PAPER NAME

Artikel Merdeka Mengajar Platform.doc

AUTHOR

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WORD COUNT

6686 Words

CHARACTER COUNT

37655 Characters

PAGE COUNT

15 Pages

FILE SIZE

1.1MB

SUBMISSION DATE

Sep 4, 2023 11:04 AM GMT+8

REPORT DATE

Sep 4, 2023 11:05 AM GMT+8

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https://e-journal.undikma.ac.id/index.php/jurnalkependidikan/index

Month-Year. Vol., No.
e-ISSN: 2442-7667
pp xx.
Email: jlppm@ikipmataram.ac.id

UTILIZATION OF MERDEKA MENGAJAR PLATFORM BY A PRODUCTIVE MATHEMATICS TEACHER: IMPACTS, MOTIVATIONS, AND STRATEGIES

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Abstract: This mixed-method research employed a convergent research design to examine the impact, motivation, and strategy of using the Merdeka Mengajar platform by a productive mathematics teacher. This research used case studies in its qualitative research and utilized quasi-experiments in its quantitative research. The participant in this case study research was a productive mathematics teacher and the sample of the quasi-experiment was one of the classes taught by the teacher. Quantitative data were obtained from student learning outcome tests on statistics and qualitative data were obtained from semi-structured interviews with the teacher. The quantitative analyses used were descriptive statistics (mean and standard deviation) and inferential statistics (one-sample t-test). The qualitative analysis used refers to three steps: data condensation, data display, and decision-making. The impact obtained by mathematics teachers was an enhancement in competence and knowledge, including those related to teaching and technology. Learning innovations inspired by learning outcomes in PMM were effectively implemented in the mathematics classroom. What motivates teachers to optimize the use of PMM varies from the desire to continue learning and provide the best quality of learning to the desire to contribute to student success and to be role model. Productive mathematics teachers' strategies in optimizing the use of PMM in self-development focus on three elements: targets, consistency, notes and application with feedback, and self-reward as a supporting element.

Article History
Received:
Revised:
Published:

Key Words :
Merdeka Mengajar
Mathematics teacher
Impacts
Motivations
Strategies

How to Cite: First author., Second author., Third author, etc.. (20xx). The title. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran, vol*(no). doi:https://doi.org/10.33394/jk.vxxyyi

https://doi.org/10.33394/jk.vxxyyi

Introduction

Mathematics is one of the most important subjects because of its wide application in everyday life. Mathematics, as part of STEM (Science, Technology, Engineering, and Mathematics) can aid students in cultivating the skills needed for citizenship, life, and careers (Maass & Engeln, 2019). Mathematics teaches us many things, from systematic thinking to critical thinking. A & Sihotang (2021) argue that many students in Indonesia think that mathematics is a very difficult subject to comprehend and they consider that mathematics lessons are often boring due to the lack of innovation to provide quality and fun learning.

Month-Year. Vol., No.
e-ISSN: 2442-7667
pp xx.
Email: jlppm@ikipmataram.ac.id

Therefore, one of the things that needs attention in mathematics education is the development of the professionalism of mathematics teachers.

The role of teachers is essential in the world of education. Teachers contribute to preparing students to face increasingly large and complex challenges as the times develop (Mamoh & Bete, 2019). In addition, teachers play an important role in providing better education and quality learning to students (El-ahwal, 2020; Fadhliyah et al., 2020; Fatmawati & Utama, 2023; König et al., 2021; Nelly et al., 2022; Suryawati et al., 2021). This is supported by (Sheveleva et al., 2021) survey of 600 teachers which shows that one of the most important factors affecting the quality of education is teacher professionalism.

Mathematics teachers encounter numerous challenges in delivering quality mathematics learning. They also face the task of adapting to changing standards and expectations for learning mathematics and statistics today (Hollebrands & Lee, 2020). These changes have become even more pronounced following the pandemic. During the pandemic, all elements in the Education sector, including teachers, have had to adapt by shifting to online activities, including learning (Daniel, 2020; Ikram & Rosidah, 2023). Some of the problems and challenges faced by teachers include the lack of pedagogical and professional competence (Utami et al., 2021). Another problem is that teachers often have limited resources to support their professional development (Hollebrands & Lee, 2020).

Professional development through self-development is one of the tasks that teachers must do (Safruddin et al., 2020). This self-development is included in the category of professional development (Jawahir & Yusuf, 2021) which is carried out so that teachers have competence in carrying out the learning process (Nuryanti et al., 2022). Self-development is a task that must be done to obtain optimal learning and education quality (Ambarwati, 2019; Jawahir & Yusuf, 2021; Kartomo & Slameto, 2016; Nuryanti et al., 2022; Sennen, 2020). Self-development activities are an indicator of work productivity that can help teachers as agents of change in the field of education (Andriani et al., 2022; Lestari et al., 2022). These self-development activities can be in the form of training, seminars, workshops, courses, and so on (Jawahir & Yusuf, 2021; Kartomo & Slameto, 2016).

Throughout the pandemic, various digital platforms have emerged to assist teachers' self-development. More teachers are turning to platforms that provide online self-development activities (Hollebrands & Lee, 2020). These platforms have a great influence on teaching quality as teachers interact with various resources in planning and developing their competencies and learning (Lei & Medwell, 2021; Pepin et al., 2017). The Indonesian government in this case also did not remain silent and launched various digital self-development platforms that can be utilized by teachers in developing their competencies.

One of the platforms that can assist teachers in developing their profession and teacher innovation is Merdeka Mengajar (previously named Guru Berbagi). This platform facilitates the government, teachers, and education practitioners to collaborate and share their ideas and best practices (Jawahir & Yusuf, 2021). Merdeka Mengajar can help teachers design and implement innovative learning (Setyawan & Syamsuryawati, 2023). By providing a sharing and training platform, the government hopes that teachers can provide the best quality of learning for students. This application is also an effort made to improve teacher professionalism on an ongoing basis (Ni Putu et al., 2023). Therefore, this application is very useful for teachers, especially for those who want to do self-development or develop their competence.

Although the government has launched many self-development platforms, including Platform Merdeka Mengajar (PMM), there is still a lack of supporting information and

research on these platforms (Jawahir & Yusuf, 2021). Research by Jawahir & Yusuf (2021) discussed Guru Belajar and Guru Berbagi (now called PMM) and how teachers respond to their self-development using these two applications. Jawahir & Yusuf (2021) used literature data and questionnaires as data sources. The questionnaire was distributed to 29 teachers. The study only discussed in general terms the programs followed, benefits, reasons for use, and difficulties encountered. Their research did not discuss further and in detail what was obtained and whether the innovations obtained were effectively applied in the classroom or not.

There was a study conducted by Budiarti (2022) that investigated how mathematics teachers utilized PMM. However, the study did not specify the benefits obtained, especially regarding the details of the learning innovations obtained. In addition, the benefits obtained are only explained qualitatively and have not been proven empirically. Data related to the impact of PMM on mathematics teachers and learning requires both quantitative and qualitative data.

Another problem that arises is the minimal use of PMM. Our preliminary study by surveying 55 mathematics teachers from different schools showed that only 30 knew the use of PMM. In fact, of the 30 who use PMM, only 14 use them regularly. This lack of use is supported by data obtained from gurubelajardanberbagi.kemdikbud.go.id. Calculated since 2 September 2023 from the website, there are a total of 1,406,085 users. However, posts related to lesson plans and articles were only 671,644 and 14,082 respectively. The video posts were only 190 and the number of action posts was only 1439.

The results of our preliminary study also revealed that many mathematics teachers found it difficult to complete the training or simply view and listen to the works of teachers on PMM due to several reasons including lack of time due to many other matters to be completed, an environment that is also lazy to do self-development if it is not required by superiors, and lack of will and initiative. This is supported by Jawahir & Yusuf (2021) who suggested that lack of willingness and support from the environment are some of the factors that hinder the optimal use of PMM. Fadhliyah et al. (2020) added that one of the difficulties found when teachers access PMM is related to limited time.

The reasons that prevent mathematics teachers from maximizing PMM for self-development and learning certainly contradict the fact that there are productive mathematics teachers who can maximize PMM to develop their competencies and improve their teaching quality. In addition, the main tasks of teachers are to develop themselves and become agents of change that can have a significant impact on the quality of education and learning. Therefore, teachers should continue to improve themselves by continuing to learn and develop themselves, and if necessary learn from productive mathematics teachers in conducting self-development.

Based on the problems stated earlier. Researchers consider it important to know how productive mathematics teachers are in conducting self-development, what motivates them, and what strategies they use to optimize the use of the platform. Information related to these aspects is very important because it can be used as a reference in developing and optimizing PMM further so that it can further facilitate and assist teachers in developing their competence. In addition, the results of this study can make less productive teachers more interested and motivated to use PMM because they can find out the benefits that can be obtained, see empirical evidence of the implementation of things that have been learned in PMM, and know the motivations and strategies behind optimizing the use of the platform.

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e-ISSN: 2442-7667
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In addition to the problems previously described, the researcher considers it important to discuss topics related to the use of PMM because it is the recommended research topic suggested by (Clark-Wilson et al., 2020) which is related to the impact of long-term use of technology by teachers in mathematics classrooms. Clark-Wilson et al. (2020) suggested that teachers often comment that the self-development undertaken has little relevance to their classroom experience. Wilson continues that what they ask for are resources that are practical and can be applied easily. This is certainly closely related to the topic discussed in the research related to how to use PMM, including its application in the classroom.

Based on the background previously described, the problem formulations and research questions in this study are:

1. *What benefits did the productive mathematics teacher gain from using PMM?*
2. *Are the learning innovations gained from PMM effective in the mathematics classroom?*
3. *What motivates the productive mathematics teacher to optimize the use of PMM?*
4. *What are the strategies of the productive mathematics teacher to optimize the use of PMM?*

Research Method

1. Design

This research is a mixed-method research that used a convergent design. This design is used when we will collect quantitative and qualitative data simultaneously (Creswell & Clark, 2018). In quantitative research of this study, researchers use quasi-experiments to test whether the learning inspiration obtained from the Merdeka Mengajar platform is effective in the classroom. As for the qualitative research, researchers used case studies by conducting interviews to obtain data related to the benefits of using PMM from the teacher's perspective. In qualitative research, researchers also collect data related to the motivation and strategies that the teacher has in optimizing the use of PMM. We used a case study because it focuses on providing an in-depth understanding of a case (Creswell & Poth, 2018). The case in this study is the utilization of PMM by productive mathematics teachers which consists of impacts, motivations, and strategies.

2. Participants

The respondent of the qualitative study was a mathematics teacher (coded PT) who was categorized as productive. The participant chosen was a productive mathematics teacher who often conducts self-development activities every day by utilizing PMM. As for the quantitative part, the sample taken was one class taught by PT using strategies inspired by the Merdeka Mengajar Platform.

3. Instruments

The instruments in this study were divided into two, namely the main instrument and supporting instruments. The main instrument is the researcher himself while the supporting instrument is the interview guide. This interview guide contains several questions that will be asked by the researcher. The questions asked were about the impacts of using PMM, motivation, and strategies to optimize the use of the platform. In quantitative research, we do not use instruments because the learning has been carried out and the statistical test score data already exists.

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4. Data Collection and Data Analysis

We collected quantitative data by collecting mathematics test results from the teacher. The teacher used Google Form to give their tests. The material assessed was statistics. At the school, students had to score higher than 76 to pass the exam.

For the first research question, we used SPSS which stands for Statistical Product and Service Solutions to analyze quantitative data. There were two criteria for effectiveness. Firstly, the average score of each class must be higher than 76. Secondly, the percentage of students passing the minimum criteria must be more than 85%. We used the mean score to determine the average mathematics score of each class. We also calculated the number and percentage of students who passed and did not pass the minimum criteria of 76 (KKM or Minimum Completion Criteria).

Before conducting the t-test, we had to check whether the data obtained followed a normal distribution or not. In this case, we used the Shapiro's Wilk test. The criteria of the test were if $p > 0.05$ the data follows the normal distribution. However, if $p \leq 0.05$ then the data is not normally distributed.

If the data follows normal distribution, then a one-sample t-test is used to determine whether the mean score of each class is significantly higher than 76 or not. The hypothesis is:

$$H_0 = \mu_p \leq 76 \text{ vs } H_1 = \mu_p > 76$$

μ_p is the average score parameter of the mathematics test results. The null hypothesis (H_0) means that the score is lower than or equal to 76 while the alternative hypothesis (H_1) indicates that the mathematics test results are higher than 76. The decision to reject H_0 is taken when the t value is more than zero and the significance value is less than 0.05. However, if the data does not follow the normal distribution, then we employed a one-sample Wilcoxon signed rank test.

Regarding qualitative data collection, we used interviews. We conducted the interviews by first enquiring about the documentation of the interviews, either transcribed live, audio-recorded, or video-recorded. The interviews used in this study were semi-structured. The interviews were not fully guided by the Interview Guidelines as a supporting instrument. Questions may change or develop based on the responses given by the participants.

The data analysis used in this qualitative research follows three main steps: data condensation, data display or presentation, and decision-making (Miles et al., 2020). In data condensation, the researcher filters the data by determining which data should be the main focus to be re-examined. However, the researcher in this case did not discard or delete data that was not the main focus. Researchers keep the data for comparison purposes at a later time because researchers may use it again when the temporary conclusions obtained are inadequate. The researcher in this step organized and categorized the responses given by mathematics teachers based on the utilization of PMM, which are the impacts, motivations, and strategies to optimize it. In Data Presentation or Display, researchers displayed data in the form of transcripts, tables, or pictures to compare the responses given by the interviewed mathematics teachers. Based on the results of the comparison, the researcher then made conclusions. The conclusions obtained may be provisional. In this case, the researcher will re-examine the data that is not the main focus or consider collecting more data.

In this study, data validity was achieved using triangulation. Triangulation is a method used to validate research findings (Creswell, 2019). The triangulation used is data

triangulation by comparing interview results from different research respondents. By comparing data from several respondents, more credible data can be obtained.

Result and Discussion

1. Impacts

The researcher interviewed PT to find out the benefits he obtained after using PMM. The following interview excerpt shows the response of PT.

Interviewer : *What benefits have you gained after using PMM?*

PT : *First of all, I felt a change in terms of my competence, especially related to pedagogic competence and professional competence. Through PMM, I learned how to design and deliver quality learning and it broadened my knowledge about teaching. The PMM has a lot of training in it. This helped me develop my competence. In addition, I am often inspired by the proof of work, inspirational videos, and tools provided.*

Secondly, because of the frequent access to PMM, I have become more familiar with and more proficient in utilizing technology or platforms that can support my teaching.

Thirdly, many students were more enthusiastic and more active after I implemented some PMM-inspired lessons. Many of them easily understood the material after I implemented what I read in PMM.

The benefits obtained by PT are similar to those suggested by (Tuan et al., 2017) that a combination of online and offline professional development training can improve teachers' knowledge of teaching. The other benefit obtained by PT from using PMM is that teachers are more proficient in using various platforms or applications in teaching mathematics. This is similar to research conducted by (Thurm & Barzel, 2020) that the frequency of technology use in mathematics learning increased during the professional development program. The considerable use of technology by PT is supported by the opinion (Tabach & Trgalová, 2019) that technology has a major impact on teacher practice and facilitates new approaches to learning and teaching.

The researcher then asked for an example of learning that had been implemented in the classroom and was inspired by the learning outcomes at PMM. PT's response can be seen in the following interview excerpt.

Interviewer : *Can you describe one example of a lesson you implemented that was inspired by or learned from PMM?*

PT : *So you see, one of the activities that I often do at PMM is looking at proof of work or inspirational videos. One time, I saw a lesson that used Market Place Activity and I thought it was interesting because it was as if buying and selling was happening in the market.*

Interviewer : *Then do you apply the learning in class?*

PT : *No, I was just inspired. Because I also want to design my learning, I modify the elements in it and adjust it to the learning that will be applied in my class.*

Interviewer : *What are those elements?*

PT : *In MPA, there is something called presentation of work or group*

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work. In my lesson, I asked each group to make a short video explaining the material or discussing the questions as interesting as possible based on their reading on the internet. Now, in the next meeting, each group will watch the video explanation of the material or discussion of the problem and they will take turns to provide feedback or questions from the videos. Finally, as a closing, a conclusion will be made. Then for the reward element, I use voting to choose which video is the most interesting and which is the easiest to understand. Of course, the voting results will be used as the basis for awarding prizes.

We can see how PT modifies what he has read and seen in PMM to apply in her classroom. In the two interview excerpts, we can inferred that students also benefited from the innovation made by the productive teacher. The researcher then asked permission to look at one of the video submission tasks and one of the video screenshots. These can be seen in Figure 1 and Figure 2 below.

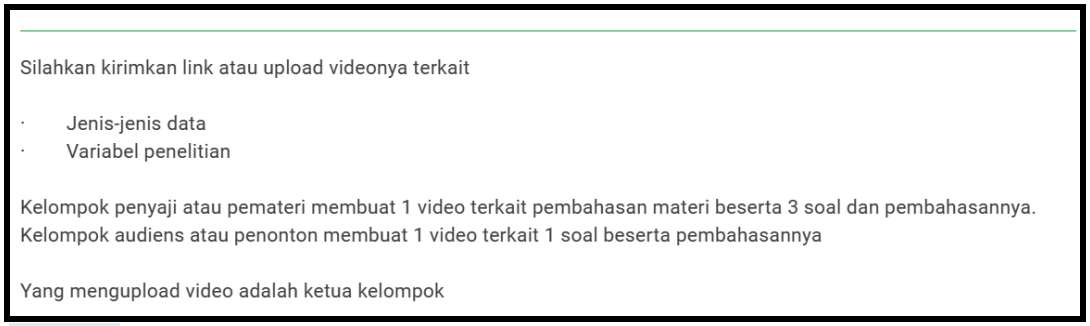

Figure 1. Screenshot of Video Task Explanation of Material or Problem Discussion

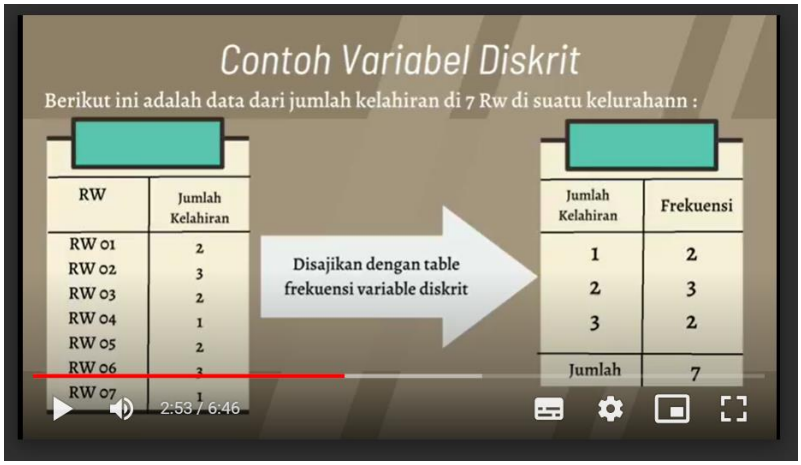

Figure 2. Screenshot of One of the Group Work Videos

The interviews and the Figures showed that the mathematics teacher applied what they had learned in PMM. Similarly, it was reported (Jawahir & Yusuf, 2021) that many teachers after attending PMM modified and gained ideas for designing lessons to be implemented in their future classrooms.

The impact on students in terms of increasing their understanding is certainly not enough if only described qualitatively. Therefore, the researcher asked PT for permission to analyze the statistical test scores of students who had been taught with the use of the video to find out whether the learning inspiration obtained from PMM was effective in being applied in the classroom. The results of the descriptive statistical analysis are as follows.

Table 1. Results of The Implementation of Direct Instruction

Below Standard (Number/Percentage)	Above the Standard (Number/Percentage)	Mean	Standard Deviation
2/6.25%	30/93.75%	89.21	7.43

Two students scored below the standard and 30 students scored above the standard (93.75%). This means that one of the learning effectiveness requirements set out earlier has been met. The mean of the students' statistics test score is more than 76, which is 89.21 with a standard deviation of 7.43. Descriptively, the mean is more than 76. However, researchers need to check whether the score is significantly more than 76 or not. Therefore, the researcher conducted a one-sample t-test to find out.

Before conducting the t-test, the researcher first conducted a normality test as a prerequisite test to determine whether the data obtained followed a normal distribution or not. The normality test used is the Shapiro-Wilk Test. H_0 indicates that the data obtained is normally distributed while H_1 indicates that the data obtained is not normally distributed. The criterion for rejecting H_0 is a significance value that is less than 0.05. The results of the test are as follows.

Table 2 Results of Shapiro Wilk Test

Df	Sig.
32	0.164

The table shows a significance value of more than 0.05, which means that H_0 fails to be rejected. This means that the students' statistics test score data is normally distributed.

Furthermore, the researcher conducted a one-sample t-test, and the results are shown in Table 3 below.

Table 3 Results of One-Sample t-Test

Sig.	t value
0.000	10.06

Based on the criteria explained earlier, the t value of more than 0 (10.06) and the significance value of less than 0.05 indicate that H_0 is rejected. That is, students' statistics learning outcome scores are significantly more than 76. This adds to the evidence that teacher-inspired learning in PMM is effective to be implemented in the classroom. That is, PMM has an impact not only on teachers but also on students.

The results of this study are supported by several studies which state that the use of PMM can improve teacher competencies that can help the learning process (Aulia et al., 2023; Defa et al., 2023; Marisana et al., 2023; Ramdani et al., 2022; Suryadi & Hidayati, 2023), including in mathematics learning (Budiarti, 2022). Our research findings are also supported by the findings of (Susanti et al., 2023; Triscova et al., 2022) who reported that teachers found it helpful in understanding the implementation of the Merdeka curriculum and were highly inspired in designing teaching modules and creative content that could support the learning process.

2. Motivations

Responses related to PT's motivation in optimizing the Merdeka Mengajar platform can be seen in the following interview excerpt.

Interviewer : What motivated you to optimize the use of this PMM in your self-development?

PT : o Initially I also just saw this platform on the internet. They said it was good and complete for self-development purposes. Then, I diligently do self-development here because the benefits obtained at PMM are many. All the needs around learning and teaching are there. The materials provided are complete and of high quality, credible. So, the rest is the will of the teacher himself. Then, I am diligent in doing self-development because, in my opinion, no teacher is perfect. So I need to keep learning to develop my competence as a teacher. I must continue to strive to provide the best quality of learning. How can I expect students to continue to learn and develop themselves while I do not do it? Therefore, I must be a role model.

Interviewer : What does it mean that no teacher is perfect and needs to keep learning?

PT : So nowadays, changes can happen at any time. So teachers also need to keep learning to meet the needs of the times. It could be that the teaching methods that we have been using are not very relevant in the future. Then, I also saw that many of my students lacked basic mathematical skills. From here I feel the need to contribute by becoming an educator who prepares them to be able to compete in the world of work. I also want to contribute to their success and success.

We can see that what motivates PT to continue to do self-development is her desire to be a role model to her students, the desire to continue to develop in fulfilling and adapting to the needs of the times, and the desire to provide quality learning. PT considers that teaching methods may change with the times so she considers it necessary to keep updating her knowledge and skills. The quality, completeness, and credibility of the materials also motivate PT to use PMM in developing herself. According to him, it is only the willingness of the teacher that determines whether the teacher can optimize PMM. The same thing was stated by Defa et al. (2023) that PMM is an almost complete platform and all is returned by teachers whether they want to optimize it or not. Motivation related to the desire to contribute to students' success is in line with the results of a study by Täht et al. (2023) where helping students to succeed (and witnessing their progress) motivated mathematics teachers to

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e-ISSN: 2442-7667
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continue teaching. The desire to develop competence was also found in a study by Jawahir & Yusuf (2021) where it motivated teachers to use PMM.

The motivations mentioned by PT are things that encourage her to continue to do self-development, including the use of PMM. This is something that some of the teachers in our preliminary study may not have, as many of them rarely do self-development due to other commitments.

3. Strategies

PT has its strategy so that the utilization of PMM can be maximized. This can be seen in the following interview excerpt.

Interviewer : What is your strategy to optimize the use of this PMM?
PT : Always focus on four aspects. The first is the target, so at least every day there must be something to read or watch from the proof of work or inspirational videos in PMM. If participating in training, then you must also have a target of how many percent will be completed. If you learn about devices, then there must be a target, for example, how many devices must be compiled in a week.
Interviewer : What if you have a lot of activities in a day? What about the family?
PT : It's impossible to be active for 24 hours, there must be free time. So you can utilize that free time, even 5-15 minutes is enough. Another important element here is consistency because if this is not achieved and maintained, laziness will continue to come to us.
Interviewer : Is there anything else?
PT : Notes and application, This is the third important point, so taking notes on what we have learned and how we apply it in the classroom. The application, of course, can be a combination of various innovations that have been provided by other maths teachers at PMM. Then don't forget to always ask for feedback from teachers or students regarding what has been learnt so that we know what is right or wrong and what needs to be improved.
Interviewer : Is there anything else?
PT : Self-reward. Doing activities that require thought and concentration is also tiring. So once a month, I always give myself a reward, which could be going on holiday, going out to eat, buying certain things, and other desires. But keep in mind that this self-reward still needs to be adjusted to our budget and salary. Always look for alternatives that don't cost too much.

Based on the interview excerpt, there are three important elements along with one supporting element that need to be considered to optimize PMM as a means of self-development. The first is the target. Mathematics teachers need to set daily or weekly learning targets so that they have clear goals. The second is consistency. According to PT, this element is equally important because if this element is not present, laziness will dominate and make us less likely to do self-development. Third is notes and application. Mathematics teachers need to record the important things they have learned and then modify them to be applied in the classroom according to the needs of the classroom. Finally, teachers also need to occasionally

pay attention to self-reward that grants teachers' wishes to be more motivated in doing self-development.

4. Implications

Our results have shown the impact, motivations, and strategies of productive mathematics teachers' use of PMM as a means of self-development. The government can use these results as a reference to create a program in which each school is given targets for self-development activities to be carried out with the Penggerak teacher as the one who provides guidance, monitoring, and evaluation. Regarding these targets for using PMM, the government can work with schools to provide awards so that teachers are more motivated to use the platform to develop their competencies. Based on the strategies put forward, the government can also conduct socialization in various media that show strategies that can support teachers to optimize the use of PMM.

Based on the many benefits of using PMM, the researcher suggests adding access rights for students majoring in education or alumni of education majors to get an early overview of the curriculum being implemented. This is because the use of digital platforms like this can help the teaching practices of mathematics teachers as stated by (El-ahwal, 2020) where e-learning platforms can help develop the teaching practices of mathematics education students. Another suggestion from the researcher is the unification of various platforms into the PMM platform so that teachers are not too confused by the number of platforms that must be accessed.

Conclusion

Based on the results of the research conducted, the following conclusions were obtained.

1. The benefits obtained by mathematics teachers are not only learning innovations but also increased competence and knowledge, including those related to learning, teaching, and technology. The benefits were also felt by the students as evidenced by the students' scores reaching 89 and the pass percentage exceeding 90%.
2. The learning innovation, inspired by PMM in the form of a modified Market Place Activity learning method supported by video project assignments, was effectively implemented in the mathematics classroom.
3. What motivates productive mathematics teachers to optimize the use of PMM is the desire to continue learning, to develop competencies, and meet and adapt to the needs of the times as teachers. Another motivation is the desire to provide the best quality of learning and contribute to preparing students to be able to compete in the world of work. Another motivation mentioned was the desire to be a role model and motivation for the students themselves.
4. Productive mathematics teachers' strategies for optimizing the use of PMM in self-development focus on three elements: targets, consistency, notes, and application with feedback. The supporting elements of this strategy include self-reward which aims to further motivate mathematics teachers in conducting self-development.

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e-ISSN: 2442-7667
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Recommendation

This study only involved one productive mathematics teacher. As a suggestion, researchers interested in the topic of PMM could explore involving several mathematics teachers from different levels or perhaps compare it with teachers from any other subject in the school. Other researchers might consider examining the problems that occur with the use of PMM in a school and how the school could implement school action research to address these problems. Another possibility is to survey what self-development platforms teachers frequently access and make comparisons between them. This can certainly be a reference for the government to continue to improve the quality of PMM. Finally, other researchers or experts in the field of education, especially media development or self-development platforms, can collaborate with the government and platform developers to research and develop a platform for teachers that already contains all the necessary elements from administration to self-development.

Acknowledgment

We would like to express our gratitude to the Ministry of Education, Culture, Research, and Technology of Indonesia that have supported us by providing funding to conduct our research.

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