



Analysis of the Use of AI (Artificial Intelligence) Based Learning Media in State Vocational High Schools (SMK) in Langkat Regency

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Abstract

The purpose of this study is to determine the extent of the use of AI (Artificial Intelligence) based learning media in Vocational High Schools in Langkat Regency. This is qualitative study with a descriptive approach. There are four State Vocational High Schools (SMK) in Langkat Regency namely SMK Negeri 1 Pematang Jaya, SMK Negeri 1 Serapit, SMK Negeri 1 Tanjung Pura, and SMK Negeri 1 Stabat which are the places of research. Totally there are 20 teachers from four schools became informants in this study. In this study, data collection used is in-depth interviews. The findings of the study show the use of AI in the classroom learning process as a teaching medium is still far from effective. Many teachers have not used AI as their learning media. Most teachers already know about AI generally, but the use of AI in education as a learning medium is still not widely known and implemented. Even some teachers still do not know what AI (Artificial Intelligence) actually is. Supporting facilities and infrastructure such as: Unstable or even lost internet connection, limited WIFI, Projectors, PCs that do not support are some of the reasons why AI is still not effective as a learning medium in the classroom. It is hoped that socialization, workshops and training on the use of AI for teachers can be carried out by the central education office and local education offices to increase awareness of technology.

INTRODUCTION

In 2023, AI (Artificial Intelligence) is developing very rapidly so that in early 2024 almost all levels of society are starting to realize the benefits of AI for life. From September 2022 to August 2023, there were 1.4 billion visits to AI applications by Indonesian internet users and this has placed Indonesia in third place for AI users in the world (Databoks, 2024). AI applications have helped a lot and have had a significant impact on various fields including health, finance,

economics, transportation and education (Afandi & Kurnia, 2023). In education, AI is able to provide various systematic, dynamic learning solutions such as becoming an independent tutor, facilitating the explanation of teaching materials through the development of sophisticated and fun educational content. AI (Artificial Intelligence) applications are very helpful for teachers in making material creation time more efficient, and contain many contemporary learning innovations so that students do not get bored and passive in learning (Maufidhoh & Maghfirah, 2023). Based on several studies, it has been proven that the use of AI in learning construction is very helpful and facilitates the process of transferring knowledge. Research by Gusli et al (2023) ; and Sugiarto et al (2023); said that “the use of AI in learning can increase student motivation and achievement, and support an effective and efficient learning process”. Likewise, Sugiarto et al (2023) stated that AI is the main foundation that opens up opportunities for independent learning for students, good curriculum development, and detailed data analysis for school management.

Learning media is everything used by educators, both in the form of tools and teaching equipment that function to help smooth the learning process in an educational institution such as in schools. Media in learning can be divided in three parts, such as: audio-based learning media, visual, audio-visual, and environmental. In the current 5.0 era, many teachers have switched to digital and technology-based learning media. Digital-based learning media is very important to use in the era of globalization (Rahayu, 2021). One of them is the use of AI (Artificial Intelligence) as a learning medium that makes it easier for teachers to prepare and deliver teaching materials to students (Priowirjanto et al., 2023). AI is artificial intelligence that resembles human intelligence which is designed by computer technology that innovates and transforms in various scientific fields (Manongga et al., 2022). In the history of computer development, AI is the fifth generation of computers which is a continuation of the fourth generation of computers in the form of laptop products. In vocational science, management and business, AI can be used to read future situations accurately and reliably and can provide an overview of decisions and suggestions that must be taken (Nurkholis & Iksari, 2023).

Several studies have shown the use of Artificial Intelligence in education, especially in the learning process, it has a very positive effect on teachers and students. Naila et al (2023) who studied the effect of Artificial Intelligence application on student learning motivation in terms of Rogers’ theory found that AI applications have a very big effect on students, making them more motivated to learn. This is because AI provides a lot of scientific information according to the needs of each student. In addition to increasing student motivation, Gusli et al (2023) found that the use of Artificial Intelligence for teachers and educators is very helpful and facilitates the learning process which has simultaneously improved the quality of education. On the other hand, AI also supports and assists teachers in producing quality outputs. Based on the research finding of Batubara et al (2023) with SPSS Version 20.00 calculations and Wilcoxon, Kolmogorov Analysis, from two sample groups, it was proven the use of AI in learning at schools has improved student learning outcomes. In addition, AI can also be used by teachers to evaluate and assess the learning itself. Based on research by Oktavianus et al (2023) on the use of AI in learning and assessment in digital era, it was revealed that the use of AI is not only to support the quality of learning and improve the quality of education itself, but also very useful in learning assessment. AI greatly helps the learning process in schools. Teachers and students can use it to develop dynamic and transformative learning.

Schools should have provided technology-based learning so as not to be left behind. One of the schools that deals directly with technology and the present is Vocational High School (SMK). SMK is an educational institution that offers vocational or skilled education. SMK cannot be separated from the mastery of technology and information, like computers. AI is one of the

products produced by computers in the form of smart applications that can be used by teachers and students to help the learning process.

In North Sumatra, Langkat Regency is not in the provincial capital like Medan and its surroundings. Langkat Regency is very far from the provincial capital, about two to four hours. Langkat Regency only has four State Vocational High Schools spread across Stabat, Tanjung Pura, Pematang Jaya and Serapit. The four vocational schools are state vocational schools in Langkat Regency. Researchers need to look deeper to find out and explore information about the use and utilization of AI (Artificial Intelligence) in State Vocational High Schools in Langkat Regency. Researchers want to explore information about whether state vocational schools in Langkat Regency have utilized AI in the learning process. Researchers also want to know more about teachers' perceptions of AI (Artificial Intelligence), its use in schools, and the obstacles faced by these teachers in utilizing AI as a medium of learning at the class. Researchers hope that this research can be a reference, appeal and input that contributes to the Langkat Regency Education Office and the central government to further improve the quality of education in Langkat Regency. In education, learning carried out in class often experiences obstacles only because of monotonous teaching media and teachers who are unable to use technology. One-way interactions often occur in class. Students only passively listen to all the material from the teacher and work on questions without any reciprocal interaction. Based on the background of the problem, the researcher is interested in analyzing the use of AI (Artificial Intelligence)-based learning media in State Vocational High Schools (SMK) in Langkat Regency.

LITERATURE REVIEW

AI (Artificial Intelligence) is one of the fifth generations computer products after the previous fourth generation was laptops. Artificial Intelligence is a part of computer applications that can do assignments that generally require human intelligence. AI has helped a lot of human work in terms of health, security, transportation, economy, industry, and education. In education, the role of Artificial Intelligence is very significant. AI has helped many teachers in conducting collaborative research collaborations to increase knowledge about education and students in strengthening the treasury of theoretical foundations and broader and more open learning concepts AI also helps to find various references as a theoretical basis that educators and researchers need in conducting joint research (Zhai et al., 2021). The benefits of AI in education have been widely felt by students in particular. By using AI in the learning process, students are guided to learn more intensively and exclusively according to their respective interests, talents and needs (Bhutoria, 2022).

Learning media is anything in the form of objects or technology that is systematically arranged and carefully prepared for use by teachers in delivering teaching materials to students in class. In this technological era, educators are required to apply learning media using current technology. This aims to ensure that the learning media used by teachers can attract the attention, interest and motivation of students to learn easily and effectively without feeling pressured and afraid (Sari & Junaidi, 2024). Teachers must be able to master technology to help them prepare and develop interesting and communicative teaching materials for their students in class (Astuti et al., 2022).

METHODS

Data Collection Methods and Techniques, The type of this study is descriptive qualitative study. Qualitative descriptive study is the study describes data as it is without any addition or reduction to the research results themselves (Rusandi & Muhammad, 2021). Totally there are 20

teachers from four Vocational High Schools (SMK) in Langkat Regency will be volunteers in this study. There are four State Vocational High Schools (SMK) in Langkat Regency, including: SMK Negeri 1 Pematang Jaya which borders directly with Aceh Province; SMK Negeri 1 Tanjung Pura; SMK Negeri 1 Stabat; and SMK Negeri 1 Serapit.

Data collection techniques, In data collection, researchers use observation, interviews and documentation.

Observation

The researcher will observe every State Vocational High School in Langkat Regency. Then the researcher will review the classes to find out the extent of the use of AI as a teaching medium in the classroom.

Interview

The researcher will interview 20 State Vocational High School teachers in Langkat Regency using semi-structured interviews. The researcher will ask about the use of AI in the classroom, the obstacles faced and the views of the teachers on the use of AI in the classroom.

Documentation

In addition to primary data, researchers also use documentation to find secondary data sources found in documents, libraries, and archives. Documentation is also needed to support the validity of data in the field.

Data analysis techniques, The data collected from this study will be analyzed to obtain valid and reliable research results. Researchers use data analysis by reducing data (data reduction), displaying data as a whole by presenting it (data display), and drawing conclusions based on the data that has been presented (conclusion drawing and verification) (Rusandi & Muhammad, 2021).

RESULTS AND DISCUSSION

This purpose of the study is to analyze the Use of AI (Artificial Intelligence) Based Learning Media in State Vocational High Schools (SMK) in Langkat Regency. A total of 20 teachers from four State Vocational High Schools (SMK) in Langkat Regency became volunteers or informants to explore various information regarding the use of Artificial Intelligence based learning media in their respective schools. Based on the findings of in-depth interviews with 20 teachers, various surprising facts and various current information were obtained regarding the use of AI (Artificial Intelligence) based learning media in Vocational High Schools (SMK).

The use of AI (Artificial Intelligence) by teachers in classes at Vocational High Schools (SMK) in Langkat Regency.

Based on the findings of interviews with 20 teachers, it is found that in the classroom learning process, AI (Artificial Intelligence) has not been fully used as a learning medium. In fact, from several informants, it is found that some of them had never applied AI in class at all. Even out of four vocational schools in Langkat Regency, two of them had never used AI as a learning medium in their classrooms. Some teachers said that they knew about AI and personally often used it, but they had never used it in the class. They were familiar with AI and always used AI in searching for various references, materials and teaching materials to support the learning process that they did in class, *Chat GPT* is one of the AI that they often used to search for references for their teaching materials in class. ChatGPT has a positive impact on teachers because it improves the quality of teaching and can save time in assessing students, as well as reducing the administrative workload (Diantama, 2023). However, they had never used AI in front of students as his teaching media.

Then, there are some teachers who does not know what AI is and what its uses are in education. They said that they were not familiar with AI because they were not millennials. They do not understand what AI is. They often hear young people say AI, but they personally do not know what the use of AI is. They are very pessimistic about AI and said if they are old teachers. Pessimistically, the teachers said that AI may not be able to be used for all subjects, only a few subjects may be able to. The above findings are the same as the findings conducted by (Halim, 2023) who found that many teachers are not confident in using AI and some other teachers have never used AI in class as a learning medium.

Meanwhile, another teacher said that AI is very useful for his students, especially with his position as an English teacher. She said that she never used AI as her teaching media in class, but as early as possible she has recommended all students to get to know English with various AI product features that can help her students improve their English language potential, including the use of *Duolingo* and *ELSA* which can be accessed by students using their respective cellphones. However, there are some teachers who are against the use and utilization of AI in the classroom. They deliberately do not use AI in class because they do not want their students to become lazy and form an instant or practical mindset that results in those students not having the ability to think critically and systematically because they often use AI to help them in all lessons. These teachers also believe that the free use of AI by students will hinder the development of their literacy skills because they no longer think critically in solving various problems related to lessons. Several students who always use AI applications to help them with their college assignments also revealed that excessive use of AI can reduce their creativity, make them lazy, and reduce creativity in thinking (Ali et al., 2023). However, most teachers have utilized AI in searching for teaching materials, in developing teaching materials and innovating in their learning even though they do not use AI as their learning media in class.

The perceptions of teachers at State Vocational High Schools in Langkat Regency about the use of AI (Artificial Intelligence) in the learning process at classroom.

The results of interviews with 20 teachers regarding their perceptions and responses about AI in the learning process in the classroom are very diverse. Most teachers greatly appreciate and are helped by the presence of AI that accompanies them in the learning process in the classroom. However, some of them have different views about AI. Some of them convey that AI has positive and negative influences in the world of education, especially in schools. The positive impact of using AI is that it makes it easier for teachers to create teaching media and teaching materials, but the frequent use of AI can also make teachers lazy to think and innovate. They think that the presence of AI will indeed make the time for creating teaching materials more efficient, but the impact is that teachers become accustomed to relying on AI without thinking and being creative in determining topics and teaching media in the classroom. Excessive use of AI can also result in dependence on the application, resulting in reluctance to read various references, which in the end can increase the potential for plagiarism (Zakiyah et al., 2024).

However, in contrast to those teachers' statement, some others strongly support the use of AI in classroom. They assume that the use of AI has been very helpful in exploring various information and current ideas that can make classroom learning less monotonous. The role of AI in education has a very significant impact, where AI can improve the quality of education and teaching (Pebrian et al., 2023). Since they knew the function of AI for education, they feel that they have been able to access various teaching media and updates on current scientific information more easily and quickly. Even though they take from the internet through AI, not all materials are taken without going a filter first. Some of them said they only see what materials are suitable and then they develop them based on the needs of their students. They feel that their students became very enthusiastic after they used AI media in the classroom. *Quizizz*, *Wordwall* and *Kahoot* from

AI are their mainstay to attract students' interest in learning. Some teachers focus more on the impact of AI on their students. They have the view that when they teach using AI facilities, students will find out about AI and start to learn how to use AI. They think that when they students know a lot about the various conveniences provided by AI, such as the use of *Chat GPT* to find and solve various learning problems, and several AI-supported applications such as *Photomath*, *Microsoft Math Solver*, *Cymath* and others that are able to answer math problems easily and are accompanied by how to solve the problems without my students having to think critically anymore, then it's all like fooling students intellectually. They will become a lazy generation to think, easily discouraged and weak in character. Teachers also chimed in by saying that the continuous use of AI in all activities carried out by students in class will reduce their creativity, as well as their literacy skills will also stagnate and not develop and may even decline because they are rarely honed.

Then, teachers also said if many AI features have been used to advance various aspects of life both in terms of health, finance, economy and education. Then, despite all the weaknesses and shortcomings that AI has, some teachers also admit that AI plays a very important role in the world of education, as a computer information technology teacher that said AI is very helped in teaching students how to edit photos, videos, make short videos, some simple animations and design some banners, posters and others by using some editing features and cool contemporary templates provided by AI. A teacher said that AI is very useful for students for their future which is more advanced and not outdated. He realizes the positive and the negative aspects of AI depend on the user, if the user uses AI to make their work easier in doing positive things, then AI will play a positive role for the user, but on the contrary if AI is used to cheat, manipulate data and make various lies, then AI will also be negative. So, this teacher concluded that AI depends on who and what the purpose of its use is.

The obstacles faced by the teachers at State Vocational High Schools in Langkat Regency in utilizing AI (Artificial Intelligence) in the classroom.

Several obstacles are experienced by teachers who tried to apply AI in the classroom as their learning media. The most common problems encountered by researchers when visiting four vocational high schools (SMK) in Langkat were:

Slow internet signal or network

The results of interviews with several teachers at SMK Negeri Pematang Jaya, Langkat Regency revealed that the signal was the main obstacle they faced when starting classes using AI media. The loss of signal and unstable internet connection disrupted learning in the classroom using AI. The teachers said that the signal is very bad, often disappears suddenly, they only use one T brand internet card, because the signal is quite good, but when they use it sometimes it gets stuck and disrupted too, maybe because the range is too far. The location of SMK Negeri Pematang Jaya which is very far from the city causes the internet signal to be very disrupted. This is considering the distance of SMK Pematang Jaya is around 110.2-130 KM or equivalent to 3 hours 49 minutes from the capital of Langkat Regency, Stabat. The same thing is also experienced by SMK Negeri 1 Serapit. The distance of this school is around 34.8 KM or takes about one hour from the center of the capital of Langkat Regency, Stabat. Teachers said that there are many internet signals that can be used in the use of AI in class, but strangely the internet signal cannot reach the classes, the signal is only stagnant in the teacher's office, so the signal is only strong and smooth when we are in the office and will be hampered, not smooth, even lost when in class".

Inadequate supporting facilities and infrastructure for AI (Artificial Intelligence)

The use of AI in class as a learning medium, several other supporting media are needed such as projectors, laptops and WIFI that can be accessed without limits. However, in fact, some schools still do not have these supporting devices. This is what sometimes becomes an obstacle

for teachers to use AI in class. as conveyed by some teachers if sometimes, they have prepared AI-based teaching materials in class, but it is impossible for them to teach students without using a projector, how they know about the way of using the applications in AI if they do not show them the steps using a projector and a stable internet connection.

Devices or Personal Computers (PCs) that do not support

There was one school that the researcher visited that was constrained by PC problems. Schools such as SMK which are vocational schools that require expertise in the field of IT and vocational technology should have complete facilities and infrastructure, but the computers in the school are inadequate and do not have supporting PC facilities that support them.

Limited internet quota

Several schools visited by researchers revealed that they had not used WIFI for learning purposes in class. they still use limited personal internet packages. Even if there is WIFI in the school, it cannot reach far into the classrooms. Small and limited WIFI facilities mean that not all teachers or students can use it freely for learning purposes such as learning using AI which uses more internet in its use.

Lack of socialization and workshops on the use and utilization of AI for teachers

Many teachers from the four schools visited by researchers revealed that in general they already knew about artificial intelligence AI. However, the lack of official socialization from the local government and stakeholders such as the Education Office regarding training or workshops on the use of AI in helping the learning process in the classroom has made some teachers less aware of the function of AI in the field of Education. Even some other teachers do not know what AI is and what its functions and uses are in Education. Teachers said that personally they have already known AI, but when it comes to the use of AI in teaching, they do not know at all, because they have never been trained on the use of AI either in seminars or workshops.

The use of Artificial Intelligence in Education is a new challenge in education, especially teachers. Teachers in 5.0 era are required to be able to adapt and live with technology in their teaching systems (Rahman, 2022). AI can be used by every teacher to help them process and design new ideas for creative, efficient and effective learning media which is tailored to the needs and character of students (Mambu et al., 2023). AI used by teachers is a reflection of the technology applied in the field of Education. In today's digital era, teachers should be sensitive to current technology, including digital-based facilities and infrastructure, and no less important is the readiness of schools to face digitalization (Masnah et al., 2024). However, in reality, many teachers in schools are less able to teach using technology so that it seems that these teachers do not have a global perspective and are not professional (Amelia, 2023).

Teachers should be aware of the role of technology, especially AI, which cannot be separated from education. Ilham (2023) stated that AI greatly helps educators in facilitating and improving the quality of learning, evaluating and making technology-based decisions that must also pay attention to the ethics and privacy of using AI itself. The ethics of using AI that are of concern to users are that users must be critical, evaluative and skeptical of AI bias. Where educators must be able to synergize and integrate AI into learning without forgetting the ethical and humanizing side of education itself (Serdianus, 2023).

In the world of education, there are many AI products that can be used by educators as learning media in the classroom. According to Gusli et al (2023), AI products that are often used in the learning process include: "Virtual Mentor; Voice Assistant; Smart Content; Presentation Translator; Global Courses; Automatic Assessment; Personalized Learning". There are many other AIs that can be used in the classroom learning process as teaching media to make students more active and motivated in learning. The use of technology in the form of AI in the classroom can also stimulate and develop creative ideas, innovation and critical thinking of students in

learning a science (Naila et al., 2023). Therefore, every learning media that will be used by teachers taken from the internet, especially AI, must be adjusted to the needs of students. That is why every learning model applied in class requires innovation, so that it can be in line with current technological advances (Susanto et al., 2024).

AI is an Artificial Intelligence created to help human work but it does not mean that it will replace human tasks. AI in education has been widely applied by educators to create, create and design learning materials that are fun and interesting for their students. AI will not replace the role of educators in education institution. Artificial Intelligence is actually very useful for teachers in developing fun and non-boring learning media. Fun learning media will attract students' interest in learning and increase their motivation to learn (Kusnadi & Azzahra, 2024). Motivation greatly influences the student learning process. Students who lack motivation in learning will have an impact on their low interest and passion for following lessons (Nahdiyah et al., 2024).

Teachers will remain at the forefront of the process of shaping the success of their students in facing a bright and brilliant future. The learning provided must be side by side with current technology so that the learning we convey is not outdated and old-fashioned. Teachers must follow the development of the era where education must not leave behind existing and latest technology. This aims so that students can follow the development of the era and can compete nationally and internationally and can become part of ready-to-use workers or even more than that, become great job creators. Therefore, it is only right that teachers start to improve and understand that in the current digital era, teaching that is applied with technology is very important to improve the quality and effectiveness of teaching (Kusnadi & Azzahra, 2024). However, despite the importance of education alongside internet-based technology today, teachers are also required to provide students with an understanding of digital ethics and guidance on the responsible use of information technology so that it is not misused. Students must be equipped with an understanding of the rules and ethics in using the internet or online such as user privacy security, as well as being able to understand the consequences of internet topics such as the use of prohibited applications or content and social media (Setyawan et al., 2023).

CONCLUSION

Of the four State Vocational High Schools in Langkat Regency, namely SMK Negeri 1 Pematang Jaya, SMK Negeri 1 Serapit, SMK Negeri 1 Tanjung Pura, and SMK Negeri 1 Stabat, it has been shown that the use of Artificial Intelligence in education has not been fully applied in the classroom. Many teachers have not used AI in their learning process in the classroom. Some teachers even do not know what AI is and how to use it in the learning process. On the other hand, facilities and infrastructure are also a big problem for teachers in implementing their teaching system using AI assistance. Unstable and suddenly lost internet access, school WIFI strength that is not extensive and stable, PCs that are not adequate and not supported by modern devices, and projectors that are not sufficient, even some schools do not have projectors are also the main obstacles to the use of AI in the classroom. In addition, human resources who do not fully understand the role of AI in education, and a reluctance to use technology in their learning process in the classroom also cause technology to be slow to connect to students. This is what makes many vocational high school graduates insensitive to technology and of course this greatly affects to their competitiveness in the world of work. The role of the principal, as well as the central education office, and the local education office is highly expected to advance and create a learning climate based on contemporary and modern technology. Teachers should be at the forefront of changing a nation and civilization. Teachers should be able to innovate in every teaching moment in class. Teachers are expected to understand the character of each student and know that the

needs of each student are not the same. Therefore, various interesting and creative learning media are needed to create students' enthusiasm. However, teachers cannot be blamed in this case. It is because the role of policy makers and decision makers on quality education is also in the hands of the ministers of education, the central education office and the local education office. Socialization and training are very much needed to introduce the use of AI for the education area.

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