learning that requires increased ability on a small scale are teacher understanding of online learning, the teacher's ability to operate basic computers (typing, accessing the internet, editing files, etc.), teachers' ability to use the basic internet (using email, searching, downloading, etc.), the teacher's ability to follow instructions on a computer screen to complete a task, and the teacher's ability to use information technology such as online or computer learning to complete daily tasks. Aspects that require improvement on a small scale are the main aspects of the implementation of online learning.

5. CONCLUSION

Based on the results of research on the readiness of Geography teachers in *online* learning during the Covid-19 pandemic in Tanah Bumbu High School using Aydin and Tasci models, an ELR score was obtained = 3.9 ($3.4 < x \leq 4.2$). The results of the score showed that overall the Geography teachers in Tanah Bumbu High School are ready to carry out online learning but need a slight improvement. The necessary improvement of the 4 readiness factors is knowledge of e-learning, experience using e-learning, and availability of facilities and infrastructure supporting e-learning.

Geography teachers need to improve their teaching skills with an online learning system (e-learning) by attending various webinars and workshops on how to prepare online learning media (e-learning). The school also plays a very important role in providing support for improving teacher skills and improving facilities and infrastructure to support e-learning such as organizing e-learning-based learning, managing funding sources, improving facilities and infrastructure, and improving internet facilities.

AUTHORS' CONTRIBUTIONS

Author 1 contributed to the conceptualization, method, data collection, and data analysis. Author 2 and 3 contributed to validation and data collection. Author 4 contributed to formal analysis while Author 5 contributed to reviewing and writing format.

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