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AI Socialization in Creating Teaching Materials for Elementary School Teachers in Bukittinggi City West Sumatra

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Abstract. The use of Artificial Intelligence (AI) in education offers innovative solutions to improve the quality of learning, especially in creating teaching materials. However, in Bukittinggi City, West Sumatra, many elementary school teachers have not yet utilized this technology due to limited knowledge and skills. Therefore, this community service activity aims to socialize and train elementary school teachers in utilizing AI to create interactive and effective teaching materials. The implementation method of this activity includes socialization of AI theory, practical training on the use of AI applications, group discussions, and direct practice in creating AI-based teaching materials. The results of this activity show an increase in teachers' understanding and skills in using AI. As many as 75% of teachers are able to create more varied and efficient teaching materials by utilizing AI technology. However, several obstacles were found, such as limited technological infrastructure in schools. This socialization activity succeeded in improving teachers' ability to utilize AI, but limited technological infrastructure is a major challenge. The evaluation showed that most teachers needed further training to deepen their understanding of AI technology. In the future, there needs to be increased access to technology and ongoing training to ensure the sustainability of AI utilization in elementary education in Bukittinggi.

Keywords: AI, Elementary School Teachers, Learning Quality, Teaching Materials

1 Introduction

In recent decades, technological developments have affected various aspects of life, including the education sector. Technology has not only changed the way we access information, but also teaching and learning methods [1] . One of the latest technological developments that has great potential to be applied in education is Artificial Intelligence (AI). AI can support the learning process in various ways, such as helping teachers compile more interactive teaching materials, creating questions automatically, and personalizing learning materials according to student needs [2]. [3] . However, even though AI technology offers many benefits, its use in the education sector, especially at the elementary school level, is still very minimal.

In Bukittinggi City, West Sumatra, education is a sector that receives special attention. Bukittinggi is known as a city of education, with many schools and educational institutions that focus on improving the quality of learning [4] . However, elementary school teachers in this area generally still use conventional learning methods, such as blackboards and textbooks as the main tools in teaching. They rarely use more modern digital technology, let alone AI, in compiling and delivering teaching materials. This is due to the lack of knowledge and skills of teachers regarding the latest technology and minimal access to AI-based devices and applications.

This lack of knowledge and skills causes the teaching materials used in class to tend to be monotonous and less interesting for students. In the digital era, where children are accustomed to various interactive content from the internet and social media, traditional teaching methods are often unable to attract students' attention effectively [5] [6] . As a result, students' learning motivation decreases, and the learning process becomes less than optimal. On the other hand, the demands on teachers to continue to update their teaching methods are increasing, especially with the Independent Curriculum which encourages the use of technology in the teaching and learning process. [7] [8] .

In addition, time constraints and large administrative burdens are also challenges for teachers in designing quality teaching materials. Many teachers find it difficult to create interesting and varied teaching materials because they have to manage various other tasks, such as assessing student assignments and completing

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educational administration. In this context, AI can be a significant solution. AI technology enables automation in the creation of teaching materials, such as questions and learning materials that are appropriate to students' needs, so that it can lighten the workload of teachers [9] [10] [11] [12] .

Therefore, real efforts are needed to improve the understanding and skills of elementary school teachers in Bukittinggi in utilizing AI as a tool in creating teaching materials. This community service activity aims to provide training and assistance to teachers in using AI-based applications so that they can create teaching materials that are more interactive, interesting, and relevant to current developments. Through this training, it is hoped that teachers can utilize AI technology optimally, improve the quality of learning, and be able to compete with the dynamics of modern education.

The purpose of writing this article is to provide an overview of the implementation of socialization and training activities for Elementary School (SD) teachers in Bukittinggi City, West Sumatra, in utilizing Artificial Intelligence (AI) technology for creating teaching materials. This article aims to improve teachers' understanding and skills in using AI-based applications, which can help them create teaching materials that are more interactive, interesting, and in accordance with students' needs. In addition, this article also aims to evaluate the results of the socialization activities, identify the challenges faced, and provide recommendations for further development related to the application of AI in elementary education in Bukittinggi.

2 Methods

As for the implementation method of socialization activities for the creation of AI-based teaching materials , there are several stages of activities, namely: socialization and introduction of AI technology, training in creating teaching materials using AI, group discussions and working on case studies, direct practice with assistance and finally conducting evaluation activities. The following is an explanation of each stage of PKM activities [3] [13] [14] :

a. Socialization and Introduction of AI Technology
   This session aims to introduce the basic concepts of AI and how AI can be applied in education, especially in the creation of teaching materials. Participants are given an explanation of AI technology, such as natural language processing, image recognition, and AI applications in education, for example to create interactive quizzes, digital learning materials, and adaptive assessments.
b. AI-Based Teaching Material Creation Training
   In this session, teachers are trained to use various AI-based applications and platforms that can help in creating teaching materials, such as:
   1. AI to create automatic questions
      Teachers can use AI to design practice questions based on the desired level of difficulty.
   2. AI to create interactive videos or animations
      Teachers are trained to use applications that can turn lesson materials into engaging animated videos.
   3. AI-based chatbots
      Teachers are introduced to the use of chatbots that can help students learn independently.
   4. Group Discussion and Case Study
      Teachers are divided into groups to discuss and solve case studies on the application of AI in creating teaching materials. Each group is asked to create examples of teaching materials using the AI-based tools that have been taught.
   5. Direct Practice and Mentoring
      After the theory session, participants do direct practice by creating teaching materials that are in accordance with the subjects they teach. The service team provides assistance and guidance during the practice.
   6. Evaluation and Feedback
      In the final stage, an evaluation is carried out on the results of the teaching materials created by the teacher. Feedback is given so that teachers can better understand the optimal use of AI and can apply it in the learning process.

3 Results and Discussion

The results of this socialization activity show an increase in teachers' understanding of AI technology and its applications in education. Based on the results of the initial survey before the training, most teachers (around 80%) were not yet aware of the use of AI in education and found it difficult to develop interactive teaching materials. However, after participating in the training, there was an increase in teachers' understanding and skills in utilizing AI applications.

Teachers have successfully created more varied and interactive teaching materials, for example by utilizing AI tools to create adaptive questions, interactive videos, and multimedia-based learning materials. Several teachers also said that using AI helped them save time in compiling learning materials, because some processes can be automated.

However, there are several challenges faced during the implementation of this activity, including the limited technological infrastructure in schools, not all of which have adequate supporting facilities such as computers and internet. In addition, some teachers still feel that more practice is needed to be able to use AI technology more proficiently.

The socialization activities carried out showed that teachers' understanding of AI technology had increased significantly. Before the training, the majority of teachers were unaware of the potential of AI in education. The fact that around 80% of them find it difficult to develop interactive teaching materials indicates the need for appropriate intervention. By providing appropriate training, we have been able to change perceptions and raise awareness of the benefits of this technology.

After the training, the results showed that the teachers not only understood the theory, but were also able to apply it in practice. They have succeeded in producing more varied and interactive teaching materials. For example, the creation of adaptive questions allows students to learn according to their level of understanding, while interactive videos make the teaching and learning process more interesting. The use of multimedia in teaching materials also provides a new dimension in the delivery of information, which can increase student interest and motivation.

One of the main benefits cited by teachers is time efficiency. By automating some processes, such as creating questions or compiling materials, teachers can focus more on interacting with students. This not only increases teacher productivity, but also has the potential to improve the overall quality of teaching. Teachers who previously felt stressed by the workload can now see the possibility of exploring more creative teaching methods.

However, the challenges faced during this activity need to be noted. Limited technological infrastructure is a major obstacle that must be overcome. Not all schools have adequate access to computers and the internet. This creates a gap in the implementation of AI technology, where schools with better facilities can utilize this technology more optimally than others. Therefore, there needs to be more attention from the government and policy makers to improve technological infrastructure in schools.

In addition, the need for ongoing training is also very important. Although many teachers feel more confident after training, some still feel that they need more practice to master this technology. Holding regular follow-up training sessions or workshops can help teachers stay updated with the latest developments in educational technology and AI applications.

In addition, support from the principal and education managers is also very important. They need to create an environment that is conducive to the adoption of new technologies, including providing facilities and time for teachers to experiment with AI tools. Building a culture of collaboration among teachers can also speed up the process of adapting to new technologies, where they can share experiences and resources.

Furthermore, it is also important to involve students in this process. By providing an understanding of AI technology, students can be better prepared to utilize the tool in their learning. This can also increase student engagement and make them more proactive in the learning process.

Overall, the results of the socialization activities showed positive steps in improving teachers' understanding and skills regarding AI technology. Despite the challenges ahead, a commitment to continuous learning and adaptation is key to maximizing the potential of this technology in education. With the right support, it is hoped that the use of AI in education will expand and provide significant benefits to teachers and students.

Table 1. Success of the Socialization of AI Utilization Activities in Making Teaching Materials for Elementary School Teachers in Bukittinggi City, West Sumatra

Aspects of Success	Indicator	Results Achieved
Teacher Knowledge Improvement	Percentage of teachers who understand basic AI concepts	Before socialization: 20% After socialization: 85%
Understanding AI in Education	Percentage of teachers who understand the application of AI in creating teaching materials	Before socialization: 15% After socialization: 80%
Mastery of AI Technology	Number of teachers who are able to use AI applications in creating teaching materials	75% of training participants were able to create AI-based teaching materials after training.
Quality of Teaching Materials	More varied and interactive teaching materials	Teachers successfully create adaptive questions, interactive learning videos,

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		and AI-based multimedia content
Time Efficiency in Creating Teaching Materials	Ease of the process of creating teaching materials with AI	Teachers report saving up to 40% in time in creating questions and lesson materials with AI.
Challenges and Obstacles	Barriers in technology infrastructure	Limited internet access and computer devices in some schools cause some teachers to have difficulties
Further Training Needs	Level of teacher need for further training	90% of teachers feel they still need further training for deeper mastery of AI
Teachers' Motivation to Use AI	Teachers' willingness to apply AI in teaching and learning activities after training	85% of teachers are interested in using AI technology in daily teaching after training

Table 1 shows that although the socialization activities succeeded in increasing teachers' understanding and skills in utilizing AI, there are still several challenges that need to be considered, especially regarding access to technology and further training.

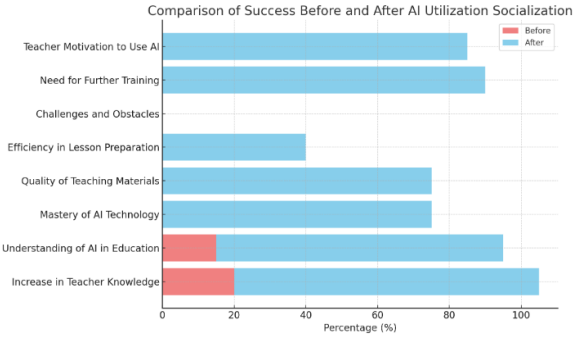

Figure 1. Comparison of Percentage of Success Before and After Socialization of AI Utilization in Making Teaching Materials for Elementary School Teachers in Bukittinggi City

Based on Figure 1, a comparison of the percentage of success before and after the socialization of the use of AI in creating teaching materials for elementary school teachers in Bukittinggi City can be seen. From this graph, it is clear that there is an increase in teachers' understanding, skills, and motivation after attending the training. For example, the increase in knowledge about AI and teachers' understanding of its use for education reached more than 80% after socialization, compared to a very low percentage before the training.

Figure 2. Socialization Activities for the Use of AI in Making Teaching Materials for Elementary School Teachers in Bukittinggi City by the PKM Team of Lecturers from the PTIK Study Program, UIN Sjech M.Djamil Djambek Bukittinggi

4 Conclusions

The socialization activity of AI utilization in the creation of teaching materials for elementary school teachers in Bukittinggi City has succeeded in increasing teachers' knowledge and skills in utilizing AI technology to develop more creative and interactive teaching materials. With AI technology, teachers can more easily create interesting materials for students, which can ultimately improve the quality of learning in the classroom.

However, the success of implementing AI in learning also depends heavily on the availability of technological infrastructure and ongoing support in terms of training and mentoring for teachers. It is hoped that in the future, the government and schools can focus more on providing adequate facilities and infrastructure and providing ongoing training on the latest technologies.

From the results of implementing this activity, there are several things that can be used as evaluation and recommendation materials:

a. Expanding Access to Technology
   To increase the effectiveness of AI implementation in schools, there needs to be increased access to technology, such as computers and internet connections in schools in Bukittinggi.
b. Continuous Training
   Teachers need continuous training to keep their skills in utilizing AI growing. Local governments can hold regular workshops or training.
c. Collaboration with Related Parties
   Collaboration with various parties, such as technology companies or higher education institutions, can accelerate the implementation of AI in schools.

With good evaluation and follow-up, it is hoped that the use of AI in education can be a real step in advancing the quality of education in Bukittinggi City and West Sumatra in general.

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