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Lecturer Competence in The Digital Era : Are Lecturers Able to Utilize Artificial Intelligence-Based Learning Media in The Civic Education Learning Process?

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Abstract: This study aims to explore the competence of lecturers to face the challenges of artificial intelligence, the use of artificial intelligence-based learning media in the learning process of civic education, and the constraints of lecturers in utilizing artificial intelligence-based learning media. This research uses a qualitative approach with descriptive methods and data collection techniques using interviews, observation, and documentation. The subjects in this study are lecturers who teach civic education courses. The data analysis used was content analysis, and this research was conducted at Universitas Sebelas Maret, Indonesia. The results showed that in facing the challenges of the era of artificial intelligence, a lecturer, in addition to having pedagogic, professional, social, and personality competencies, must also have learning and innovation skills, digital literacy skills, and career and life skills. The use of artificial intelligence-based learning media at Universitas Sebelas Maret in the learning process is still relatively less than optimal because there are still some lecturers who do not utilize artificial intelligence technology. The obstacle faced by lecturers in utilizing artificial intelligence-based learning media is that there are still lecturers who cannot operate artificial intelligence technology, so the impact on student learning motivation is reduced. This phenomenon will have implications for the weak civic competence in students, especially civic skills so that they will experience obstacles in facing the development of the times.

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Introduction

A quality education system can adapt to the times to produce good, intelligent, and responsible citizens, both in the real world and in cyberspace (Kusdarini et al., 2020). Artificial intelligence is the development of the times, especially technology and information developed to facilitate human activities in everyday life (Lo Piano, 2020). Artificial intelligence is a driving system technology to help human activities, such as robots, but in virtual form in a computer system, the technology can help or facilitate all human activities, from the fields of economy, socio-cultural life, security and defence, politics, and education (Pratikno, 2017). Artificial intelligence is a brain design that can create a system similar to how the human brain works (Pilling & Coulton, 2019).

The education curriculum in Indonesia over time always changes to adjust to the times, especially in the era of artificial intelligence. The education curriculum in Indonesia currently applies a *Merdeka* curriculum (Elihami & Melbourne, 2022). The emergence of the independent curriculum policy contained in Regulation of the Minister of Education and Culture Number 3 of 2020 concerning National Standards for Higher Education requires all

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universities in Indonesia to implement the *Merdeka Belajar Kampus Merdeka* curriculum (Widiatmaka & Kurniawan, 2023). This curriculum does not require lecturers to be the main learning resource for students, considering that learning resources are currently easily found through artificial intelligence technology (Kinshuk et al., 2016). However, lecturers are required to be the driving force of the Tri Dharma of Higher Education (Education, Research, and Community Service) outside the campus for students. In addition, lecturers must also be smart in knowing the potential, talents, and interests of students because each student has different potential, talents, and interests. Through the learning process on campus, it is hoped that every student can become a citizen who has hard skills and soft skills and is responsible, both in the real world and in cyberspace (Resch et al., 2022). The *Merdeka Belajar Kampus Merdeka* curriculum is oriented towards the world of work and shapes students to become responsible citizens in the real world and also in the digital world (Yuliandari et al., 2023).

Digital citizenship is a concept that emerged to respond to contemporary phenomena in civic studies. The ease of accessing digital technology gives birth to people who actively participate in virtual space through the internet in everyday life (Choi et al., 2017). The state in this case must be able to guarantee the availability of internet facilities to its citizens so that every citizen can access the internet (Piro et al., 2014). Lecturers, through their competencies, must be able to shape students into responsible digital citizens, especially in the era of artificial intelligence, considering that currently, many students encounter irresponsible actions that are not by the values of Pancasila in the digital world, especially on social media, such as the spread of fake news, fraud, online gambling, and so on. Artificial intelligence technology, in addition to having a positive impact, also has a negative impact because many students use it to commit cyber crimes or criminal acts (Benbya et al., 2021). Based on data from the Ministry of Communication and Information Technology, Indonesia is a country that has a lot of cyber crimes and is ranked second in the world after Japan. The ranking is based on the number of hacks through cyberspace (Rizki, 2018).

Based on data from the National Police Criminal Investigation from January 1, 2022, to December 22, 2022, there were 8,831 thousand online crimes, and most of them were committed by young people. The cases consisted of three types: hate speech, hate content, and provocative (Bareskrim Polri, 2023). This phenomenon will have implications for the future of the Indonesian nation, considering that many young people commit criminal acts on online or social media. In this case, the role of lecturers is needed to shape students into responsible digital citizens. However, what is in common today is the competence of lecturers. The mandate of Law Number 14 of 2005 concerning Teachers and Lecturers explains that a lecturer must be able to master four competencies, namely professional, pedagogic, social, and personality (Afikah et al., 2023). However, currently, there are still many lecturers in Indonesia who have not been able to master pedagogic competence and also cannot adapt to the development of artificial intelligence technology, so learning in the classroom is not optimal and learning objectives are not achieved optimally (Maisyaroh et al., 2023). Students faced today are digital native generations who cannot be separated from the internet in their daily lives and want to always get recognition from digital citizens so that the use of digital technology is more skilled or more expert than their lecturers. However, with the expertise that students have in using digital technology, it turns out that many students commit irresponsible actions, especially through social media, so many students become suspects in cybercrime cases (Martzoukou et al., 2020).

Another problem in the world of education, especially in universities, is the excessive use of artificial intelligence technology by students. The use of artificial intelligence-based technology in universities raises complex problems, so it must be anticipated immediately

(Humble & Mozelius, 2022). According to UNESCO data, it shows that the use of artificial intelligence in universities has several threats, namely threatening the sustainability of the character education process, considering that artificial intelligence degrades student character, such as religion, justice, responsibility, and so on, the use of artificial intelligence can weaken academic ethics, such as academic integrity, originality, and academic ethics. Artificial intelligence-based technology facilities, such as ChatGPT, provide convenience and complete student learning tasks without having to think hard, and the use of artificial intelligence-based technology in education can kill critical thinking and student creativity. For students who already have a dependence on artificial intelligence technology, when faced with complex problems, it is feared that they will be easily stressed and lose motivation to learn (Algabri et al., 2021).

These phenomena show that there are problems faced by education in Indonesia, especially universities, considering that most of those who commit violations or criminal acts are students. The problems often faced by universities are that they have not been able to meet the needs of stakeholders, so they cannot produce quality human resources or graduates. Several factors affect the low quality of education in Indonesia, namely the low quality of lecturers and teachers; the welfare of lecturers and teachers is still not guaranteed; student achievement is still low; the correlation between education and needs is still relatively low; and the cost of education is relatively high (Putri & Suwatno, 2017).

Ouyong and Jiao's research in 2021 on artificial intelligence in education: the three paradigms. The results show that artificial intelligence has been integrated into the education system, especially the learning process. This is an opportunity and a challenge. The three paradigms of artificial intelligence in education are: artificial intelligence is used as a means to solve educational problems; artificial intelligence is used to represent knowledge models; and artificial intelligence is used as a means to facilitate the learning process (Ouyang & Jiao, 2021). The next research was conducted by Nemorin et al. in 2023 about hyped artificial intelligence. A horizontal scan of discourse on artificial intelligence in education and development. The study results show that artificial intelligence is a system that is always used to develop the education system. The world of education today will not be separated from artificial intelligence because technology has a great influence on the education system in every country in the world. Every educator must be able to adapt to the times, especially artificial intelligence technology, but must remain critical in facing the challenges posed by artificial intelligence in the world of education (Nemorin et al., 2023).

This research has novelty or differences from previous research that several researchers have done. First, the research conducted by (Ouyang & Jiao, 2021), which emphasises the role of artificial intelligence in the world of education, is very important, especially in the learning process, while this research emphasises the use of artificial intelligence-based learning media in civic education learning. Then, the research conducted by (Nemorin et al., 2023). emphasises that artificial intelligence is a system for the development of the education system, while this research emphasises the use of artificial intelligence-based learning media in civic education.

This research aims to explore the competence of lecturers to face the challenges of artificial intelligence, to find out the use of artificial intelligence-based learning media in the learning process of civic education, and to find out the obstacles of lecturers in utilising artificial intelligence-based learning media. Each lecturer is expected to master digital technology competencies, especially artificial intelligence so that they can face the challenges of the times. In addition, each lecturer can take advantage of artificial intelligence-based learning media in the learning process so that they can form quality student competencies,

especially civic skills. To improve the quality of lecturers' competencies to be able to face the challenges of the times, it must be supported by effective government policies.

Research Method

This research uses a qualitative approach with descriptive methods because it seeks to describe the competence of lecturers to face the challenges of artificial intelligence, the use of artificial intelligence-based learning media in the learning process of civic education, and the constraints of lecturers in the use of artificial intelligence-based learning media. The qualitative approach is a research approach to study, describe and understand an individual or group phenomenon (Saldana, 2011), while the descriptive research method is a research method that aims to describe a phenomenon or event in detail and in-depth (Creswell & Poth, 2016).

This research was conducted for three months (May 2024 to June 2024) and was conducted at Universitas Sebelas Maret, which is located at Jl. Ir Sutami, No. 36, Kentingan, Jebres, Surakarta City, Central Java, Indonesia. The subject of research in this study is lecturers who teach compulsory courses in the civic education curriculum. Data collection techniques in this study use interviews, observation, and documentation. Here is the explanation:

1) Interview
   The interview in this study used in-depth interview techniques, so the informants in this study amounted to nine informants who were lecturers who taught the civic education course. Civic education courses are compulsory subjects at Universitas Sebelas Maret, so every student who is in nine faculties in the first semester gets civic education courses. Researchers determined the nine lecturers as informants because, during their time as lecturers at Universitas Sebelas Maret, they had taught civic education courses at nine faculties at Universitas Sebelas Maret.
2) Observation
   Observations in this study used structured observation techniques so that researchers were not directly involved with participants and only observed the learning process of Civic Education, which was carried out by Civic Education lecturers at Universitas Sebelas Maret, especially lecturers who teach civic education courses. Documentation
   Documentation in this study, researchers tried to collect data related to the competence of Civic Education lecturers in forming responsible digital citizens in the era of artificial intelligence in the form of Semester Learning Plans (RPS) for Civic Education courses used by five informants (lecturers), journal articles, proceedings, books, research reports, online news, and others.

The data analysis technique used in this research was content analysis. The content data analysis procedures included (a) data collection (b) data categorization, (c) data coding, (d) data simplification, and (f) conclusion drawing (Saldana, 2011). The conclusions in this study are significant to be used as a reference for providing recommendations among related parties, especially lecturers and students.

Results and Discussion

Lecturer Competencies to Face Artificial Intelligence Challenges

Competence is a set of knowledge, skills, and behaviours absorbed from the social and work environment that can be interpreted as an instrument to build value through their duties. Lecturer competence is the ability of a lecturer to think, behave, and act consistently as a form of manifestation of his knowledge, skills, and attitudes (Gay, 2013). Lecturers who

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have competence are educators who have knowledge, skills, and wise attitudes in providing learning materials, strengthening in class, opening and closing learning, having varied learning models and methods, being able to understand the potential of students, and being an example for students (Rusilowati & Wahyudi, 2020).

Artificial intelligence is the concept of artificial intelligence that can create a tool or machine that works like the human brain. Artificial intelligence can help or complement humans in determining decisions based on the analysis carried out by artificial intelligence so that humans can determine a decision, both those that have an impact on themselves and others (Jarrahi, 2018). Artificial intelligence has been used in various fields, from economics, law, politics, education, and so on. For example, artificial intelligence has been used to improve the quality of human resources and the learning process (Chien & Chen, 2008). Comparison between artificial intelligence and the human brain in solving problems shows that artificial intelligence dominates in the ability to perform high analysis with a low level of complexity and uncertainty, while humans have a low level of analytical ability and dominate in problems that have a higher level of complexity and uncertainty. In addition, in the learning process in the classroom, artificial intelligence makes it easier to solve problems and tasks that have a high level of uncertainty (Bullock, 2019). Based on this comparison, the learning process requires artificial intelligence technology so that it can run effectively and efficiently and learning objectives can be achieved properly. However, the most important thing in this case is the competence of an educator, especially lecturers, who must be able to master the competence of qualified lecturers to respond to the development of artificial intelligence technology (Alam, 2021).

According to Pearson, the competencies of lecturers in the 21st century that are needed, especially in the era of artificial intelligence, are leadership, digital literacy, communication skills, emotional intelligence, global citizenship, entrepreneurship, problem-solving, and teamwork ability (Hogan et al., 2016). Civic Education A lecturer in the 21st century is a lecturer who can adjust or adapt to the changes or developments of the times. The competencies of lecturers needed in the era of artificial intelligence are learning and innovation skills, digital literacy skills, and career and life skills (Ramírez-Montoya et al., 2021). The following is an explanation of the three competencies of the lecturers:

a) Learning and innovation skills
   A lecturer must have the ability to think critically, be able to solve problems, communicate and collaborate well, and be able to innovate in utilizing learning models, learning media, and learning methods.
b) Digital Literacy Skills
   A lecturer must have the ability to use information literacy, media literacy, and information and communication technology literacy to run the *Tri Dharma* of Higher Education (education, research, and community service)
c) Career and Life Skills
   A lecturer must be able to adapt to the times, be able to carry out social interactions across cultures, religions, ethnicities, and others, have productivity and excellence in running the *Tridharma* of Higher Education, have leadership skills, and be responsible.

An overview of the competence of a lecturer needed to face the challenges of the artificial intelligence era, can be described in the flow diagram as follows:

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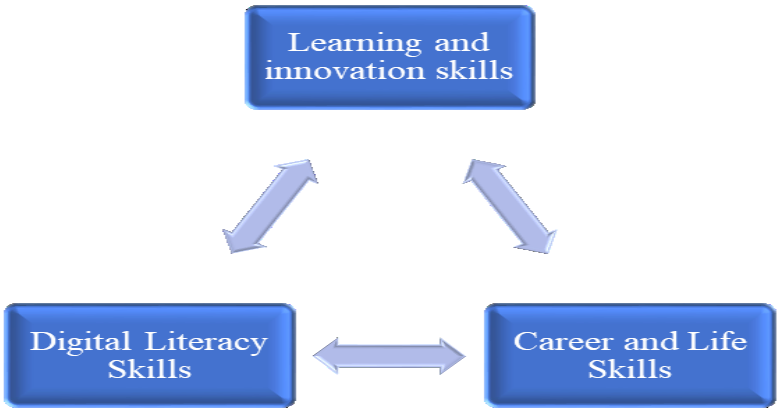

Figure 1. Lecturer competencies needed in the era of artificial intelligence
Sumber: Ramírez-Montoya et al., (2021)

These three lecturer competencies are competencies that must be mastered by every university in Indonesia, especially civic education lecturers in the era of artificial intelligence to build students into good citizens, especially responsible digital citizens. If each lecturer can master competence as an educator, it can provide outcomes and outputs to universities, especially in running the *Tridharma* of Higher Education (Xu et al., 2020). Through these competencies, it is expected to build students into digital citizens who are responsible and have civic knowledge, civic skills, and civic disposition competencies.

Utilization of Artificial Intelligence-Based Learning Media in the Learning Process of Civic Education

The role of lecturers who teach civic education courses must have an effective strategy to build student competence in responding to artificial intelligence so that these students become responsible digital citizens (Ally, 2019). A lecturer must be smart and wise in utilizing artificial intelligence technology as a learning medium in the learning process so that students who are millennials have high learning motivation because the learning medium used is digital-based. AS, a lecturer who teaches civic education at Universitas Sebelas Maret, explained that artificial intelligence technology is very important in the learning process. In addition to innovation in civic education learning, it is also very important to build students into good and smart digital citizens. In addition, artificial intelligence technology encourages students to be more active and motivated in learning, considering that students today are a digitally native generation that cannot be separated from digital technology (interview, May 20, 2024).

Wj explained that artificial intelligence technology has an important role in the learning process, especially if you want to build students into responsible digital citizens. In the learning process of civic education, the learning methods that are often used are the case method and team-based project (interview, May 20, 2024). Both learning methods emphasize student activeness in the learning process, especially in discussing and solving problems. Raharjo explained that to build a responsible digital citizen, in the learning process, a lecturer must be smart in utilizing artificial intelligence-based learning media to find references or learning resources, for example, the class point application, which is a learning aid integrated into Microsoft PowerPoint. This can increase student enthusiasm and motivation to learn; besides that, the main key to being able to build responsible digital citizens is learning that can adjust to the times, especially in the era of artificial intelligence (interview, November 2, 2023). EY explained that the main key to building a responsible digital citizen is that a lecturer must be a good role model for students, and then determine effective learning strategies by choosing the right learning methods and utilizing artificial intelligence-based

learning media. This is important because current learning must be able to adjust to technological developments. A lecturer, in addition to having to master pedagogic, professional, social, and personality competencies, must also be able to operate artificial intelligence technology in the civic education learning process, such as the use of voice assistant learning media to facilitate achieving learning objectives (interview, June 14, 2024).

Wn explained that building a responsible digital citizen, especially when using social media, begins with providing an understanding in advance of the ethics of using artificial intelligence technology and cybercrime so that the lecture learning method varies in the learning process of civic education. Furthermore, the methods used are assignments, group work, problem-solving, and presentations. Effective learning to build students into responsible digital citizens is that a lecturer has an understanding that when the learning process utilizes artificial intelligence technology and when there is no need to use artificial intelligence technology, the concern raised when in the learning process using artificial intelligence technology continuously is that students have a dependence on the technology, so that students cannot think critically and creatively (interview, June 14, 2024).

Artificial intelligence technology helps lecturers determine effective learning strategies to build responsible digital citizens because, through this technology, every student can be given space or freedom to access information using applications that are part of artificial intelligence technology so that they can develop their potential and determine actions that are contrary to and by the personality of the nation (Nuryadi & Widiatmaka, 2023). Rm and Dw explained the same thing regarding the strategy of building responsible digital citizens in the era of artificial intelligence, namely that lecturers as role models for their students are the main key to building responsible digital citizens, then determining effective learning strategies by utilizing learning media based on artificial intelligence technology, considering that students today are a digital native generation that cannot be separated from digital technology, so a lecturer must be able to adjust this (interview, November 6, 2023). Furthermore, MM explained that a lecturer in the learning process of building a responsible digital citizen must use varied learning methods and utilize artificial intelligence-based learning media, such as ClassPoint. The use of these media increases student learning motivation, so interest in becoming responsible humans is increasing. However, the most important thing is that a lecturer must be able to be a responsible educator and be able to set a good example for students (interview, June 20, 2024).

Rn, who is a civic education lecturer, explained that to build a responsible digital citizen in the era of artificial intelligence, a lecturer must be able to adjust to the times and utilize artificial intelligence technology in the learning process (interview, June 20, 2024). Although Rini is a lecturer who has not utilized artificial intelligence technology in the learning process, the two lecturers agreed that in building students to become digital citizens who are responsible for the learning process of civic education, they must utilize artificial intelligence technology.

Based on field observations conducted from June 13 to 15, 2024, it shows that in the learning process of civic education, every lecturer's learning process motivates students to become good and responsible digital citizens, using varied learning methods such as lectures, assignments, group assignments, problem-solving, presentations, and so on. Most civic education lecturers at Universitas Sebelas Maret utilize artificial intelligence technology as a learning medium, but some lecturers do not use artificial intelligence technology in the learning process, and student response to the learning process that utilizes artificial

intelligence-based learning media is very good. It is proven that student enthusiasm for participating in the learning process is very high.

Most lecturers at Universitas Sebelas Maret have pedagogic, professional, social, and personality competencies. On the other hand, it also has learning and innovation skills, digital literacy skills, and career and life skills because it can utilize artificial intelligence-based learning media, become an example for students, use varied learning methods, and be able to motivate students to increase interest in learning, conducting research, and community service. However, some lecturers do not have learning and innovation skills because they have not been able to innovate learning, especially in utilizing artificial intelligence-based learning media.

Lecturer Constraints in Utilizing Artificial Intelligence-Based Learning Media

The use of artificial intelligence-based learning media is a way of facing the challenges of higher education in the era of disruption and building competent and responsible digital citizen students (Halagatti et al., 2023). A lecturer must be smart and wise in utilizing artificial intelligence technology in the civic education learning process, but lecturers currently have several obstacles to integrating artificial intelligence technology in the civic education learning process, namely, many lecturers who have not utilized artificial intelligence-based learning media in the learning process, and there are still many lecturers who do not know how to use artificial intelligence technology (Yang et al., 2021).

Lecturers who teach civic education courses at Universitas Sebelas Maret utilizing artificial intelligence-based learning media experience several obstacles. Rn explained that in the learning process of civic education, they have not utilized artificial intelligence-based learning media; so far, they only use video conferencing when learning is carried out online (interview, June 20, 2024). Wn also explained that in the learning process, artificial intelligence-based learning media is rarely used because the impact caused by artificial intelligence technology is that students will be pragmatic and depend on the technology (interview, June 14, 2024). Even though effective learning can adjust to the times, especially artificial intelligence, to produce students who can develop their competencies based on the times. On the other hand, artificial intelligence is a system that facilitates lecturer performance and can reduce the workload of lecturers in running the Tri Dharma of Higher Education (Nelly et al., 2024).

EY explained that the obstacle to using artificial intelligence-based learning media is at the beginning of lectures because lecturers and students must make adjustments first so that some civic education learning processes are less than optimal even though they have used artificial intelligence technology. However, after being able to adjust to artificial intelligence technology in the learning process until now, the obstacle is that some students experience dependence on artificial intelligence, especially when doing assignments using ChatGPT. This is a negative impact of artificial intelligence because it can degrade students' creativity and critical attitude (interview, June 14, 2024). AS explained that the obstacle to the use of artificial intelligence-based learning media in the civic education learning process is the decline in critical power and creativity in students because some students have an attitude of dependence on artificial intelligence technology, such as ChatGPT (interview, May 20, 2024). Wj explained that the obstacle to using artificial intelligence-based learning media is the preparation of students in installing applications that will be used in learning. Even though previous guests had been asked to install it on each of their respective laptops, when learning began, many students had not installed the application. This means the learning process does not run optimally and learning objectives are not achieved (interview, May 20, 2024).

Based on field observations conducted from June 13 to 15, 2024, related to the learning process of civic education at Universitas Sebelas Maret, several lecturers do not utilize artificial intelligence technology in the learning process to cause student boredom or do not increase student learning motivation. In contrast to some lecturers who utilize artificial intelligence technology in their learning processes, such as EY, AS, Rh, and Wj, who are civic education lecturers who can increase student learning motivation the use of artificial intelligence technology in the learning process can increase student motivation.

The obstacle for civic education lecturers at Universitas Sebelas Maret in the use of artificial intelligence-based learning media is that there are still some lecturers who cannot operate artificial intelligence technology. Students have a dependence on artificial intelligence technology, especially in working on coursework, so it can degrade students' creativity and critical attitude and result in less than optimal preparation in the learning process, especially in the use of artificial intelligence technology.

A lecturer, if he can utilize digital technology, especially artificial intelligence, in the learning process, will have implications for the quality of student competence (Widiatmaka et al., 2023). Learning that utilizes artificial intelligence-based learning media, can increase students' creativity or improve students' civic skills so that students can face the challenges of the times (Nuryadi & Widiatmaka, 2023). However, on the other hand, if lecturers are not able to utilize artificial intelligence-based learning media, it will have implications for the quality of student competence, so that the quality of student civic skills is not able to face the challenges of the times. The lack of maximum Civic Education lecturers at Sebelas Maret University in mastering digital technology, especially artificial intelligence, has an impact on the learning process that is not optimal because it does not utilize artificial-based learning media in the learning process, which has implications for the quality of student competencies that are not optimal, such as civic skills. In addition, the implication is that students are unable to face the challenges of the times, due to weak civic skills.

Conclusion

The findings of this research conclude that in facing the challenges of the era of artificial intelligence, a lecturer, in addition to having pedagogic, professional, social, and personality competencies, must also have learning and innovation skills, digital literacy skills, and career and life skills. The use of artificial intelligence-based learning media at Universitas Sebelas Maret in the learning process is still relatively less than optimal because there are still some lecturers who do not utilize artificial intelligence technology. The obstacle faced by lecturers in utilizing artificial intelligence-based learning media is that there are still lecturers who cannot operate artificial intelligence technology, so the impact on student learning motivation is reduced. The decrease in learning motivation has implications for the lack of maximum competence mastered by students so that in facing the development of the times is not optimal.

Recommendation

Based on the results of the research, the recommendations given are expected for each lecturer to improve their competence, especially skills in mastering digital technology, especially artificial intelligence, and it is hoped that the government will make a policy to hold technical guidance or workshops related to lecturer competence in facing the challenges of the development of the times on a regular or periodic basis.

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