The Effect of Artificial Intelligence in Improving Student Learning Achievement in High School

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Article Information:	ABSTRACT
	Artificial Intelligence (AI) is a process to shape human thinking styles in order to design machines to be able to behave like humans or also called Cognitive Tasks, namely from programmed information data that makes machines able to do work like humans are doing automatically. The purpose of the study is to see how influential Artificial Intelligence is in improving student achievement, especially in high school. This problem utilizes a quantitative approach with a survey model and in-depth interviews. The research survey used by researchers is online-based using the Google Form Platform. The results of this study explain that Artificial Intelligence can assist teachers in creating students who excel in learning, especially at the high school level. The conclusion of the research on the Effect of Artificial Intelligence at the Senior High School level in Improving Student Learning Achievement is that with the help of this Artificial Intelligence Technology, it helps teachers in achieving student competence in the teaching and learning process and students can also improve achievement in the learning process. The limitation of this study is that researchers only conducted research on the influence of Artificial Intelligence in improving student achievement at the senior high school level, researchers hope that future researchers can conduct the same research but at a higher level. **Keywords**: *Artificial Intelligence, Achievement, Influence*

INTRODUCTION

Increasingly widespread Information Technology has become a necessary part of all sectors and aspects of life, both in the scope of economics, business, and even education (Adisel & Prananosa, 2020; Suradji, 2018; Yanuarti & Rusman, 2019). This happens due to the adjustment of people's needs in finding information which can be helped by Information Technology. In everyday life, whether we realize it or not, we have applied the use of artificial intelligence technology (Abdullah et al., 2019). There are many applications around us that are often used based on artificial intelligence such as video/music streaming, search engines, selfie features on smartphones, Global Positioning System (GPS), Video Games, and Social Media (Chanda Halim & Hendri Prasetyo, 2018). Educational institutions, especially high schools, are a place where the teaching and learning process takes place. There are several important roles that teachers must play in providing education in the Era of the Industrial Revolution 4.0, first students are able to create jobs that do not currently exist, secondly preparing students to be able to solve problems that did not exist before, and thirdly preparing students to be able to use technology.

Preparing students to be able to face changes from the Era of Societal Revolution 4.0 to the Era of Societal Revolution 5.0 is not an easy thing. Lecturers must be able to rack their brains to find learning strategies that can facilitate students to progress and develop (Kahar et al., 2021). Nowadays, technological developments are used to provide convenience in work and fulfill human needs. In addition to providing benefits in the field of information and communication, this technological development also provides benefits in the aspect of education (Agustian & Salsabila, 2021; Salsabilla et al., 2021). Educational technology is a derivative of abstract elements of people, ideas, machines, and management (Salsabila et al., 2021). So in that case, it can be understood that this educational technology is a solid and unified process that includes people, methods, ideas, tools and bodies to analyze cases, find ways to solve a problem, implement solutions to cases that are happening, test and strive that cover all aspects of human learning. So that this can help educators and students to be able to create effective and efficient learning.

Nowadays, the use of ICT has become an inseparable part of human life (Prajana & Astuti, 2020; Setiawan, 2018; Supianti, 2018). Various forms of human life have been affected by the existence of ICT developments ranging from individuals to government agencies. In addition, ICT can advance the transition of human civilization from the industrial era to the information era (Herliani & Wahyudin, 2019; Shodiq, 2021). Information and Communication Technology or commonly abbreviated as ICT is a technology commonly used in the process of obtaining, compiling, storing, and managing data or information in order to produce accurate, relevant, and timely data for individuals and community groups (Gusti & Ambiyar, 2021; Sekolah Tinggi Teknologi Garut et al., 2020; Syah & Tasrif, 2021). As human intelligence increases ICT also continues to develop with the creation of the latest technology to solve a problem that occurs. The more this information technology develops, the more innovations will be

obtained (Delianti, 2018; Kurniawan et al., 2021). So that the role of IT is often used as a form of support for learning, both lessons in school or for lessons that are independent (Self Learning).

Artificial Intelligence is one part of Information Technology that is present as a form or way to improve student learning achievement (Pabubung, 2021; Supriyadi & Asih, 2021). Artificial Intelligence or commonly abbreviated as AI is an application and instructions that are connected to computer programming to be able to do something that in the view of humans is intelligent or can be understood as a lesson on how to make computers able to do things that are currently done better than humans who do it (Alghafiqi, 2022; Ghazmi, 2021; Sasmito et al., 2021). The foundation and installation of Artificial Intelligence is very broad including the field of education. Learning using this AI system is learning that has been modified so that it can improve student learning achievement and focus. Because, AI has the advantage to teach students individually and mark the desired problem to find the correct and appropriate way of teaching to students by using artificial intelligence technology.

Learning by utilizing the function of AI is personalized learning (learning that adapts to the needs of students) so that it can improve the learning experience of students and make students better in understanding a subject matter (Arip Nurahman & Pandu Pribadi, 2022; Syifa, 2022). The increased focus of students in learning is one form of the role of AI in the individual system. Because the ability possessed by AI is that it can teach students to learn individually and can recognize the surrounding environment needed to find the right way of learning for students through artificial intelligence. Thus, it can improve student performance during the teaching and learning process in the classroom, especially at the university level. For example, if this technology knows what makes us interested in an object, it will use that object as an example to make it easier to understand the subject matter.

Artificial Intelligence can identify what methods make it difficult for students to understand the ongoing lessons (Chassignol et al., 2018). So that later AI can make a habit of finding new ways to help teachers in student learning to more easily understand the subject matter provided by the teacher and students become more enthusiastic during the learning process, because if students do not understand the lesson, it will make the students bored in the classroom (Chen et al., 2020; Jones (Colbourn), 1985; Yang et al., 2021). Blackboard, which is one of the tools in the field of education that is usually used in universities. Professors utilize this online platform to publish their notes, quizzes, and some tests, as it is expected to allow students to raise issues and assignments to fill out assessments. This can make it easier for students to access course materials and assignments given by professors. AI can also find out the reasons behind students' incomprehension in understanding the subject matter taught by educators.

Based on the results of relevant research related to this study conducted by Luh Putu Ary Tjahyanti, Putu Satya Saputra, Made Santo Gitakarma in their article entitled The Role of Artificial Intelligence to Support Learning during the Covid-19 Pandemic, they said Artificial Intelligence does not always have a negative impact that can replace

the role of humans. Although there are human jobs that are replaced by AI, Artificial Intelligence will also have a positive impact on humans, such as increasing human abilities and making what we are doing get better results. While the article entitled The Important Role of Artificial Intelligence in the Development of Learning Methods for students in Indonesia written by Raihana Astagisa et al (2022), they draw the conclusion that the role of Artificial Intelligence greatly supports the process of developing educational technology and is useful in developing learning methods.

The reason researchers took research with this title is because many of the students do not know where their interests and talents are in a lesson, students who do not understand the learning methods given by educators, and students who do not have an interest in their lessons. Therefore, the researcher here tries to review the importance of the role of Artificial Intelligence in the field of education. Whether using AI at the university level above can improve student achievement. So that students also know where their interests are, students can also easily understand the lessons and are interested in these lessons. That is why researchers want to show how the effect of Artificial Intelligence in improving student learning achievement at the university level.

RESEARCH METHODOLOGY

The research method used is a quantitative research method survey model, which uses online-based google forms and in-depth interviews with teachers and students. Research with this quantitative method is a process for discovering knowledge by using data in the form of numbers as a tool to find out information about what is being studied (Bauer & Scheim, 2019; Kelley-Quon, 2018; Strijker et al., 2020). The researcher tries to understand and describe the understanding that can be obtained from the survey process between the researcher and the subject to be interviewed. Researchers use analysis from sources so that researchers can understand what really happened. By utilizing the basic theoretical foundation that is owned, it makes researchers more focused on the truth that occurs in the intended field. In this study, it does not provide detailed questions, but the questions given to the subject are general questions first, after which it is done to provoke the subject to speak as a whole.

This method has a deductive thinking pattern, by knowing a phenomenon and using general concepts to explain specific phenomena (Bauer et al., 2021; Östlund et al., 2011). By using this quantitative method, it is hoped that researchers can find clues to the problems being studied in depth and thoroughly. The purpose of conducting research is to obtain results from the research process carried out by means of interviews so that researchers can get clear information in an observation. In this method, researchers use data analysis techniques using numbers and numbers in their research. Researchers use the method via online directly with google form and wharsapp. This technique was chosen because researchers can get more accurate and concrete information on subjects who experience the process directly.

In this study, it is necessary to have an observation carried out by the researcher, which is to get a realistic picture of the effect of Artificial Intelligence in improving

student achievement. In capturing a truth because it cannot only be by researching one subject, but also the need to approach many people, because each person has a different view. So that makes researchers unable to capture the truth widely and in detail. Therefore, in research the data received is data analysis, this is what causes the research results obtained from research results using this quantitative method to have the possibility to change. Thus, in this study, researchers conducted a survey by providing online questionnaires to lecturers and students for data collection, by asking questions related to the influence of AI in improving student learning achievement at the university level.

RESULT AND DISCUSSION

The results obtained after conducting observations conducted at Sam Ratulangi University concluded that Artificial Intelligence is very influential at Sam Ratulangi University to improve student achievement. Effective learning will be created with the right method given by educators to students with the support of the right media as well, with a good relationship between the two will certainly be able to realize outstanding students. Therefore, the purpose of Artificial Intelligence is to help students and lecturers during the learning process. In addition, to find out mistakes in a learning method given by lecturers to students so that students do not understand the lessons explained by the lecturer. Therefore, researchers here provide several questions to respondents, both teachers and students, in order to strengthen the research being studied by researchers. Researchers distribute questions online, namely by utilizing google form. It is evident from the acquisition of a percentage of 67.9 which shows that the criteria agree that many respondents agree with the existence of Artificial Intelligence at Sam Ratulangi University. In detail can be seen in the following figure.

No	Assessment Aspects	Strongly Agree	Agree	Disagree	Disagree	Criteria
1	AI can determine the direction of students' interests at the college level	34,6%	58%	2,5%	4,9%	Agree
2	AI makes students interested in their studies	30,9%	61,7%	2,5%	4,9%	Agree
3	AI can find mistakes in a learning method	23,5%	67,9%	1,2%	7,4%	Agree
4	AI helps students improve their performance in	28,4%	58%	6,2%	28,4%	Agree

	learning					
5	The use of AI is needed at the college level	32,1%	61,7%	-	6,2%	Agree
6	AI makes it easier for students to understand the lessons given by lecturers	34,6%	59,3%	1,2%	4,9%	Agree
7	AI can identify the reasons behind students' incomprehension in the lesson.	27,2%	61,7%	2,5%	8,6%	Agree
8	AI helps students in obtaining answers to assignments given by lecturers	30,9%	65,4%	2,5%	1,2%	Agree
9	AI makes it easier for students to find course materials	33,3%	58%	2,5%	6,2%	Agree
10	The existence of AI can reduce students' interest in reading textbooks	28,4%	54,3%	11,1%	6,2%	Agree
11	AI replaces the role of teachers as student educators	21%	55,6%	9,9%	13,6%	Agree
12	Using AI can increase student productivity in lessons.	29,6%	60,5%	6,2%	3,7%	Agree
13	AI can increase student creativity	35,8%	55,6%	4,9%	3,7%	Agree
14	AI can minimize	27,2%	60,5%	4,9%	7,4%	Agree

	student errors in lessons					
15	The way AI relates what students like to the subject matter makes students more understanding and enthusiastic about learning.	32,1%	56,8%	3,7%	7,4%	Agree

The results show that Artificial Intelligence is a factor that cannot be ruled out in the quality learning process. From the data obtained, it can be concluded as follows: illustrates that the response based on 81 people both students and lecturers became examiners and assessors in this study. Based on the results of the respondents seen in the table above that many agree with AI that can find mistakes in a learning method, obtaining the highest percentage of 67.9% which is included in the agreed criteria, they argue that with the help of AI it can find what the problem has been that makes students not or difficult to understand the explanation given by the lecturer to students. The results of the 2nd highest evaluation of AI that can help students find answers to assignments given by lecturers, obtained a percentage of 65.4% which is also included in the agreed criteria, by using AI students can search for subject matter and help answer the assignments they get from lecturers. The 3rd highest evaluation result is that many respondents chose to agree that the existence of AI makes students interested in their lessons and can find out what is behind students' incomprehension in lessons, getting a percentage of 61.7%. Therefore, a lecturer should be able to utilize the role of AI in the teaching and learning process, because both lecturers and students are helped by the existence of Artificial Intelligence.

Meanwhile, among the many respondents who chose to agree that the use of AI can be influential in improving student learning achievement at the high school level, there were also respondents who thought that the use of AI would make students less interested in reading books, because they thought that if there was already technology they did not need books anymore and did not need to summarize the subject matter given by the teacher, there were 54.3% who agreed with this statement. According to researchers, this can be prevented by the control of teachers to students, if lecturers can control or maximize the use of AI to students properly, then reading interest will not decrease. So it can be concluded that AI is very impactful in improving student learning achievement and its use is needed at Sam Ratulangi University, because it can also facilitate teachers during the teaching and learning process and create fun learning for students so that it becomes more effective and efficient.

As a factor that can be an influence in improving the quality of education, the use of technology that is always developing has also had a lot of influence on the learning

process. The benefits of technology in education are to support learning in order to produce the desired achievement. The application of technology in education today is like an exam using a computer, where students usually take the exam using paper answer sheets but now with the development of technology they can answer the exam with a computer and with that the lecturer does not bother to assess the student's answer, because with technology it can automatically assess student answers according to what has been programmed. On the other hand, if students take the exam using a computer, there are no papers wasted after that and the teacher does not bother carrying the student answer papers which are certainly not small, so that the answer papers from students are not scattered.

The emergence of new ways of learning that can facilitate students and lecturers in the learning process. With the advancement of technology, it will certainly create new methods and with this technological advancement, it is hoped that students can more easily understand the material that is still abstract. Learning that previously had to be face-to-face between lecturers and students, with the development of technology the learning process does not have to bring together lecturers and students, but can be carried out by utilizing internet services such as now using zoom, gmeet, and others. In addition, students' learning resources are not only from lecturers, but with the internet services students do not need to be fixated on information obtained from teachers, they can access subject matter directly from the internet. Therefore, lecturers not only act as teachers, but also as mentors for their students so as not to use technology in a negative direction.

The use of Artificial Intelligence is one option to support or assist lecturers in the learning process, and the expected end result can improve student achievement. If the use of Artificial Intelligence can be done optimally, it will also provide the best benefits for students. This means that learning will obtain perfect results or quality if carried out in accordance with applicable regulations. If it is not done with the applicable provisions, there will be a negative impact both on the teacher and on the students. As is known that Artificial Intelligence is useful for increasing student intelligence and helping lecturers in conducting effective and efficient learning activities. AI does have a lot of positive impacts in increasing student learning achievement, but it should also be underlined that technology will never replace the role of a lecturer because its function is only as a tool.

Artificial Intelligence has several important roles in education: 1) Virtual Mentors, with this can provide or assist students in finding material and answering practice questions, for example Blackboard. 2) Voice Assistant, allowing students to search for various course materials, reference questions, articles, or books by simply giving the keywords. 3) Smart Content, an example of this technology is Cram101 which functions to make a book into a more specific summary as needed. 4) Presentation Translator, the same as Voice Assistant except that Presentation Translator can explain a text into the desired language. 5) Global Courses, with this students can search or take courses online from all over the world. 6) Automatic Assessment, using

this can make it easier for lecturers to prepare and hold quizzes easily and practically. 7) Personalized Learning, allowing students to get services like a personal assistant (Ameen et al., 2021; Hasan et al., 2021; Mustak et al., 2021). Thus, it can be seen that the use of AI at the Senior High School level is very influential in improving student learning achievement.

Artificial Intelligence does provide many benefits in education, which can help lecturers and students during the learning process. However, Artificial Intelligence can also have a negative impact on education, including: 1) AI that can do all activities automatically makes teachers and students more lazy in doing a job, 2) When AI is used to manage administration in higher education, it can eliminate the role of administrative staff in schools, 3) Does not have Common Sense, namely AI that can learn and work like humans cannot understand what the purpose of the information is, 4) Work according to instructions, when it has been programmed AI will work according to what has been made, AI cannot work outside of what has been arranged, 5) AI stores information and data digitally and online, this allows our personal data to be hacked, 6) Everything man-made will definitely be damaged, especially technology and machines. therefore we must be wise in using a technology so that the negative impact is not exposed to ourselves.

gambar 1 contoh Artificial Intelligence

The picture above is one example of an application commonly used by students to help the learning process, namely the photomath application called E-Learning AI. E-learning Artificial Intelligence is one form to help in solving math problems, E-Learning learning method is one of the many learning systems that are right for students because this can help students add information systematically through learning activities about the concepts learned. By using this photomath, students can solve math problems with an accurate explanation step by step using only the rear camera on the smartphone, namely photomath. In addition, it is one of the alternative learning media in solving integral problems. Every process displayed by this application makes it easier for students to get answers to the problems they are looking for.

Technology has an important role in changing the learning process. Human activities are made easy by the development of increasingly advanced technology.

However, many humans do not realize that this technology has the possibility to replace the role of humans. However, technology is very helpful, one of which is in the field of education. There are several roles of technology in education, including: 1) learning becomes easier and more practical, for example students can submit assignments online using google classroom. 2) Learning can be more fun and can increase student learning competition by utilizing various free platforms on the Internet with online game applications. 3) Broaden students' horizons, because students can look for references or learning guides through online applications such as e-Books so they don't stick to the books available. It can be concluded, that technology has a positive impact in the world of education if it is used properly and if it is developed appropriately, for that teachers should provide learning innovations to students during the teaching and learning process.

CONCLUSION

The results of this study reveal that this technology is not only used or utilized in the scope of economics, politics and business, but technology has developed to the aspect of education. The influence of technology and science that is very fast also has a positive impact and a negative impact. The positive impact of the development of science and technology is the spread and opening of information and knowledge throughout the world and makes education very easy to implement in any condition. If the development of this technology is not controlled properly, negative impacts will arise, such as the emergence of changes in behavior, ethics, rules, or morals of life that are contrary to the norms that exist in society. To address this, the role of education is very important to develop the positive impact of technology and improve the negative impact of technology, in order to form students who excel.

ACKNOWLEDGEMENT

Artificial Intelligence does have a positive impact on teachers and students, there are many roles of AI in creating effective and efficient learning. However, educators also need to remember, even though the lecturer's work is helped by the existence of AI, teachers should not immediately let go of their hands. Here the task of AI is only as a tool of assistance not to replace the role of the lecturer completely and the lecturer must also always control the use of AI in students, because if there is no supervision students can also get out of hand with their obligations as students, for example students start to be lazy to write lessons or reduce subject matter because they can use cellphones and can make students also lack interest in reading their books. Therefore, if you want to get optimal results, you must also utilize the use of technology optimally as well.

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