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PERCEPTION OF SDN 05 MUARO KALABAN TEACHERS ABOUT TRAINING IN DEVELOPING NUMERACY QUESTIONS BASED ON THE TESTMOZ APPLICATION

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ABSTRACT
Technology-based training is a strategic effort to improve teacher competence, especially in developing numeracy questions. This study aims to describe the teachers' perceptions of SDN 05 Muaro Kalaban about training in developing numeracy questions based on the testmoz application. The method used was descriptive quantitative. This research was conducted at SDN 05 Muaro Kalaban, an elementary school in West Sumatra Province. The sampling technique applied was total sampling, with seven teachers as respondents. Data were collected through a Likert scale-based questionnaire, which included numeracy question development, content and context, application, and testmoz-based question development. Data were analyzed using the percentage technique. The results showed that most teachers responded positively to the training, with "agree" and "strongly agree" ratings in all indicators. Teachers felt that the training helped them understand concepts, develop grids, and improve their skills in developing numeracy questions. In addition, the testmoz application was considered to make it easier for teachers to design technology-based evaluations efficiently. The training effectively improves teachers' competencies and strengthens their confidence in integrating technology into learning. Thus, it can be concluded that teachers of SDN 05 Muaro Kalaban positively perceive the training on developing numeracy questions based on testmoz. This finding supports the importance of technology-based training in teacher professional development.
Keywords: numeracy; perception; question development; testmoz application.

ABSTRAK
Pelatihan berbasis teknologi merupakan upaya strategis dalam meningkatkan kompetensi guru, terutama dalam pengembangan soal numerasi. Penelitian ini bertujuan untuk mendeskripsikan persepsi guru SDN 05 Muaro Kalaban tentang pelatihan pengembangan soal numerasi berbasis aplikasi testmoz. Metode yang digunakan adalah deskriptif kuantitatif. Penelitian ini dilakukan di SDN 05 Muaro Kalaban, sebuah sekolah dasar yang terletak di Provinsi Sumatera Barat. Teknik sampling yang diterapkan adalah total sampling, dengan tujuh guru sebagai responden. Data dikumpulkan melalui angket berbasis skala Likert, yang mencakup: pengembangan soal numerasi, konten dan konteks, penerapan, serta pengembangan soal berbasis testmoz. Analisis data dilakukan menggunakan teknik persentase. Hasil penelitian menunjukkan bahwa mayoritas guru memberikan respon positif terhadap pelatihan, dengan penilaian "setuju" dan "sangat setuju" di semua indikator. Guru merasa pelatihan membantu mereka memahami konsep, mengembangkan kisi-kisi, dan meningkatkan keterampilan dalam menyusun soal numerasi. Selain itu, aplikasi testmoz dinilai memudahkan guru dalam merancang evaluasi berbasis teknologi secara efisien. Pelatihan ini efektif dalam meningkatkan kompetensi guru, dan memperkuat kepercayaan diri mereka dalam mengintegrasikan teknologi dalam pembelajaran. Dengan demikian, dapat disimpulkan bahwa guru SDN 05 Muaro Kalaban memiliki persepsi positif tentang pelatihan pengembangan soal numerasi berbasis testmoz. Temuan ini mendukung pentingnya pelatihan berbasis teknologi sebagai bagian dari pengembangan profesional guru.

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Kata kunci: aplikasi *testmoz*; numerasi; pengembangan soal; persepsi.

Introduction

In this 21st-century era, education must ensure teachers have skills that support technology and information, as well as media-based teaching. Information Communication Technology (ICT) has become essential to supporting educational activities in Indonesia (Ngongo et al., 2019). In education, teachers need to improve competencies in the professional domain to become more proficient and effective in their teaching tasks through competency-based training that includes technological skills (Mijares, 2022). Integrating technology with education, particularly in developing numeracy skills, is becoming increasingly relevant.

Through the Minimum Competency Assessment (AKM) program since 2021, the government has emphasized the importance of numeracy as a reasoning ability in mathematics (Kemendikbud, 2020). Numeracy is the ability to apply the concept of numbers and perform arithmetic operations in various daily life situations (Apriliani et al., 2023; Linuhung et al., 2023; Pratiwi et al., 2024). Numeracy skills include the application of mathematical concepts and rules in everyday problems, including dealing with unstructured problems, having various alternative solutions, or even not having a complete solution(Pratiwi, 2021).

Previous studies have shown that technology in education can improve teacher and student competencies. There was an average increase of 59% in teacher competence and skills in designing web-based media to support literacy and numeracy (Muin et al., 2024). Training in making educational games effectively increases elementary school teachers' understanding of using the Wordwall application as a supporting tool in developing teaching materials related to numeracy literacy (Sitompul et al., 2024). Teachers experienced increased competence in making android-based AKM questions, and 84% of students passed the AKM during the test (Effendi et al., 2023). Technology in the context of education is effective in improving students' numeracy skills (Mumayizah et al., 2023). The effectiveness of technology-based training in helping teachers understand the concept of developing numeracy-based questions (Kartiwi & Ismayani, 2022). Ardhana's research (2020) showed that 93.30% of students accept using testmoz as an online test integrated with Google Classroom and get a positive response from students and support for its future use.

Based on previous studies, research focuses more on the effectiveness of technology on teacher and student competencies. While the aspect of teacher perception as the primary user of technology often gets less attention. Especially teacher perceptions that focus on the testmoz application as a numeracy-based question development tool. In fact, teacher perceptions are critical to ensure the use of technology for the necessary needs (Akram et al., 2022; Rahmi et al., 2019).

Although research by Rosmiyati et al. (2024) meracy questions based on the testmoz application? This study aims to fill the gap by describing the perceptions of SDN 05 Muaro Kalaban teachers towards the numeracy question development training based on the testmoz application. Thus, the results of this study are expected to be a reference for implementing similar training in the future.

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Research Methods

The method used in this research is the quantitative descriptive method. This method aims to describe, analyze, and explain the object of research factually, as well as conclude based on the observed phenomena based on numerical data (Sulistyawati et al., 2022). This quantitative research aims to describe the perceptions of SDN 05 Muaro Kalaban teachers about training in developing numeracy questions based on the testmoz application. The research was conducted in the odd semester of the 2024/2025 academic year. The population included all SD Negeri 05 Muaro Kalaban teachers who participated in training on developing numeracy questions based on the testmoz application, totaling seven people. The sampling technique applied was total sampling, involving seven teachers as respondents. This technique was chosen due to the relatively small population and to ensure that all training participants could provide feedback on the effectiveness of the training provided.

Data were collected through a questionnaire technique. This study used a Likert scale-based closed questionnaire as a data collection instrument. Closed questionnaires are a method of collecting data by presenting several questions or statements relevant to the issue being studied (Prawiyogi et al., 2021). The closed questionnaire consists of several lists of statements, where respondents will provide answers by choosing the options measured by the researcher. The Likert scale in this study consists of four answer options: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The questionnaire lattice for teachers' perceptions of training on developing numeracy questions based on the testmoz application is listed in Table 1.

Table 1. Lattice of Teacher Perception Questionnaire on Numeration Problem Development Training

No.	Indicator	Number of Statements	Statement Number
1	Development of numeracy questions	3	1, 2, 3
2	Content, context, and numeracy level	9	4, 5, 6, 7, 8, 9, 10, 11, 12
3	Application	4	13, 14, 15, 16
4	Development of numeracy questions based on the testmoz application	11	17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27

The questionnaire was then developed in accordance with the grid that had been prepared in Table 1. Before being used, the questionnaire was validated first to ensure its validity and accuracy. This study uses content validity, which is measured based on expert opinion; the instrument validation process is carried out by two mathematics lecturers and one Indonesian language lecturer. Based on the validation results, the questionnaire was declared feasible and valid to be used as an instrument in this study.

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The data analysis technique used is the percentage technique, with the formula adapted from Suryanti et al., (2019) as follows.

$$P = \frac{f}{N} \times 100\%$$

Description:
F: the frequency being sought for the percentage.
N: number of frequencies/number of individuals.
P: Percentage number.

The results of the analysis will be categorized by percentage the responses 'strongly agree' and 'agree', which are then categorized as positive perceptions. Meanwhile, the 'disagree' and 'disagree' responses are considered negative perceptions (Suryanti et al., 2019).

Results and Discussion

The results of the study provide an overview of the perceptions of SDN 05 Muaro Kalaban teachers about the training on developing numeracy questions based on the testmoz application. The percentage results of each indicator in the questionnaire filled out by teachers at SDN 05 Muaro Kalaban were analyzed and presented in detail. Table 2 below presents the research results on the indicators of numeracy question development.

Table 2. Perceptions of Teachers' Responses Regarding Indicators of Numeracy Problem Development.

No.	Statement	Percentage			
		SA	A	D	SD
1	This training helps me understand the concept of developing numeracy questions.	14.29%	85.71%	0%	0%
2	I understand the numeracy question development material presented in this training.	14.29%	85.71%	0%	0%
3	This training can improve my ability to develop quality numeracy questions.	14.29%	85.71%	0%	0%
	Average	14.29%	85.71%	0%	0%

Table 2 shows that the average on the indicator of developing numeracy questions is 14.29% of teachers strongly agree, and 85.71% agree in all statements. Based on the percentage above, it can be concluded that this training helps teachers understand the concepts and materials for developing numeracy questions and can improve their ability to build quality numeracy questions. This confirms that the ability of teachers to develop numeracy test questions plays a vital role in encouraging the improvement of students' thinking skills. Suryanti et al., (2022) also confirmed that teachers are the primary key to numeracy learning success.

The percentage results of teachers' perceptions of content, context, and numeracy level indicators are presented in Table 3 below.

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Table 3. Percentage of Teachers' Responses on Content, Context, and Numeracy Level Indicators.

No.	Statement	Percentage			
		SA	A	D	SD
4	I understand the four numeracy contents better after attending this training.	14.29%	85.71%	0%	0%
5	I can develop numeracy question grids well.	14.29%	85.71%	0%	0%
6	I understand all the question forms that must be present in numeracy questions.	14.29%	85.71%	0%	0%
7	After this training, I can develop numeracy questions based on relevant contexts.	14.29%	85.71%	0%	0%
8	After attending this training, I can develop numeracy questions based on the appropriate cognitive level.	14.29%	85.71%	0%	0%
9	I feel more confident in creating numeracy questions after attending this training.	14.29%	85.71%	0%	0%
10	I gained many new ideas related to developing varied and interesting numeracy questions.	14.29%	85.71%	0%	0%
11	This training enriched my ability to assess students' numeracy skills better.	0%	100%	0%	0%
12	This training provided me with practical strategies for developing diverse numeracy questions.	14.29%	85.71%	0%	0%
	Average	12.70%	87.30%	0	0

Based on Table 3, it can be explained that, on average, 12.70% of teachers strongly agree, and 87.30% agree on content, context, and cognitive level indicators. It can be seen that the majority of teachers, 14.29%, chose strongly agree, and 85.71% of teachers agree in almost all statements except for statement 11, which stated 100% agree. Based on the percentages above, it can be concluded that this training helps teachers to understand the four numeracy contents better. In addition, teachers can also develop numeracy question grids well and understand all forms of questions that must be included in numeracy questions. This shows that teachers feel more prepared to prepare questions by the AKM standard, as also found in Kartiwi & Ismayani (2022). Teachers can develop numeracy questions based on relevant contexts and appropriate cognitive levels. In addition, this training also increased teachers' confidence in creating numeracy questions. Through this training, teachers gained many new ideas for developing varied and interesting numeracy questions. Teachers' ability to assess students' numeracy

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skills also increased. In addition, this training provides practical strategies for teachers in developing diverse numeracy questions. This finding is supported by Rahmasari (2022), who states that teachers need a deep understanding of content and cognitive levels to improve student competence in numeracy.

The percentage results of teachers' perceptions of the application indicators are presented in Table 4 below.

Table 4. Percentage of Teachers' Responses on the Application Indicator.

No.	Statement	Percentage			
		SA	A	D	SD
13	I can apply the numeracy problem development techniques learned in my class.	14.29%	85.71%	0%	0%
14	I can adapt the examples of numeracy problems learned in the training for students with different ability levels.	28.58%	71.42%	0%	0%
15	This training helped me better understand the challenges in developing numeracy questions and how to overcome them.	14.29%	85.71%	0%	0%
16	I plan to use the numeracy question development methods learned in this training in future teaching and learning activities.	14.29%	85.71%	0%	0%
	Average	17.86%	82.14%	0%	0%

Based on Table 4, it can be seen that on average 17.86% of teachers strongly agree, while 82.14% of teachers agree with each statement on the application indicator. 14.29% of teachers strongly agree, and 85.71% of teachers agree that teachers can apply the numeracy problem development techniques learned in the classroom. Also, this training helps teachers better understand the challenges in developing numeracy problems and how to overcome them, and teachers plan to use the numeracy problem development methods learned in this training in the following teaching and learning activities. Then, 28.58% of teachers strongly agree, and 71.42% agree that teachers could adapt the examples of numeracy problems learned during the training for students with various ability levels. This shows that the numeracy problem development materials given to teachers can improve their teaching quality in the classroom, as expected with the new curriculum reform by the government. This is by Ardellea & Hamdu (2022), who say that efforts to improve the quality of the curriculum that continues to be carried out by the government aim to improve teaching materials and learning processes in each existing educational unit. For this reason, teachers must be able to improve their teaching skills per the applicable curriculum.

The results of the percentage of teacher perceptions on the indicator of developing numeracy questions based on the testmoz application are presented in Table 5 below.

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Table 5. Percentage of Teacher Responses Regarding Indicators of Numeracy Problem Development Based on Testmoz Application.

No.	Statement	Percentage			
		SA	A	D	SD
17	This training helped me understand the use of the testmoz application to develop numeracy questions.	14.29%	85.71%	0%	0%
18	The testmoz application is straightforward to use.	28.58%	71.42%	0%	0%
19	The various tests in the testmoz application help me make choices in making numeracy questions.	28.58%	71.42%	0%	0%
20	The various types of tests in the testmoz application are beneficial for online tests.	28.58%	71.42%	0%	0%
21	The test results in the testmoz application help me to evaluate students.	14.29%	85.71%	0%	0%
22	The test results in the testmoz application make it easy to find student abilities.	28.58%	71.42%	0%	0%
23	This training can improve my ability to compile numeracy questions based on the testmoz application.	14.29%	85.71%	0%	0%
24	This training is beneficial because the Testmoz application can be used to prepare numeracy-based evaluations at school.	14.29%	85.71%	0%	0%
25	Using the testmoz application during the pilot test was very easy.	42.86%	57.14%	0%	0%
26	The training provided a better understanding of using technology to develop numeracy questions.	14.29%	85.71%	0%	0%
27	I used the testmoz application in the training to create and score numeracy questions.	14.29%	85.71%	0%	0%
	Average	22.86%	77.14%	0%	0%

Based on Table 5, it can be seen that on average 22.86% of teachers strongly agree, and 77.14% of teachers agree on the indicator of developing questions based on the testmoz application. There are 14.29% of teachers strongly agree, and 85.71% of teachers agree that this training helps teachers understand the use of the testmoz application for developing numeracy questions; the test results in the testmoz application are beneficial for teachers to evaluate students, this training can improve teachers' ability to build numeracy questions based on the testmoz application, this training is beneficial because the testmoz application can be used

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in preparing numeracy-based evaluations at school, this training provides a lot of better understanding of how to use technology in developing numeracy questions, teachers are very capable of using the testmoz application in training to create and assess numeracy questions. Then there were 28.58% of teachers strongly agree, and 71.42% of teachers agree that the testmoz application was straightforward to use, the various types of tests in the testmoz application helped teachers to make choices in making numeracy questions, the multiple types of tests in the testmoz application were beneficial for online tests, the test results in the testmoz application made it easy for teachers to find out student abilities. There were 42.86% of teachers who strongly agree, and 57.14% of teachers who agree that using the testmoz application during the trial was straightforward. According to Karuniawati (2022), technology can potentially increase efficiency and effectiveness in the learning process. Based on the description above, it is clear that the testmoz application is handy and can help teachers develop numeracy questions and evaluate student test results.

Based on the percentage of the four indicators, it can be said that the perception of SD N 05 Muaro Kalaban teachers towards the training on developing numeracy questions based on the testmoz application has achieved good results and generally received a positive response. The teachers of SD N 05 Muaro Kalaban assessed "Strongly Agree" and "Agree" on all statements in each indicator of this training. This shows that the training activities that have been carried out have succeeded in providing an understanding of the concepts and materials for developing numeracy questions. Training activities can also improve teachers' ability and knowledge in developing technology-based questions. Salsabila et al. (2023) also revealed that technology can support the development of facilities and infrastructure along with scientific progress.

Using the testmoz application to develop questions is an innovation in learning evaluation. Testmoz provides online test creation services for free or paid (Ardhana, 2020). According to Ardhana & Zahroh (2023), the testmoz application is considered adequate in increasing motivation and more interesting learning, can bring innovation in evaluation, and provide in-depth and detailed feedback.

This study's results can improve teachers' ability to develop numeracy questions. This is by Kartiwi & Ismayani (2022) state that technology-based training effectively helps teachers understand the concept of developing numeracy questions. Numeracy includes the ability to apply numbers and data in everyday life (Napfiah et al., 2023), requiring relevant learning approaches. This training provides teachers with a better understanding of the development of numeracy questions that are relevant to the context of daily life. This study supports research by Kartiwi & Ismayani (2022) and Rosmiyati et al. (2024) found that the testmoz application can be used by teachers to design numeracy-based questions with AKM standards. In addition, these results are consistent with the findings of Ardhana & Zahroh (2023), who stated that using web-based learning applications creates more interesting learning interactions.

This training significantly impacts teachers' competencies, especially in utilizing technology for learning evaluation. Teachers feel more confident in using the testmoz application, which aligns with Karuniawati (2022) research that technology can improve learning efficiency, and Muin et al. (2024) believe that technology-based training contributes significantly to teacher competence.

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Application-based training approaches such as testmoz have advantages over conventional methods because they offer flexibility in question design and assessment. Azhar & Rahmawati (2022) research shows that features such as diverse question types and detailed evaluation results are significant advantages over manual approaches.

The results showed that training in developing numeracy questions based on the testmoz application positively contributed to improving teacher competence, both in the aspects of understanding concepts, preparing questions, and applying technology. This finding is consistent with previous studies showing that technology integration in education can increase teacher engagement and motivation (Ardhana & Zahroh, 2023). In addition, these results indicate the importance of continuous training to strengthen teachers' ability to implement technology in the learning process. Such training can be a model to support the implementation of the Minimum Competency Assessment, especially in improving students' numeracy skills. This study strengthens the argument that app-based technologies such as testmoz have the potential to revolutionize educational evaluation approaches.

While this study provides valuable insights into teachers' perceptions of testmoz application-based training, there are limitations to this study, namely the limited sample size. This study only involved seven teachers from one primary school, so the results cannot be generalized to a wider population of teachers. Future research needs to be conducted with a larger sample and involve various schools for more representative results.

Conclusion and Suggestion

This study aims to describe the teachers' perceptions of SDN 05 Muaro Kalaban towards training in developing numeracy questions based on the testmoz application. Based on the results and discussion, it was found that the majority of teachers responded positively to this training. Teachers felt that the training helped them understand the concept of numeracy question development, develop appropriate question grids, and improve their skills in using the testmoz application for technology-based evaluation. The results show that this training effectively improves teachers' competencies. Teachers also expect similar training to be conducted continuously to support technology-based learning innovations. Thus, it can be concluded that teachers of SDN 05 Muaro Kalaban positively perceive the training on developing numeracy questions based on testmoz. This finding supports the importance of technology integration in teachers' professional development and can be the basis for developing similar training in the future.

In this study, researchers suggest that teachers continue to use the testmoz application to develop numeracy questions and conduct learning assessments for students. It is also hoped that educational institutions, especially at SDN 05 Muaro Kalaban, will organize technology-based training on an ongoing basis. Adding further mentoring or practice sessions is necessary to help teachers who still face obstacles in understanding the material or operating the application. For future research, studies with larger samples and more schools are recommended to make the results more generalizable. In addition, research can explore the long-term impact of using testmoz on student learning outcomes and its application in teaching through qualitative methods such as interviews or observations.

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