



## Optimising the Strengthening of Teachers' TPACK Skills in Developing Media and Learning Resources in Elementary Schools through Google Site

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### Abstrak

*Program pemberdayaan kemitraan masyarakat (PKM) yang bermitra dengan Majelis Dikdasmen dan PNF PDM Kabupaten Pinrang bertujuan untuk meningkatkan kemampuan TPACK guru-guru di tiga sekolah dasar di wilayah tersebut. Berdasarkan hasil wawancara dan observasi, terdapat beberapa permasalahan yang dihadapi mitra, yaitu: keterbatasan dalam pelayanan berbagai layanan, pemahaman dan penerapan konsep TPACK yang terbatas, serta kurangnya pengetahuan dan keterampilan dalam menggunakan aplikasi untuk membuat media dan sumber belajar. Program ini dirancang untuk memberikan pelatihan dalam pengembangan media dan sumber belajar berbasis teknologi, khususnya menggunakan Google Sites, guna meningkatkan kemampuan TPACK guru. Pelatihan dan pendampingan yang diberikan diharapkan dapat meningkatkan kinerja mitra dalam mencapai tujuan program kerja dan memperbaiki kualitas pembelajaran. Selain itu, program ini juga selaras dengan konsep Merdeka Belajar Kampus Merdeka (MBKM) untuk dosen dan mahasiswa, terutama yang mengambil mata kuliah di Program Studi Pendidikan Guru Sekolah Dasar. Hasil program PKM menunjukkan peningkatan yang signifikan dalam pemahaman TPACK guru, yang berhasil mengintegrasikan pengetahuan teknologi, pedagogi, dan konten secara efektif dalam proses pembelajaran.*

**Kata Kunci:** TPACK, Google Site

### Abstract

*The community partnership empowerment programme (PKM) in partnership with Majelis Dikdasmen and PNF PDM Pinrang Regency aims to improve the TPACK skills of teachers in three primary schools in the area. Based on the results of interviews and observations, there are several problems faced by partners, namely: limitations in various services, limited understanding and application of TPACK concepts, and lack of knowledge and skills in using applications to create media and learning resources. This programme is designed to provide training in developing technology-based media and learning resources, especially using Google Sites, to improve teachers' TPACK skills. The training and mentoring provided is expected to improve partner performance in achieving work programme objectives and improving learning quality. In addition, this programme is also in line with the concept of Merdeka Belajar Kampus Merdeka (MBKM) for lecturers and students, especially those taking courses in the Elementary School Teacher Education Study Programme. The results of the PKM programme showed a significant increase in teachers' TPACK understanding, who successfully integrated technological, pedagogical, and content knowledge effectively in the learning process..*

**Keywords:** TPACK, Google Site

### Introduction

With the development of information and communication technology, teachers are expected to keep up with the changes in 21st-

century learning. Husain (2014:184) stated that information and communication technology in education plays an important role as an intermediary in delivering knowledge without eliminating the traditional style of face-to-face

learning in the classroom. Rosenberg & Koehler (2015) mention that to achieve quality learning, a framework is needed to develop technology, pedagogy, and learning content. Mishra & Koehler (2006) explain that TPACK is a framework that connects knowledge about teaching (pedagogical knowledge), content knowledge, and the use of technology (technological knowledge). These three components provide the attraction and strength to foster active learning that focuses on students. The relationship between content, technology, and pedagogy represents a shift in the learning paradigm. Therefore, TPACK competence is very important for elementary school teachers because they need to teach multiple subjects and integrate technology into the learning process in accordance with the appropriate strategies.

Majelis Pendidikan Dasar Menengah dan Pendidikan Non Formal (Dikdasmen PNF) Pimpinan Daerah Muhammadiyah (PDM) Kabupaten Pinrang is an institution overseeing primary, secondary, and non-formal education under Muhammadiyah. Majelis Dikdasmen PNF PDM Pinrang has educational institutions at the primary school level, namely SD Muhammadiyah 2 Pinrang, SD Muhammadiyah 3 Pinrang, and SD Muhammadiyah Jampue. Of these three schools, two are accredited B and one is accredited C. One of the highlights in the accreditation process is the shortage of qualified educators and education personnel. Improving the capacity of educators and education personnel is key to successful education and provides a potential opportunity at schools and institutions to develop the capacity of educators. Teachers have a significant impact on the quality of learning, which in turn determines the quality of graduates. Therefore, the role of teachers is central and vital in education.

To achieve quality learning, a framework is needed to develop technology, pedagogy, and learning content. Technological Pedagogical Content Knowledge (TPACK) is a framework that links teaching knowledge (pedagogical knowledge), content knowledge, and the use of technology (technological knowledge). These three components provide the attraction and strength to foster active learning that focuses on students. The relationship between content, technology, and pedagogy is part of a paradigm shift in learning. TPACK competence is crucial for elementary school teachers because they teach multiple subjects and need to integrate

technology into the learning process with the appropriate teaching strategies.

As part of Muhammadiyah, Majelis Dikdasmen PNF's main duty is to organize, guide, supervise, and develop educational institutions in the fields of primary and secondary education, as well as non-formal education. However, they must also consider the development of primary, secondary, and non-formal schools in their region. Based on this, the PKM UNIMEN team collaborates with Majelis Dikdasmen and PNF PDM Pinrang to address issues and improve the management and skills capacity of the partner. Based on an interview with the head of Majelis Dikdasmen PNF PDM Kabupaten Pinrang, initial information regarding the partner's condition includes: 1) Majelis Dikdasmen PNF oversees various institutions in the field of primary and secondary education, requiring convenience services in various aspects, including an information system; 2) The elementary school teachers under Majelis Dikdasmen PNF have diverse educational backgrounds and technological skills. Most of them have basic knowledge of information technology; 3) The elementary schools under Majelis Dikdasmen PNF show varying levels of technological infrastructure.

Based on this, the PKM team will conduct training and mentoring in the development of media and learning resources for elementary schools based on Google Sites. This PKM project aims to enhance the performance of the partner in developing media and learning resources within the framework of TPACK for elementary school teachers in Amal Usaha Muhammadiyah (AUM) PDM Kabupaten Pinrang. Thus, teachers will have knowledge and skills to develop media and learning resources in line with the TPACK framework. The target partners for this initiative are the teachers in AUM Kabupaten Pinrang.

## **Method**

Methods or steps for community service to improve TPACK skills in developing media and learning resources in elementary schools through Google Site include: 1) Socialization and preparation stage; 2) Learning module preparation stage; 3) Training implementation stage; 4) Mentoring stage; 5) Evaluation and monitoring stage. Evaluation of the implementation of the program "Optimizing TPACK skills in developing media and learning resources in elementary schools through Google Site" is carried out by evaluating the process,

output, and outcome of the program for partners and the community.

## **Result and Discussion**

### **Phase I: Socialization and preparation**

In the socialization of the program, the PKM UNIMEM Team visited partners, namely the Majelis Dikdasmen and PNF PDM Pinrang. Socialization related to program implementation was carried out on 8 - 10 October 2024. The activity took place at the Muhammadiyah Da'wah Center (PUSDAM) building.



Figure 1: Socialization of the TPACK Strengthening Program

The socialization materials are: 1) introduction to the concept of TPACK and its importance in digital era learning; 2) Summary of training on developing media and learning resources using Google Site; 3) Benefits and expected impacts of the training program. The results of the socialization received a response from elementary school teachers in AUM Pinrang Regency of 90% expressing high interest in the program, this was certainly seen enthusiasm in the question and answer discussion after the presentation of the material.

The results of the Pre-Training Questionnaire obtained data of 75% of elementary school teachers in AUM Pinrang Regency felt less confident in integrating technology into learning, there were 80% of elementary school teachers in AUM Pinrang Regency had never used Google Site to create learning media, and 95% of elementary school teachers in AUM Pinrang Regency expressed the need for digital media development training.

### **Phase II: Learning module preparation**

At this stage, the PKM UNIMEM team together with Partners have formed a training

team consisting of; 1) 2 TPACK expert lecturers from Universitas Muhammadiyah Enrekang (Masnur, and Fuad Danindra); 2) 3 Google Workspace for Education expert practitioners; and 2. PGSD student assistants who participated in the MBKM Program training. Next, compile training modules in the form of; a) Module 1: Introduction and Basics of Google Site; b) Module 2: Interactive Learning Media Creation Techniques with Google Site; c) Module 3: Evaluation and Development of Digital Learning Media.

Furthermore, the team made technical preparations in the form of: 1) Provision of stable internet access by providing internet quota; 2) Creating a Google Workspace for Education account for each participant; 3) Preparation of training room with projector and sound system. As for the evaluation that will be carried out in the program. The PKM UNIMEM team provides a pre-test and post-test related to the level of understanding of TPACK and a Google Site-based learning media product assessment rubric and participant feedback forms related to the training program carried out.

### **Phase III: Implementation of training**

At this stage, the implementation team held training for Partners in Pinrang Regency. The training was held for 3 days on October 8 to 10, 2024 at the Muhammadiyah Da'wah Center Building in Pinrang Regency. The number of participants was 30 teachers of SD AUM PDM Pinrang. The implementation of the training session on the first day was the introduction of TPACK and Basic Google Site. At this stage of the session, teachers at AUM PDM Pinrang Regency were introduced to the concept of TPACK and the importance of technology integration in learning. Teachers were also invited to reflect on their current teaching practices and identify areas for improvement. Teachers were introduced to the features of Google Sites and how this platform can be used to create media and learning resources. The instructor demonstrated how to create a site, add content and organize the layout. One of the contents practiced was the creation of attendance with a barcode system.



Figura 2. Training on Absence and Barcode Creation

The next session in the second hasi is the Practice of Media and Learning Resources Development Participants were given the opportunity to practice the development of media and learning resources using Google Sites. They were asked to create a simple learning site in accordance with the subjects they teach. The next activity was the material on TPACK Integration in Media and Learning Resources Development. Teachers were guided to integrate TPACK principles in the development of their media and learning resources. They are asked to consider how content, pedagogy and technology can be effectively integrated in the learning sites they create.

Day Three, the next material is developing Learning Media in the form of Learning Videos. At this stage, participants are introduced to the basic concepts of learning videos, including the types of learning videos (e.g. screencast, talking head, animation) and their benefits in the teaching and learning process. Teachers are invited to analyze examples of effective learning videos. Teachers are taught how to plan a learning video, including determining learning objectives, identifying the target audience, and creating a storyboard. Participants are then trained on basic video shooting techniques, including lighting, sound and image composition. They were also introduced to various equipment that can be used, starting with smartphones.

The next session was on using video editing software, both desktop-based and online. Participants learned about basic editing techniques such as cutting clips, adding text and graphics, and setting transitions. Participants are taught instructional design principles relevant to the creation of learning videos. This includes principles such as segmentation, signaling, and personalization that have been proven effective in enhancing learning through video. Participants

are also trained on how to integrate various multimedia elements such as images, animation and audio into their learning videos.

#### Phase IV: Mentoring Process

The PKM UNIMEN team has run a comprehensive mentoring program for the teachers, covering various stages from training to implementation in the school environment. This mentoring is designed to ensure that the knowledge and skills acquired during the training can be effectively applied in daily learning practices.

The mentoring process is implemented through several complementary methods. Online consultations through WhatsApp groups are organized daily, providing a space for teachers to discuss various problems and challenges faced. In this platform, an average of 5-7 questions or discussion topics arise every day, mainly focusing on solving technical problems, developing learning content ideas, and technology integration strategies in the teaching and learning process.

In addition to daily consultations, the team also holds weekly virtual mentoring sessions using Google Meet or Zoom. These sessions run for eight weeks with a different focus in each period. In the first two weeks, the mentoring activities focused on reviewing and improving the learning media that had been developed by the teachers. The third and fourth weeks are geared towards discussing technology implementation strategies in the classroom. Meanwhile, the fifth and sixth weeks are focused on developing advanced content and interactive features to enrich students' learning experience. In the last two weeks, the discussion turns to evaluating the use of technology in learning and planning for continuous development.

To ensure the effectiveness of the mentoring, the team consisting of two TPACK expert lecturers, one practitioner, and two student assistants of the PGSD Study Program also conducted field visits twice a month. The first visit was carried out in the fourth week with the aim of observing the initial implementation of technology use in the classroom. The second visit, which took place on the eighth week, focused on comprehensive evaluation and feedback on the entire process.

Through this combination of intensive mentoring, the PKM UNIMEN team succeeded in building a sustainable support system for teachers in integrating technology into the

learning process, thus creating a more interactive and meaningful learning experience for students.

#### Phase IV: Evaluation and monitoring

The mentoring results showed significant success in developing learning media based on Google Site. 100% of teachers (30 people) successfully developed at least 1 learning media, 60% of teachers (18 people) developed 2-3 media for different subjects, and 20% of teachers (6 people) showed high productivity by developing more than 3 learning media. This indicates that the program was not only effective in transferring basic skills, but also managed to inspire most participants to go beyond the minimum expectations. This high level of productivity indicates that the training and mentoring methods used successfully motivated teachers to explore and apply their new knowledge extensively. It also indicates that the materials and support provided during the mentoring training are comprehensive enough to enable teachers to develop various types of learning media.

The implementation of learning media in the classroom also shows encouraging results, with 90% of teachers (27 people) having implemented learning media in the classroom at least once and 70% of teachers (21 people) reporting regular use (at least once per week). These results show that teachers are not only able to develop media, but also have the confidence to use them in class. Regular use by teachers indicates that Google Site-based learning media has become an integral part of the teaching and learning process.

The implementation of Google Site-based learning media has shown very positive results, both in terms of developing teacher competencies, increasing student engagement, and modernizing the learning process as a whole. This of course has a direct impact on student learning in the classroom. The results of a survey of 300 students provide valuable insight into the impact of the program on the learning experience. Increased Interest and engagement 85% of students felt learning became more interesting, indicating a positive impact on learning motivation. This high percentage indicates that the use of digital learning media has successfully captured students' attention and made the learning process more interactive. This is certainly an important factor, considering that

students' active participation is an indicator of academic success.

The results of the evaluation of teachers' TPACK understanding obtained an average increase of 40% which is an indicator to determine whether the effectiveness of the PKM program in improving teacher competence holistically. This significant increase indicates that the program succeeded in integrating technology, pedagogy, and content knowledge effectively. This indicates that the mentoring approach does not only focus on technical skills, but also on how to integrate technology pedagogically in the context of specific subjects.

The high adoption rate and positive responses from students indicate that this approach has great potential to improve the quality of education in the digital era. However, to ensure sustainability and long-term impact, it is important to continuously evaluate, develop and adjust the program. With the implementation of the recommendations provided, schools can maximize the potential of technology in improving the quality of learning and preparing students to face future challenges.

#### Conclusion

The Community Service Program (PkM) entitled Optimizing the Improvement of Teachers' TPACK Capabilities in Developing Media and Learning Resources in Elementary Schools through Google Sites has successfully had a positive impact on strengthening teacher competencies. By integrating the Technological Pedagogical Content Knowledge (TPACK) component, elementary school teachers are now more prepared to utilize technology such as Google Sites in the teaching process. Through this training, teachers have been able to; 1) Develop interactive and interesting learning media and resources for students; 2) Optimize the use of Google Sites as a platform for storing and distributing teaching materials that are easily accessible to students; and 3) Improve pedagogical skills supported by technology, so that learning methods are more varied, effective, and relevant to the digital era.

This activity is not only beneficial for partners but provides a forum for students to learn and implement knowledge in the field directly. In addition, this activity improves the ability of lecturers to develop problem solving and meet the KPI standards that have been set.



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