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Evaluation of the Results of Professional Development of Mathematics Teachers in East Nusa Tenggara Province

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ABSTRAK

Literatur saat ini telah menyoroti tantangan dan peluang untuk pengembangan profesi guru di Indonesia. Namun studi yang secara khusus mengevaluasi pengembangan profesi guru matematika masih sedikit. Terkait hal tersebut, penelitian survei ini dilakukan untuk menjelajahi kendala yang dihadapi para guru matematika setelah mengikuti pendidikan profesi. Penelitian ini melibatkan 195 guru matematika yang tersebar di tujuh kabupaten. Instrumen penelitian adalah tautan kuesioner berupa googleform yang disebarkan menggunakan grup WhatsApp. Hasil penelitian ini menunjukkan bahwa para guru menghadapi tantangan dalam perencanaan pembelajaran, mengalami keterbatasan waktu karena jadwal mereka yang padat. Akses terbatas terhadap materi pengajaran, teknologi, dan sumber daya pengembangan profesional terkini dalam memberikan layanan terbaik. Evolusi paradigma pendidikan, perubahan kurikulum, dan pergeseran pedagogis yang cepat dapat menjadi tantangan bagi guru yang sedang bertugas untuk mengimbanginya, yang membutuhkan pengembangan profesional dan kemampuan beradaptasi yang berkelanjutan.

Kata Kunci: Evaluasi; Pendidikan Matematika; Pendidikan Profesional Guru

ABSTRACT

Current literature has highlighted the challenges and opportunities for teacher professional development in Indonesia. However, studies that specifically evaluate mathematics teacher professional development are still few. In this regard, this survey study explored the obstacles mathematics teachers face after undergoing professional education. This study involved 195 mathematics teachers spread across seven districts. The research instrument was a questionnaire link in a Google Form distributed using a WhatsApp group. The results of this study indicate that teachers face challenges in lesson planning, experiencing time constraints due to their busy schedules. Limited access to the latest teaching materials, technology, and professional development resources hinders providing the best service. The rapid evolution of educational paradigms, curriculum changes, and pedagogical shifts can be challenging for in-service teachers to keep up with, which requires continuous professional development and adaptability.

Keywords: Evaluation; Mathematics Education; Teacher Professional Education

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1. INTRODUCTION

Teacher professional development is dominant in determining teaching quality improvement (El Islami et al., 2022; Setyo et al., 2024). Related to that, Alt (2018) suggested increasing ICT activities by using constructivist learning theory in teacher professional development. In today's rapidly changing world, where new technologies emerge and become part of students' lives (Juandi et al., 2023; Tamur et al., 2021; Tamur, Ndiung, et al., 2023) teachers must master and apply a pedagogical approach that accommodates new technological frameworks (Komaladewi et al., 2024; Tamur, 2021; Tamur et al., 2020; Tamur, Komaladewi, et al., 2024; Tamur, Wijaya, et al., 2024; Saputro et al., 2024).

Furthermore, extensive teacher professional development that includes the use of strategies, content, and technology must be carried out to achieve the ultimate goal of learning (Akyuz, 2022; Dikmen & Demirer, 2022; Khong et al., 2023; Thohir et al., 2023). In addition, teacher motivation to participate in professional development must be increased through continuing education such as in-service teacher professional education. In-service teacher professional education can be a wise solution in accelerating the improvement of teacher professionalism and improving the quality of education (Kalin, 2022; Sari & Munawar, 2024).

However, the challenges professional teachers face today are quite complex and diverse, covering aspects related to the quality of education, policy support, socio-economic conditions, and technological developments (Cadero-smith, 2020; Kozikoglu & Senemoglu, 2021; Syaputra, Hidayati, & Hasanah, 2023). In the context of professional teachers in Indonesia, studies from the World Bank and UNESCO often highlight that the quality of education in Indonesia is still below international standards. A dense curriculum causes this problem, as well as ineffective teaching methods and low student motivation (World-Bank, 2019b). Another challenge is related to teacher competence. Many teachers in Indonesia still do not have adequate pedagogical and professional competence, which can affect the quality of teaching (World-Bank, 2019b). In addition, although the government has implemented a certification program to improve the quality and professionalism of teachers, many teachers still feel that the training is irrelevant to the classroom teaching challenges (Tias & Tongjean, 2022).

Other technical challenges are related to teacher skills in accessing and mastering digital technology (Kuputri, 2020; Warsito et al., 2023; Damanik & Widodo, 2024; Kurniawan et al., 2024). The problem of facilities and infrastructure was even highlighted in the 2019 report from the World Bank regarding the lack of infrastructure availability, especially in the Kalimantan and Nusa Tenggara regions (World-Bank, 2019a). In addition, in learning, teachers have faced stress and fatigue in the field of education for decades due to low salaries, long working hours, heavy workloads, and lack of resources (Heda & Mbato, 2022; Rahayu, Muhtadi, & Ridwan, 2022).

Evaluation of professional teacher development is critical because it directly impacts the quality of education and student learning outcomes (Bognar et al., 2024; Stutchbury et al., 2024). In this regard, this study was conducted to explore the difficulties and problems of teachers, especially those who have completed professional teacher education or are currently in office as active teachers. The identified difficulties and challenges can be used as a baseline and basis for developing strategic plans and profiles of professional teacher education graduates. These objectives are achieved by answering the following questions; what are the problems of teachers in planning learning?

2. METHOD

This study uses a survey method and uses a questionnaire distributed via Google Forms to collect data. The questionnaire is compiled using closed and open questions. Closed questions use predetermined answer choices, namely multiple choice, checkbox, or Likert scale while open questions give teachers the freedom to answer in their own words. The questionnaire that has been compiled and published in the form of a Google Forms link is then distributed via WhatsApp groups and emails from teachers. This study involved 195 teachers from two provinces, namely NTT and NTB, spread across seven districts, namely West Manggarai, Manggarai, East Manggarai, Sumba, Southwest Sumba, Alor, and Bima. The research instrument is in the form of a Google form questionnaire link distributed using a WhatsApp group. Data collection is carried out via Google Forms which is connected to email. Table 1 presents data on teachers who are respondents in this study.

Table 1. Data on Alumni of Teacher Professional Education

Regency	Number of Respondents	Percentage
Bima	15	7,69%
Manggarai	68	34,87%
Manggarai Barat	31	15,89%
Manggarai Timur	28	14,35%
Sumba	20	10,25%
Sumba Barat Daya	19	9,74%
Alor	14	7,17%

The incoming data is stored in Google Sheets. Furthermore, the data is analyzed qualitatively and presented in the form of a percentage chart. The data presentation uses simple data visualization for multiple choice or checkbox answers in the form of graphs.

3. RESULT AND DISCUSSION

a. Problems of Teachers in the Classroom

Despite having attended teacher professional education, in the learning process the teachers stated that they still experienced problems. The first problem is related to translating the curriculum into learning planning. The detailed survey results related to the first question are described in Table 2.

Table 2. Teachers' Difficulties in Learning Planning

Learning Planning	Percentage
Determining learning objectives	16,4%
Determining learning indicators	10,3%
Choosing a learning model	30,3%
Choosing learning media	14,4%
Determining learning activities	9,2%
Determining aspects of learning evaluation	19,5%
Creating learning media	49,2%
Making learning evaluations	40,5%
Compiling a diag test	21%

Based on Table 2, eight difficulties were identified for teachers in planning learning. In describing the independent curriculum that has been in effect since 2020, teachers face various difficulties even though the items are substantial materials when following the education process. These difficulties are seen, among others, in determining learning objectives, learning indicators, media selection, media development, making evaluations, and compiling diagnostic tests as an initial step in implementing differentiated learning.

From the analysis results, the dominant difficulties are related to media development and making learning evaluations. Of the 195 teachers who responded to this survey, 96 people or 49.2% of them stated that they had difficulties in developing learning media. This result is in line with the current state of the literature which underlines the difficulties of teachers in developing media. The results of research from (Wahyuningsih et al., 2021) identified the difficulties of teachers in developing media, namely related to the lack of technical skills in using digital devices, low knowledge of strategies for organizing learning materials that will be applied to digital learning resources. These results are also in line with research conducted by (Majir et al., 2021; Tamur, Pantaleon, et al., 2023) that teachers still have difficulty in using technology that can help their learning performance and professionalism.

Although teachers have not maximized their efforts in developing media independently, the results of the analysis show their efforts in using existing media prepared by educational institutions. This is also in line with research conducted by (Salam et al., 2023) that teachers can adapt to digital media and offer insights on how to support and improve their efforts. However,

it does not mean that teachers are resigned to existing conditions, they continue to strive to carry out professional development related to the development of learning media according to the needs and challenges of future learningn.

b. Obstacles in the Learning Process

The curriculum suggests the use of learning models that condition students to be active, discuss, collaborate, present, and carry out collaborative projects (Nurhidayah et al., 2021; Rahmania, 2021). In line with this, the guidelines for implementing teacher professional education include several recommended learning models in the curriculum, namely problem-based learning (PBL), Project-Based Learning (PjBL), and guided discovery learning models. In detail, the survey results related to the second question leading to this component are described in Table 3 below.

Table 3. Implementation of Professional Teacher Learning

Learning Model	Percentage
PBL	81,5%
PjBL	19%
Discovery learning	28,7%
Other models	5%

Based on Table 3, it can be said that teachers have implemented learning in accordance with the curriculum recommendations when they completed their professional teacher education. The most dominant learning model applied is PBL, which is 81% or 159 teachers who have implemented it in learning after completing their professional education. Although they have followed the professional program, teachers also continue to apply the recommended learning model such as cooperative learning, which is 5%.

In general, the impact of professional education is on improving services and the quality of learning and helping to improve teacher professionalism by emphasizing work ethics, moral responsibility, and discipline in carrying out tasks. Professional teachers are better able to adapt to various situations and challenges in the educational environment (Krulatz et al., 2024). Professional teachers produced from teacher education can also support the achievement of students' academic abilities. Current literature supports a positive relationship between professional teachers and students' academic abilities and leadership support (Jazuli et al., 2023).

However, teachers face obstacles in implementing learning supported by the use of media. Figure 1 presents a diagram of the challenges faced by teachers in the learning process.

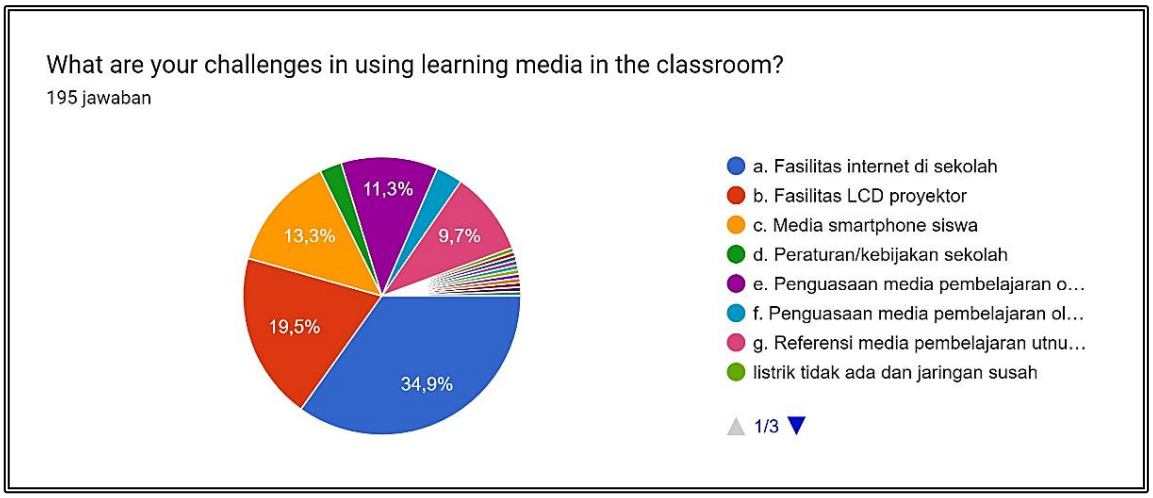

Figure 1. Tantangan Guru dalam Proses Pembelajaran

Based on Figure 1, the dominant obstacles faced by teachers in the learning process are the provision of internet facilities at school (34.9%), provision of supporting infrastructure such as projectors (19.5%), supporting infrastructure for digital learning such as student smartphone media (13.3%), mastery of learning media (11.3%), and others such as electricity networks (10%). The quality learning process as expected is faced with other technical challenges related to teacher skills in accessing and mastering digital technology (Damanik & Widodo, 2024; Kuputri, 2020). Until now, the problem of facilities and infrastructure has even been highlighted, namely the lack of availability (World-Bank, 2019a). However, teachers do not face stress caused by low salaries as reported by (Heda & Mbato, 2022). This may be due to the consequences of the professional allowances received by teachers after obtaining a teacher certificate.

4. CONCLUSION

This research answers two main problems faced by professional teachers or those who have taken professional education, namely related to learning planning and also related to the learning process. From the results of the analysis, it was found that teachers still have difficulty in translating the curriculum into learning planning. In the learning process, teachers have implemented models according to curriculum suggestions.

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