



Artificial Intelligence (AI) in Language and Science Learning in Elementary Schools: Teacher Perceptions and Solutions

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Abstract: The research is motivated by the existence of teachers who still do not use technology in learning, as evidenced by research that has been conducted by several studies. The purpose of this study is to describe artificial intelligence in learning Language and Science in elementary schools in terms of teacher perceptions and Solutions. This research is a qualitative study with a case study type. The subjects of the study were elementary school teachers in Madiun district. The research location is in Madiun district, East Java. The number of respondents was 108 teachers who had filled out the questionnaire. Data was collected using data collection techniques in the form of questionnaires, observations, and interviews. The instruments used were questionnaire sheets, observation sheets, and open questions. Indicators in the study were the use of artificial intelligence, design, and types. Data analysis was carried out starting from data reduction. The results of the study showed that the perception of teachers in using artificial intelligence was 84 people who had used artificial intelligence. Teachers use artificial intelligence to get information, copy, and update in teaching. The type of artificial intelligence most widely used by Canva teachers was 96 people, while other types used were Powtoon, sway, and Google Classroom. The solution can be done by improving digital competence, improving the quality of education providing training in small groups, and continuing with the simplest artificial intelligence practice. Mentoring and evaluation of workshop results need to be done so that the continuation of the training program can be known.

Keywords: Environment, Environmental Pollution, Garbage, Waste

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1. Introduction

Development technology gives rise to necessary era changes to prepare source power ready man will change and be able to compete in a global world. Setup Source Power man in the world of primary and secondary education no regardless of the role of teachers in schools. The characteristics of a professional teacher must be: own Skills in teaching, personality, and social and pedagogic. Professionally the teacher is wrong the only one through learning at school. This matter is not as easy as people imagine that teachers are only on duty teaching lessons (Djamarah, 2010). Professional teachers will theoretically be able to improve the quality of learning in the classroom, provide learning services to students to learn interactively, inspiring, motivating, challenging, and fun (Slameto, 2014). Teachers' demands are increasing a lots among them need their own abilities and 4 skills as well as understanding developed curriculum. Not again problems faced by related teachers with the use of learning media (Ahmad & Mustika, 2021).

Teachers must own appropriate knowledge and materials field knowledge and teach through active, innovative, and enjoyable learning (Prihatini, 2017). Activeness student seen in activities carried out by students in learning like doing projects, producing products, learning based on problems, and so on. However, not yet all teachers give a chance student develop their creativity because the teacher only gives drills For memorization without understanding the material (Wuryastuti, 2008). more over again teachers at school have the basis that is still given tasks, for example, science teachers and language learning. In language learning often happen error for example errors in writing teaching Chinese as a foreign language (TCFL) in Secondary Education in Sri Lanka, such as structure, word choice, and punctuation (Kandambi, 2020). Polish people in Russian language learning also often experience errors (Arskaya & Zarubina, 2020). Yang (2010) explains that errors are not all influenced by the first language, but by learning strategy errors. Whereas learning science based on literacy is not easy to carry out (Syofyan & Amir, 2019). Science learning must be done with Work in a way scientific starts from observation, giving chance student try, change, or replace ideas (Sujana & Jayadinata, 2018). More carry on it is said that science learning must introduce the interconnectedness between science, technology, and the environment. Science learning is necessarily instilled in students because science can behave scientifically (Agustin & Ayu, 2020). With development, technology needs integration into balanced learning teacher skills (Lestari et al., 2024). As done by Rizal (2024) who used AI technology to produce various material learning Indonesian such as text stories, poems, dialogues, and practice questions. The use of AI in Science learning including the development of animation, the use of dioramas, and creation of E-book materials water cycle (Lukman et al., 2019; Putra & Suniasih, 2021; Rusdiana & Wulandari, 2022).

There are no problems experienced by teachers only related to the learning process However burden of increasingly complex administration is difficult, not yet Again change the curriculum and digital skills that must be implemented by the teacher. Demands administration from e performance until evaluation independent teach become teacher's obligation besides teach students. Digital skills need to be

mastered by teachers, particularly in teaching that is operating device software and devices hard. There are still many teachers who have not mastered and use devices soft in teaching, cause students study with books only. This is supported Moses (2013) research states that that science and mathematics teachers tend own attitude positive to laptop usage when they find laptops useful in increasing performance teaching.

The era of Society 5.0 demands that teachers be more innovative in teaching by utilizing learning platforms. Some of their utilization of artificial intelligence in the world of education like Canva, poowton, padlet, swab, and more Lots again. Research results show the use of media using Canva can increase results in study students (Mahardika et al., 2021; Rahmatullah et al., 2020). Using poowton can give results on students while using animation media can increase the ability to think critically student increased (Fadilah et al., 2022). The use of artificial intelligence technology in students is developing rapidly. The use of artificial intelligence helps students think critically and creativity as well as facilitates the evaluation to skills complex (Luckin & Holmes, 2016). The main results of artificial intelligence are increased engagement and motivation of students, as well as increased interest in studying students (Shieh et al., 2007; Xia et al., 2022). In addition, studies conducted by researchers show the use of artificial intelligence can increase performance academic and results by helping technology (Khan et al., 2021; Kim, 2021; Winkler & Söllner, 2018) increasing the ability to communicate in Language learning (Vázquez-Cano, 2021), and encouraging learning collaboration (Ruan et al., 2019).

In addition, generative artificial intelligence can applied in various domains such as vision and language models (Polson & Sokolov, 2023). Some examples of popular generative artificial intelligence include Bard, ChatGPT, and CoPilot (Ebert & Louridas, 2023). Although the results study show improvement results study students through the use of artificial intelligence however Still many have not used learning media especially device soft. Surveys prove that teachers are still not yet fully using a laptop while in class and delivering learning. Teachers experience constraints moment understanding applications Rigianti (2020) and obstacles in the Internet network. While Permana & Daryati (2013)) results from his research convey that E-learning is carried out in a way in units of education, not yet well because seen from the internet lacks support like disconnected network or slow networks, then There are some teachers and students who are still stuttering technology and hardship in understand procedure learning based on technology. Various types of technology are already lots used in learning, for example, Canva, GPT chat, video, and streaming media. From various research conducted, there is a difference between improving language and science learning with a lack of teachers in the use of technology, the study tries try know teachers' perceptions of AI in the Madiun area. Although there are Lots supported applications for learning, not all teachers take advantage of it as part of their profession. The purpose of study This For know artificial intelligence in Language and Science learning, teacher perceptions, and solutions.

2. Method

Study This includes study qualitative with type studies case. Research this uses the method of Likert scale survey. The Likert scale is a series of statements containing a situation real that is happening researched (Joshi et al., 2015). Scale method Likert to get data from a group man with approach agree/disagree agree, satisfied / not satisfied, and so on about attitude, opinion, behavior act, or characteristics from man (Schwarz & Bohner, 2001). Data collection techniques in the form of questionnaires, questions, and interviews. The data obtained analyzed shows the trend of the response given by the population target about phenomena discussed (Creswell & Creswell, 2017). The instrument was used in the form of a sheet questionnaire distributed to 130 teachers online via group teacher work. The research was conducted in Madiun district, East Java with subjects being elementary school teachers in Madiun district. The number of teachers who fill 108 is spread out from 4 sub-districts in Madiun. Data in the questionnaire served in table form with indicators (1) Usage of technology in learning, (2) ways to design alone artificial intelligence, (3) Number of teachers who use artificial intelligence, and (4) types of artificial intelligence used. To know amount type of artificial intelligence used a questionnaire opened with the mentioned type of artificial intelligence used and how often used in learning.

3. Result and Discussion

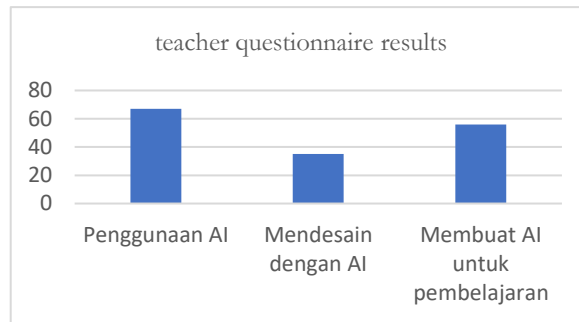
Research results at this stage observation of classroom learning show that the teacher still has not yet used a laptop or technology when teaching in class. Lack of LCD, inability to operate the laptop and not being capable create learning media become the reasons teachers don't use technology. Observation results on teachers at school show the teacher using Canva and interactive PPT for teaching in class. Questionnaire results about teacher perception in the use of artificial intelligence can seen in the following table.

Table 1. Questionnaire results

No	Indicator	Yes	No
1	Ever used AI?	67	
2	Designing with AI	35	
3	Creating AI for learning	56	

Amount Respondent from the teacher who filled in a questionnaire online with 108 teachers in Madiun. The results of the questionnaire show the teacher creates learning media technology. The use of technological media can become an opportunity for learning for teachers on a school basis (Sukamto & Ardiansyah, 2023).

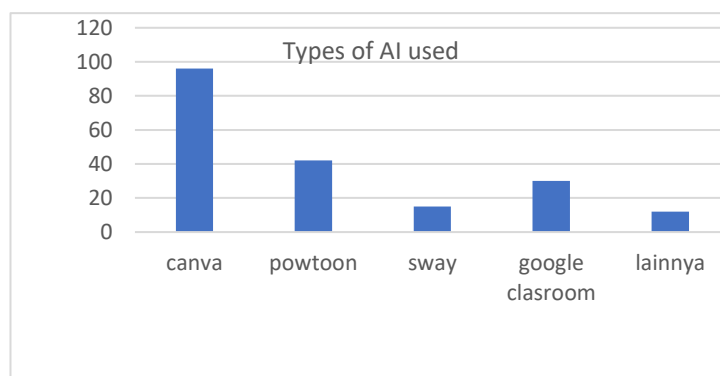
Table 2. Diagram image



The results of the questionnaire showed that 67 teachers used artificial intelligence in their learning, but only used it and copied it from colleagues or social media, while 35 designed it themselves as material or media. A total of 56 teachers made artificial intelligence because it was used as an assignment in the training of moving teachers and seminar assignments. Meanwhile, in learning, teachers use YouTube as a medium. The use of YouTube media is in line with the research of Iwantara et al. (2014) which resulted in a superior understanding of science concepts and motivation than Charta and Sistadewi (2021) media in learning Indonesian.

Based on the results of the questionnaire, teachers have used artificial intelligence in learning, although its use is limited to creating materials in the form of PowerPoint and is dominated by young teachers. The use of artificial intelligence in schools carried out by teachers is still dominated by Canva to create PPT and learning videos. Questionnaire results can be seen in the following table.

Table 3. Questionnaire results

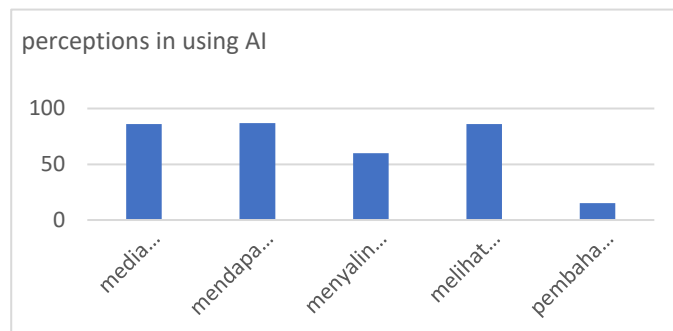


Based on the results of the questionnaire in Table 2, teachers use artificial intelligence with the type of Canva to create PowerPoint and learning videos the most, namely 96 people. While Powtoon is used by 42 teachers. Sway and Google Classroom are still used by 15 and 30 teachers. Supported by the results of the

interview, the use of Sway and Google Classroom are used when all teachers have annual meeting activities that cause students to take a holiday. The results of interviews with teachers who use other types of artificial intelligence are 12 to support seminar and training assignments. The use of Powtoon for learning media such as in the study of Fadilah et al., (2022) who used Powtoon to increase the interest in learning of grade 5 students in elementary schools. One of the teachers explained that he participated in the teacher motivator training which required the use of media in sending assignments such as Mindmeister to create concept maps. In addition, teachers also use video editing to create interactive PPTs to support their duties.

Perceptions of using artificial intelligence vary, from personal information such as social media to educational needs. This was also expressed in interviews that artificial intelligence is used by some teachers for viewing social media, and working on assignments When attending a seminar. However, teachers who do not can use artificial intelligence to ask help others to create and send task moments attend the seminar.

Table 4. Teachers' perceptions in using AI



Based on table 4. Teachers' perceptions when using artificial intelligence to teach as a medium of 84 people, artificial intelligence is only to get information such as news, videos, information, and others. There are teachers who copy artificial intelligence such as TikTok to be saved or shared with as many as 60 teachers. For teachers who want innovation in teaching using artificial intelligence to create media, videos containing learning, or activities in class.

The results of the study also showed that teachers who use artificial intelligence are young teachers and have facilities such as laptops. The research method on the use of solar system visuals saw that the impact of interactive learning materials was very high in improving learning skills and adaptation by combining learning systems. Interview results with one of the teachers also said that using artificial intelligence

makes it easier for teachers to teach, and students more interested. For example, use Quizlet and Wordwall for know activity students in class. In line with This research supported a study (Suciati et al., 2023) that explains that artificial intelligence can increase the ability of students to speak English. Innovation Learning 5.0 and artificial intelligence can optimize education by giving more solutions adaptive, efficient, and relevant for students. However, it is also necessary to consider challenge-related ethics, privacy, and data protection when implementing technology in an Educational context. In line with refoindonesia (<https://www.refoindonesia.com/artificial-intelligence-ai-etika-dan-implementasinya-dalam-pendidikan/>) explaining ethics In artificial intelligence, the student data used by artificial intelligence must be protected, and artificial intelligence must be used for increase access and equality in Education, transparent, monitoring and validation of Decisions, inclusive accessibility and better Education goals big.

The use of artificial intelligence in language learning in elementary schools to create questions in the form of quizzes and create material such as short stories, vocabulary, synonyms, and homonyms. One of the teachers at SD Bulu 03 who had taken part in driving teacher education, revealed that he used a puzzle maker and Canva to create puzzles and materials which were then practiced on grade 4 students at his school. The results were obtained by active students. This is in line with research by (Dwi Mukti, 2023; Maufidhoh & Maghfirah, 2023) that the use of puzzle makers can increase student involvement in learning. In line with (Culbertson, 2023) research using AI in language learning, it is important to match the language perfectly in addition to the desired properties. Meanwhile, in science learning, teachers use artificial intelligence to create solar system materials, plant parts, and water cycle processes. With the help of artificial intelligence, teachers can save time and energy to be efficient and provide meaningful experiences to students (Mambu et al., 2023).

The solution needed to be applied related to the still low number of teachers using artificial intelligence with stage socialization and training that has begun from the use of artificial intelligence in learning like creating media and video materials for the lesson. Other things that need to be done are giving training in a way in a way directs in group teacher's work and at the same time done in group learning. Approach improvement of the professionalism of the teacher can done with technique supervision, growing culture organization learners, and activities training (Sabandi, 2013).

Besides that digital competence is needed as involvement and practice are reflected in activity studies taught through digital technology (Paramansyah & SE, 2020). Using digital competence can increase productivity in activity learning (Prawiradilaga et al., 2013). Success activity learning in the digital era, teachers must own digital

competence as one of the solutions to face challenges in learning in the digital era (Sitompul, 2022). Another solution that does not lose importance with increase teacher competence through education. Research results previously explain that 100% of teachers are motivated to studies carry on because give benefits in improving competence and professionalism (Nurfaisal et al., 2023). Improvement of teacher competency especially field competence pedagogic can done through the implementation of learning learning (Sutaga, 2022). Education of driving teachers shows improvement in teacher competence in Education (Sijabat et al., 2022). With Education, it is hoped that teachers can studies continue to improve quality education and do research. This is in line with the research Hoesny & Darmayanti (2021) which explains that to repair the quality of teacher competence by organizing development programs for effective teacher professionalism, involving teachers in professionalism programs, improving teacher certification, improving the use of digital technology, encouraging active teachers in meeting scientific, and training to increase English language skills. This is due to English language skills are important Because product technology uses moment this using English in its operation.

4. Conclusion

The results of teacher perceptions of using artificial intelligence show that teachers in the Madiun district have used artificial intelligence in the form of learning media. This study is only to find out the teacher's perspective on using artificial intelligence regardless of the teacher's duties as an educator. The aspects identified in the use of artificial intelligence in learning are used in learning and assignments. The values obtained indicate that teachers are familiar with artificial intelligence and are familiar with artificial intelligence to search for information and teach. However, some teachers still need training or socialization about the use of artificial intelligence so that learning is more effective. The importance of artificial intelligence in learning is one of its uses to create more interactive media. This highlights the importance of providing training and motivation for the use of artificial intelligence in learning, even if it is just designing with Canva. Teachers who use artificial intelligence find innovation in teaching, the ease of creating materials, media, and learning videos needed, thus increasing self-confidence in mastering the subject matter. Although the positive side can improve teachers' skills in teaching and creating media, there are still many teachers who are completely unfamiliar with artificial intelligence and are too lazy to learn on the grounds that they have entered retirement age and do not have a laptop.

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