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Interactive Digital Teaching Materials Based on Numeracy : Development Studies on Statistical Material with The Context of Musi Banyuasin

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Abstract

Students' numeracy skills remain low, and the potential of Android-based digital learning resources has not been fully optimized. This study developed digital teaching materials enriched with local contexts from Musi Banyuasin to make learning more relevant, meaningful, and connected to students' real-life experiences. The aim was to produce valid and practical digital teaching materials and to describe students' responses after their use. The research employed the Plomp development model, consisting of preliminary, construction, and evaluation phases. The participants were 20 seventh-grade students, and data were collected through questionnaires, observations, documentation, and interviews, then analyzed using descriptive quantitative and qualitative techniques.The results indicate that the developed materials are highly valid in terms of content, construct, language, ICT components, and the integration of local contexts. The materials also met the "very practical" criteria, with practicality scores above 82% in both implementation sessions. Students' numeracy performance improved, with most achieving the "good" category, suggesting that embedding local contexts has a positive influence on strengthening numeracy skills. In conclusion, the digital teaching materials are feasible, practical, and effective in supporting students' numeracy development. The use of contextualized digital features enhances engagement, facilitates independent learning, and enables teachers to deliver interactive and relevant mathematics instruction. The findings imply that such locally contextualized digital materials are suitable for broader classroom implementation and have strong potential for scaling up in future numeracy-focused learning innovations.

Keywords: digital, teaching materials, numeracy, Plomp model, statistics

Abstrak

Kemampuan numerasi siswa masih tergolong rendah, sementara potensi sumber belajar digital berbasis Android belum dimanfaatkan secara optimal. Penelitian ini mengembangkan bahan ajar digital yang diperkaya dengan konteks lokal Musi Banyuasin untuk menjadikan pembelajaran lebih relevan, bermakna, dan terhubung dengan pengalaman nyata siswa. Tujuan penelitian adalah menghasilkan bahan ajar digital yang valid dan praktis serta mendeskripsikan respons siswa setelah penggunaannya. Penelitian menggunakan model pengembangan Plomp yang meliputi fase pendahuluan, konstruksi, dan evaluasi. Partisipan penelitian terdiri atas 20 siswa kelas VII, dengan data dikumpulkan melalui angket, observasi, dokumentasi, dan wawancara, kemudian dianalisis menggunakan teknik deskriptif kuantitatif dan kualitatif. Hasil penelitian menunjukkan bahwa bahan ajar digital yang dikembangkan sangat valid dari aspek konten, konstruk, bahasa, komponen TIK, serta integrasi konteks lokal. Bahan ajar juga memenuhi kriteria "sangat praktis" dengan skor kepraktisan di atas 82% pada kedua sesi implementasi. Kemampuan numerasi siswa meningkat, dengan sebagian besar berada pada kategori "baik", yang menunjukkan bahwa penerapan konteks lokal berdampak positif dalam memperkuat keterampilan numerasi. Dengan demikian, bahan ajar digital yang dikembangkan layak, praktis, dan efektif untuk mendukung pengembangan numerasi siswa. Penggunaan fitur digital yang kontekstual meningkatkan keterlibatan belajar, memfasilitasi kemandirian, dan membantu guru menyampaikan pembelajaran matematika secara interaktif dan relevan. Temuan ini mengimplikasikan bahwa bahan ajar digital berbasis konteks lokal layak untuk diimplementasikan lebih luas serta berpotensi besar untuk dikembangkan dalam inovasi pembelajaran numerasi di masa mendatang.

Keywords: bahan ajar, digital, numerasi, Plomp, statistik

INTRODUCTION

Numeracy is a fundamental ability that enables individuals to reason mathematically and to formulate, use, and interpret mathematics for solving problems in various real-world contexts (OECD, 2024). This ability involves the use of mathematical concepts, procedures, facts, and tools to explain and predict real-life phenomena as well as to make appropriate decisions based on relevant information (Geiger & Schmid, 2024). Numeracy also requires learners to acquire, interpret, use, and communicate numerical information in different forms, such as graphs, tables, and charts, and to interpret analytical results for predicting, formulating, and making decisions (Bolstad, 2023). Hence, numeracy plays a central role in supporting critical thinking, problem-solving, and informed decision-making in everyday life. Its importance is emphasized particularly for students at the secondary level (Kurniati et al., 2024), as numeracy is essential not only for academic contexts but also for professional and social settings (O'Meara et al., 2024).

Numeracy equips learners with logical and analytical thinking skills and enhances their competitiveness in the era of globalization and technology (Mulyono. et al., 2025), enabling them to recognize the role of mathematics in real-life situations and to make reasoned judgments and responsible decisions (Díez-Palomar et al., 2023; Winarni et al., 2025). Despite its importance, studies indicate that numeracy levels in Indonesia remain low (Hilda Nur Alifah Setyo Utami & Lailatul Inayah, 2024; Santia & Dwi Handayani, 2023). Some studies have also shown the fact that one in two students fails to meet literacy standards, and two in three fail to meet numeracy standards (Gloriani et al., 2023; Rakhmawati & Mustadi, 2022). Several factors contribute to this low achievement, including teacher-centered instruction (Muhaimin et al., 2024), limited student exposure to literacy-based questions (Aini et al., 2024), and difficulties in modelling real-world problems mathematically (Chen, 2022). Additionally, mathematics tasks tend to be routine and do not sufficiently promote numeracy skills (Kohar et al., 2022), and access to supporting numeracy-oriented learning materials remains limited (Mikidas et al., 2024). This low level of numeracy is also observed in Musi Banyuasin, where many students struggle to understand basic mathematical concepts and apply them in everyday contexts.

Preliminary study further indicates that seventh-grade students struggle to interpret statistical representations such as bar charts and frequency tables (Pallauta et al., 2021; Sari et al., 2018). They also face difficulties connecting statistical data with unfamiliar real-life contexts, such as regional economic activities, environmental issues, and community practices (Martin et al., 2019; Nugraha & Basuki, 2021; Setiawan & Sukoco, 2021). Besides that, integrating local wisdom and the surrounding environment into learning can enhance the connection between concepts and students' real-life experiences (Shufa & Adji, 2024). Contexts familiar to students facilitate the visualization of learning situations, making abstract knowledge more concrete and meaningful (Agra et al., 2019; Albuquerque, 2019). (Windi & Suryaman, 2022). One of the local contexts is local wisdom in Musi Banyuasin. Local wisdom that can be leveraged in learning includes agriculture and plantation practices, considering that the majority of students in Musi Banyuasin come from farming families, making these contexts closely aligned with their daily experiences.

Previous studies have developed various numeracy-oriented learning materials, such as digital worksheets based on the Assessment Madrasah Competence (AKMI) (Nurwahid, 2024), AI-assisted digital worksheets (Taufiqurrahman et al., 2022), AKM-based digital worksheets for geometry (Miftah & Setyaningsih, 2022), and culturally contextualized numeracy worksheets (Damayanti et al., 2022). These studies demonstrate the potential of digital worksheets to

support numeracy development. Other studies also developed digital teaching materials such as digital worksheets, which have been shown to enhance students' numeracy skills (Syafruddin et al., 2022).

The low numeracy skills of students in Musi Banyuasin highlight the need for more contextual and engaging learning materials. Considering that the majority of students come from farming families, local wisdom in agriculture and plantation practices can be effectively leveraged, as these contexts closely align with their daily experiences. Integrating such local contexts into digital learning materials allows content to be presented interactively and visually, facilitating the visualization and understanding of mathematical concepts while linking numeracy skills to real-life situations, thereby enhancing both motivation and learning comprehension (Leton et al., 2025). Classroom observations also show that Android devices, although widely owned by students, are underutilized for learning. In addition, existing teaching materials were perceived as insufficiently engaging and lacking contextual relevance. These conditions further underscore the need for interactive digital teaching materials that leverage students' technological access while embedding local contexts to increase relevance and meaningful learning.

However, there remain research gaps. Some studies have specifically developed interactive digital teaching materials based on numeracy for statistical content, but no studies have integrated specific local contexts from Musi Banyuasin into digital numeracy materials, and the optimization of students' Android devices as interactive learning tools has received limited attention. Therefore, this study offers important novelty through the development of interactive digital teaching materials based on numeracy that integrate statistical content with local contexts from Musi Banyuasin, utilizing authentic regional data such as environmental conditions, socio-economic activities, and local cultural characteristics. This integration is expected to enhance conceptual understanding, engagement, and the meaningfulness of learning. Based on this gap, the problem addressed in this study concerns the lack of digital learning materials that are interactive, contextually relevant to students' local environments, and designed specifically to strengthen numeracy in statistical topics. Thus, this study seeks to answer the following research questions: (1) What are the characteristics of valid and practical numeracy-based interactive digital teaching materials for statistical content within the Musi Banyuasin context? and (2) What is the potential effect of using these materials on students' numeracy skills? The contribution of this research lies in providing a contextual, technology-enhanced instructional solution that utilizes students' Android devices, integrates real data from Musi Banyuasin, and offers an innovative model for strengthening numeracy skills in statistical learning and addressing both pedagogical and contextual challenges identified in prior studies.

METHODS

Participants

The research subjects were selected purposively, consisting of 20 seventh-grade students, comprising both male and female learners with heterogeneous academic abilities. This group was considered representative of the diverse user characteristics targeted in the development of the numeracy-based digital teaching materials. The study was conducted from April 16 to May 15, 2025, focusing on testing digital teaching materials for statistics using the Musi Banyuasin context. Through the Wizer.me platform, students engaged with digital materials

designed to be engaging, easy to use, and aligned with their numeracy needs. The involvement of subjects with varied ability levels provided comprehensive data on user characteristics, the practicality of the materials, and their potential effectiveness in improving students' numeracy skills.

Research Design

The development process followed the Plomp (2013) model, which consists of three main phases: Preliminary, Construction, and Evaluation. The Preliminary Investigation phase included purposive selection of the research subjects and site, analysis of the learning materials, curriculum, and textbook review, and identification of essential supporting resources. During the construction phase, the numeracy-based digital teaching materials underwent systematic design, prototype creation, and expert validation to ensure their quality, coherence, and pedagogical feasibility. The criteria for selecting validators included expertise in mathematics education, experience in developing digital instructional materials, and strong knowledge of digital learning tools (Sugiharni et al., 2022). Validators were also required to possess a solid understanding of curriculum standards and pedagogical approaches to ensure the validity and instructional soundness of the numeracy-based digital teaching materials. Finally, in the Evaluation phase, the effectiveness of the developed materials was assessed through field-testing, followed by systematic analysis of the results to determine their practicality and potential impact on students' numeracy performance.

Data Collection

Data collection in this study was carried out through validation sheets for the numeracy-based digital teaching materials, questionnaires, interviews, and a numeracy literacy test. The validation sheet assessed four key aspects: content, construct, ICT, and language. These aspects are distributed across 20 detailed evaluation items. The student questionnaire consisted of 10 statements designed to measure the practicality and usability of the digital teaching materials during classroom implementation. the validation sheets and student questionnaires were developed using a Likert scale to facilitate systematic assessment. The validation sheets asked experts to rate 20 items across four aspects—content, construct, ICT, and language—on a 4-point Likert scale, enabling a quantitative evaluation of the material's validity. Similarly, the student questionnaires consisted of 10 statements on practicality and usability, also rated on a Likert scale, to measure students' perceptions during classroom implementation. Using the Likert scale allows for consistent, comparable, and easily interpretable data across respondents. The numeracy test comprised 8 items focused on data interpretation, representing three cognitive levels: understanding, application, and reasoning (Gantiyani et al., 2022). These instruments collectively provided comprehensive data on the validity, practicality, and potential effectiveness of the developed digital teaching materials.

Data Analysis

The validation data, collected from expert reviewers, were analyzed quantitatively. The scores were aggregated and converted into average scores for each aspect and for the overall material. The validity criteria were interpreted based on predetermined categories, e.g., very good for very valid, good for valid, enough, less for invalid, and poor for very invalid. Student questionnaire data were analyzed descriptively. Responses to the 10 statements on practicality and usability were converted into percentage scores for each item. The overall practicality of the digital teaching materials was interpreted using this formula and category, e.g., very good for very practical, good for practical, enough, less for impractical, and poor category for very

impractical. The validity and practicality index percentages for all assessed aspects were then calculated using the established formula.

$$P = \frac{S}{N} x100\%$$

Description: P is the percentage of sub-variables; S is the total score of each sub; and N is the maximum total score. The next results recapitulation according to category is presented in Table 1 below.

Table 1. Criteria validity and practicality

Achievement Level	Information
84 % < p ≤ 100 %	Very good
68 % < p ≤ 84 %	Good
52 % < p ≤ 68 %	Enough
36 % < p ≤ 52 %	Less
20 % ≤ p ≤ 36 %	Poor

To evaluate the performance of the numeracy-based digital teaching materials, this study employed a student numeracy test. After administering the test, an analysis was conducted to assess students' cognitive levels based on their performance. In addition to the quantitative data, qualitative data were obtained from expert validators, who assessed the digital teaching materials using standardized validation criteria. The quantitative data were analyzed using percentage calculations, whereas the qualitative data were examined through descriptive analysis to ensure alignment with the quantitative outcomes. The test data were analyzed by scoring students' answers according to a predetermined rubric, with scores ranging from 0 to 100. These raw scores were then converted into final achievement values using the established scoring guideline.

$$n = \frac{S}{M} x100\%$$

Description: n is the student's mastery level; S is the total score of each sub; and M is the maximum total score. The next results recapitulation according to category is presented in Table 2 below.

Table 2. Predicate Value Categories

Mastery Level	Criteria
90 < n ≤ 100	Very Good
80 < n ≤ 90	Good
70 < n ≤ 80	Enough
0 ≤ n ≤ 70	Less

(Apertha, 2018)

RESULT AND DISCUSSION

In this study, the developed product is a set of digital numeracy-based teaching materials in the form of student worksheets (LKPD) on statistics content, contextualized using Musi Banyuasin examples and supported by the Wizer.me platform. The research employed a development design adapted from the Plomp model. The Plomp development procedure consists of four key phases: the preliminary research phase, which includes needs analysis and context exploration; the design phase, in which the structure and components of the digital teaching materials are planned; the construction phase, during which the prototype is developed; and the testing,

evaluation, and revision phase, where the product is validated, tried out, and refined to ensure its validity and practicality.

Preliminary Phase

In the preliminary phase, the researchers conducted a comprehensive needs analysis to justify and guide the development of numeracy-based digital teaching materials. This stage involved examining students' characteristics and learning difficulties, reviewing curriculum standards, and analyzing the statistical content required at the junior secondary level. The needs analysis also aimed to identify gaps between existing learning resources and the competencies expected in numeracy, particularly in interpreting and representing data. These findings served as the foundation for determining the design requirements and pedagogical considerations necessary for developing high-quality, context-rich digital teaching materials.

Analyze students' characteristics and learning difficulties

The analysis results indicate that seventh-grade students exhibit heterogeneous academic characteristics that comprise high, medium, and low ability groups. Students in the high ability group can grasp concepts quickly and complete tasks independently. Those in the medium ability group require additional guidance to achieve complete conceptual understanding, whereas students in the low ability group struggle with fundamental ideas and need more intensive, structured learning support. Of the 24 students in the class, 7 are categorized as high ability, 11 as medium ability, and 6 as low ability. Further examination of students' report cards shows that numeracy performance remains low, indicating the need for teaching materials that can effectively strengthen students' numeracy skills. Interviews also revealed that all students possess Android smartphones, which can serve as accessible digital learning tools to support the use of the developed materials.

Analysis Curriculum and Materials

The curriculum and material analysis were conducted to identify the curriculum implemented in the school and to determine the learning content relevant for assessing seventh-grade students' numeracy skills. Based on classroom observations and discussions with teachers, it was found that the school has fully adopted the Merdeka Curriculum. The analysis of the Merdeka Curriculum content revealed that the statistics topic, specifically presenting and interpreting data, aligns with the competencies required for measuring students' numeracy performance. This topic provides opportunities for students to engage in data interpretation, reasoning with representations, and making informed decisions, which are essential components of numeracy.

Design Phase

This phase aims to design an appropriate solution to the problems identified during the preliminary stage by developing an initial prototype and preparing the necessary research instruments. At this stage, the researchers designed the numeracy-based digital teaching materials in the form of LKPD and numeracy test items. The first step in designing the teaching materials was compiling the learning content, as it constitutes the core component of the product being developed. Once the content was established, the next step involved formulating the media concept, which was outlined in a narrative document describing the objectives of the development namely, to produce valid and practical numeracy-based digital teaching materials. The design outputs at this stage included the content structure, the selection of the digital platform to be used, and the storyboard that guided the layout and interactive elements of the teaching materials.

Material Design

The materials incorporated into the numeracy-based digital teaching resources were adapted and modified from various textbooks, AKM items, ANBK items, and other relevant references. The instructional content focuses on presenting and interpreting data through bar charts and pie charts, as these representations align with the numeracy competencies expected in the Merdeka Curriculum. To enhance relevance and authenticity, several data-interpretation tasks were contextualized using real situations from the Musi Banyuasin region, such as local population data, agricultural production, and environmental conditions. This contextualization aims to strengthen students' numeracy skills by engaging them with meaningful and familiar information, thereby supporting deeper understanding and improved problem-solving.

1. Election application

This digital teaching material was developed using the Wizer.me application, which provides a variety of templates for designing interactive learning resources. Based on an analysis of interactivity, engagement, challenge level, and suitability for mathematics learning, the researchers selected templates that best supported these criteria. The chosen templates included video-based components that allow students to watch instructional videos via embedded YouTube links, as well as open-ended question formats where students can respond by uploading photos or writing their answers directly in the provided response fields. These design choices were intended to enhance student engagement and support active participation throughout the learning process.

2. Storyboard Design

Before being developed in the Wizer.me application, all components of the Student Activity Sheet (LKPD) were initially drafted in the form of a storyboard. The storyboard functioned as a detailed blueprint that structured the layout, content sequence, and interactive features to be integrated into the numeracy-based digital teaching materials. The storyboard clearly outlines the key components of the digital materials, including statistical tasks and data-interpretation activities that are contextualized using authentic real-world situations from Musi Banyuasin. The finalized storyboard design is shown in Figure 1.

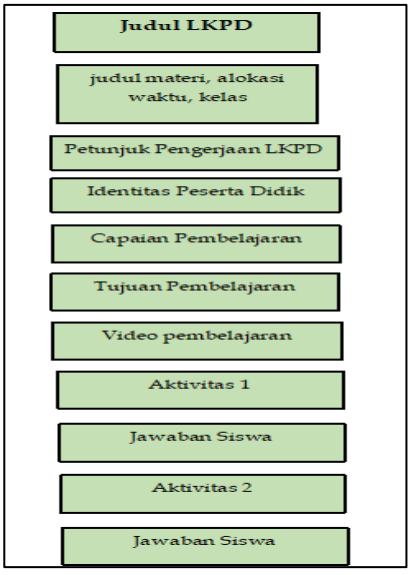


Figure 1. Storyboard Design

Construction Phase

In this phase, Prototype I (the initial prototype) was produced as the realization of the previously formulated design. The development of the teaching materials began by translating the

storyboard and content plan into digital form according to the established specifications. At this stage, both the digital teaching materials and the research instruments were completed and prepared for the subsequent testing phase. Prototype I was then ready to undergo expert validation and further refinement shown in Table 3 and Table 4.

Table 3. Prototype 1 Digital Teaching Materials in First Meeting

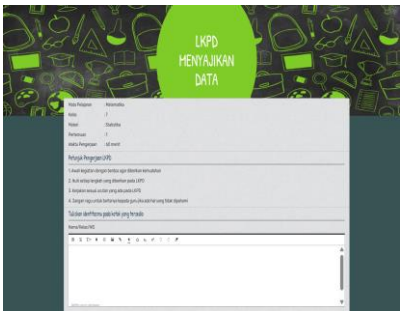
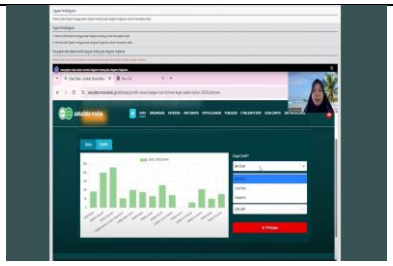
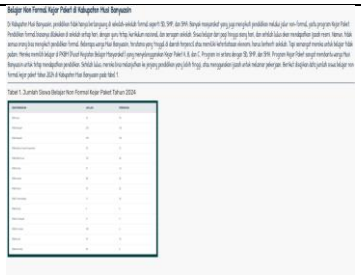
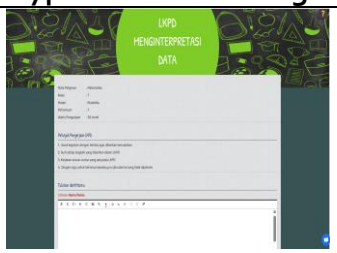
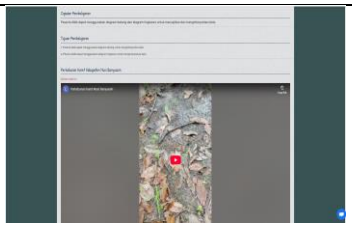
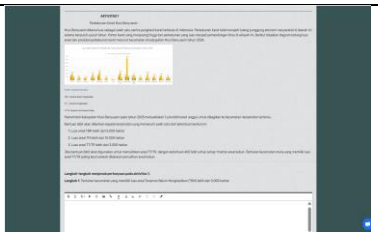
Prototype 1 LKPD Meeting 1	Description
	The first display on the LKPD contains the LKPD title, LKPD identity, LKPD work instructions, and student identity.
	Display of learning achievements, learning objectives, and learning videos presenting data in the form of bar charts and pie charts.
	Display supporting data on video
	Activity 1 and Activity 2 View

Table 4. Prototype 1 Digital Teaching Materials Second Meeting

Prototype 1 LKPD Meeting 2	Description
	The first display on the LKPD contains the LKPD title, LKPD identity, LKPD work instructions, and student identity.
	Display of learning achievements, learning objectives, and learning videos presenting rubber plantations in Musi Banyuasin Regency
	ACTIVITY 1 View
	ACTIVITY 2 View

Test, Evaluation, and Revision Phase

Following the development of Prototype I, the product was submitted for an Expert Review to undergo validation by specialists in the areas of content, construct, ICT, and language. The purpose of the expert validation process was to examine the characteristics and quality of the designed digital teaching materials, ensuring that they met the requirements for feasibility before proceeding to field testing. The digital teaching materials were reviewed by two mathematics education lecturers and one mathematics teacher. The results of the expert validation during the first review session are presented in Table 5.

Table 5. Validation results for digital teaching materials at First Meeting

No	Aspect	Indicators	Percentage (%)
1	Content	Compliance with the material presented in digital teaching materials with Phase D in the Independent Curriculum	80
		Material in the appropriate teaching materials with draft correct and incorrect statistics causes a misconception.	87

No	Aspect	Indicators	Percentage (%)
		Compliance with the material presented in the teaching materials, with the objective of learning that has been set	87
		The material presented in the teaching materials is linked with the context of season Banyuasin	93
		Delivery: The material in the teaching materials is arranged from easy to difficult	87
		Teaching materials are arranged in accordance with the indicator of numeracy	87
		Average	**87**
2	construction	Completeness component teaching materials (digital LKPD), such as title, identity, purpose of learning, and steps workmanship	93
		Compliance with the situation presented with characteristics of participants educated in phase D	80
		Accuracy and consistency of type *fonts* used in teaching materials	80
		The situations presented in the teaching materials are interesting and challenging. For the done participant, educate	80
		Illustration visual on appropriate teaching materials with material learning	87
		The layout of the teaching materials has been arranged to serve in a way consistent	87
		Average	**86**
3	*ICT*	Teaching materials presented based on *ICT*	87
		Illustrations in teaching materials are designed for use-based application of *ICT*	87
		Packaged teaching materials are interesting	87
		Color and design interesting teaching materials	87
		Letters and numbers can be read with Good	93
		Average	**85**
4	Language	Sentences used in teaching materials are sentence effective	87
		The terms used in teaching materials are appropriate for the field of Mathematics Education Science	87
		The language used in teaching materials is polite and appropriate with the norms in education	93
		Words used in appropriate teaching materials with PUEBI rules	93
		Language used in teaching materials is communicative language	93
		Language used in easy teaching materials is understood	80
		Language used in teaching materials is not ambiguous and meaningful.	80
		Teaching materials using appropriate sentences with level think junior high school students	87
		Average	**87.5**

Table 5 shows that the validity criteria for the content, construct, ICT, and language aspects were 87%, 86%, 85%, and 87.5%, respectively. These results indicate that the digital teaching materials fall within the very valid category, with an average validation score across the four aspects reaching 86.37%. Subsequently, the results of the second expert validation session are presented in Table 6.

Table 6. Validation results for digital teaching materials at the Second Meeting

No	Aspect	Indicator	Percentage (%)
1	Content	Compliance with the material presented in digital teaching materials with Phase D in the Independent Curriculum	87
		Material in appropriate teaching materials with draft correct and incorrect statistics causes misconceptions.	80
		Compliance with the material presented in the teaching materials, with the objective of learning that has been set	80
		The material presented in the teaching materials is linked with the context of season Banyuasin	87
		Delivery: The material in the teaching materials is arranged from easy to difficult	87
		Teaching materials are arranged in accordance with the indicator of numeracy	87
		Average	**84**
2	construction	Completeness component teaching materials (digital LKPD), such as title, identity, purpose of learning, and steps workmanship	87
		Compliance with the situation presented with characteristics, participants are educated in phase D	80
		Accuracy and consistency of type *fonts* used in teaching materials	80
		The situations presented in the teaching materials are interesting and challenging. For the done participant, educate	87
		Illustration visual on appropriate teaching materials with material learning	80
		The layout of the teaching materials has been arranged to serve in a way consistent	80
		Average	**82**
3	*ICT*	Teaching materials presented based on *ICT*	80
		Illustrations in teaching materials are designed for use-based application of *ICT*	87
		Packaged teaching materials are interesting	87
		Color and design interesting teaching materials	87
		Letters and numbers can be read with Good	93
		Average	**84**
4	Language	Sentences used in teaching materials are sentence effective	87
		The terms used in teaching materials are appropriate for the field of Mathematics Education Science	87

No	Aspect	Indicator	Percentage (%)
		The language used in teaching materials is polite and appropriate with the norms in education	93
		Words used in appropriate teaching materials with PUEBI rules	87
		Language used in teaching materials is communicative language	87
		Language used in easy teaching materials is understood	80
		Language used in teaching materials is not ambiguous and meaningful.	80
		Teaching materials using appropriate sentences with level think junior high school students	87
		Average	**86**

Table 5 shows that the validity scores for the content, construct, ICT, and language aspects were 84%, 82%, 84%, and 86%, respectively. Overall, these results indicate that the digital teaching materials meet the very valid criteria, with an average validation score of 84% across all four aspects.

Based on the analysis conducted, the validation results from the three expert validators for the content, construct, ICT, and language aspects during the development phase showed an average score of 86.37% in the first validation session and 84% in the second session. These findings indicate that the developed teaching materials are highly suitable for use. Overall, the materials present content aligned with the learning objectives and achievement targets, while the activities in the LKPD effectively support students' numeracy skills by engaging them in problem-solving tasks closely connected to their real-life experiences. This aligns with Hendriani and Gusteti (2021), who explain that student worksheets (LKPD) serve as structured learning materials that include summaries, instructions, and tasks aligned with basic competencies, enabling students to practice and develop their skills. Furthermore, the LKPD developed in this study meets the principles of material depth and accuracy, incorporates contexts relevant to daily life, and provides clear procedural steps that guide students in constructing their understanding (Suriani & Putri, 2023).

According to Sari et al. (2022), validity is a key foundation in developing quality teaching materials that can be effectively used by teachers and students. Valid student worksheets support learning, increase students' motivation, and facilitate independent study. Similarly, Desrinelti and Miaz (2022) emphasize that to support learning, student worksheets must be evaluated for suitability by experts, as they function as guides that direct students to apply their understanding in real-world situations through meaningful tasks. Referring to the validation results from the three expert validators, it can be concluded that the digital numeracy-based teaching materials contextualized to Musi Banyuasin meet the very valid criteria. However, the validators also provided several comments and suggestions for further improvement, shown in Table 7.

Table 7. Validator Comments /Suggestions

Comments /Suggestions	Revision Decision
Some questions still do not match the numeracy indicators, so the questions need to be corrected	The question has been revised according to the suggestions.

Comments /Suggestions	Revision Decision
Write down instructions in the LKPD section that contains videos, for example: watch the video about the method for presenting data!	Fixed as suggested
Make it clear what step LKPD works on so that students understand what should be done	Fixed as suggested
Take note of writing letters and numbers so that students can read with good by students	Fixed as suggested

After the Prototype I LKPD was revised based on the validators' suggestions, the updated version was referred to as Prototype II. The Prototype II LKPD was then tested through a one-to-one trial involving three Grade VII students. At this stage, the researcher observed how each student engaged with and completed the teaching materials to identify their responses, as well as any obstacles or difficulties encountered while working through the LKPD.

Figure 2. One-to-one test

In addition to observing students' difficulties in completing the numeracy-based digital LKPD, the researcher also provided a comments-and-suggestions sheet to gather additional data from the students. The following are the results of the students' observations regarding their difficulties, as well as their comments and suggestions related to the digital teaching materials.

Table 8. One-to-one Difficulty Student

	Difficulty Student	Revision Decision
1	Students are confused about the meaning of instructions in LKPD	Repair editorial Instructions on LKPD
2.	The figures presented in the table are too small, so students are wrong in reading the information	Repair size letters on LKPD

The difficulties experienced by students when completing the LKPD were then used to improve the developed digital teaching materials. Prototype II was subsequently revised and refined according to the suggestions and comments obtained from the one-to-one stage, resulting in Prototype III. Furthermore, the digital teaching materials were tested in a small-group trial involving six seventh-grade students. At this stage, students were given a response questionnaire to assess the practicality of the developed product. The results of this small-group trial served as an evaluation step; if further revisions were needed, improvements were made to

produce numeracy-based digital teaching materials that are both valid and practical. Table 9 shows the result of practicality.

Table 9. Questionnaire Results Practicality

Practicality Indicators	Percentage	Criteria
Easy digital teaching materials accessed through digital devices	80 %	Practical
The appearance of interesting and easy digital teaching materials is understood.	76.7 %	Practical
Instructions for using digital teaching materials are clear and easy to follow	90 %	Very practical
I can use teaching materials independently or in groups	86.67%	Very practical
The statistical material presented in easy digital teaching materials is understood	86.67 %	Practical
Digital teaching materials help me understand presenting and interpreting data using bar charts and pie charts	80%	Practical
Using digital teaching materials improves interest in Study statistics.	82.38%	Practical
Digital teaching materials help me connect material statistics with daily life	80%	Practical
Instructions given in challenging digital teaching materials can still be done	82.38 %	Practical
Digital teaching materials help me think more critically in finish problems numeracy	82.38%	Practical
Average	82.7%	Practical

From Table 6, it can be seen that the students' average rating of the digital teaching materials is 82.7%, which falls into the practical category. Therefore, it can be concluded that the teaching materials on statistics are practical for use by students in learning activities, and the students are able to use the digital teaching materials effectively.

Figure 3. Small Group Test

After the prototype development stage was completed, the research proceeded to the assessment phase, namely the summative evaluation, to determine the effectiveness, efficiency, and attractiveness of the developed product. This assessment involved field testing through data collection and evaluation procedures. The field trial was conducted with students over three sessions on May 9, May 10, and May 15, 2025. After the learning sessions were completed, a numeracy literacy test consisting of eight questions was administered to the students. The test results were then analyzed to evaluate the impact of the digital teaching materials on students' numeracy literacy, providing insights into their effectiveness in

supporting competencies related to data interpretation. Figure 5 below is the answer of students with good numeracy skills.

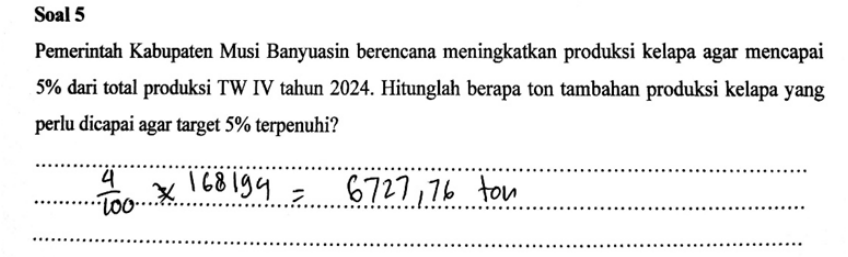


Figure 4. Answer Question 1 Student C

Figure 5 presents the answer to Question 5 by Student A. Student A has fulfilled the indicator formulation, as the student was able to identify the key information in the problem and understand what was being asked. This is shown by the student noting that 168,194 tons represents the total production of palm oil, rubber, and coconut in Q4 2024, and that 4% is the required increase in coconut production. Student A also fulfilled the do indicator, demonstrating the ability to determine the appropriate mathematical operation and solution steps by multiplying 4% by 168,194 tons. In addition, Student A met the next do indicator by using numbers, units, and calculations correctly, shown through the accurate computation that 4% of 168,194 tons is 6,727.76 tons. Furthermore, Student A partially fulfilled the interpret indicator, as the student was able to explain the reasoning, draw conclusions, and interpret the result logically through a clear sequence: identifying information, selecting the correct operation, and performing accurate calculations. However, Student A did not fully meet the final interpret indicator because the student did not conclude the answer in accordance with the contextual requirement of the question.

Teacher : Son, how is it? method finish question 5?
Student A : What was asked addition of production of coconut from 1% to 5% means the increase is 4 %.
Teacher : What? Because you multiply 4% by 168,194 tons?
Student A : Yes. ma'am Correct.
Teacher : 6727.76 tons. What?
Student A : That results time, ma'am
Teacher : What do you mean, son?
Student A : 6727.76 tons is the additional production of coconut
Teacher : Additional production of coconut that is needed has been achieved, so that the government's target is fulfilled, yes, right?
Student A : Yes, ma'am.
Teacher : Why? No, you write it down
Student A : What should I do? written ma'am?
Teacher : Yes, son, that's it. will explain the answer end You in accordance with the context in which it is asked.

After the students completed the numeracy test, the results were analyzed based on the numeracy evaluation rubric and its corresponding indicators. The analysis of students' problem-solving performance is presented in Figure 6.

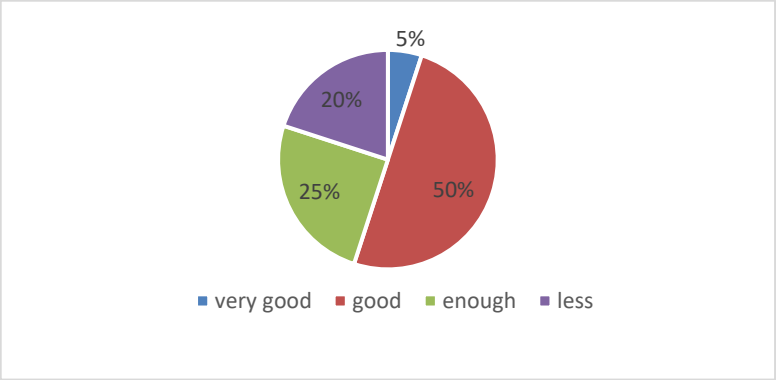


Figure 5. Test results of ability numeracy

Based on Figure 5, the results of the numeracy ability test show that 20% of students fall into the poor category, 25% into the adequate category, 50% into the good category, and 5% into the very good category. A total of 50% of the students are categorized as good. This indicates that half of the participants have been able to meet the numeracy indicators at a reasonably adequate level, particularly in identifying relevant information, determining appropriate operations, performing correct calculations, and completing solutions in a logical sequence.

Discussion

The findings of this study indicate that the developed digital numeracy-based worksheets are valid, practical, and relevant to students' learning needs. This is supported by the alignment of content with learning objectives, the clarity of instructions, and the inclusion of interactive features through the Wizer.me platform. The integration of local contexts, particularly agriculture and plantation practices familiar to students in Musi Banyuasin, further enhances the meaningfulness and relevance of the activities, allowing students to connect abstract mathematical concepts with real-life experiences. These results are consistent with previous studies suggesting that contextualized digital learning materials not only improve comprehension but also increase engagement and motivation (Leton et al., 2025; Lisnani et al., 2023; Susanta et al., 2023).

The results highlight that a key strength of the developed materials is the integration of contextual relevance with digital interactivity. By incorporating videos, interactive questions, and open-response formats, the worksheets (LKPD) promote active engagement, independent learning, and problem-solving skills. The small-group trials, which yielded a high practicality score of 82.7%, demonstrate that students were able to navigate the materials efficiently while interacting with authentic statistical problems. These findings are in line with prior research indicating that digital worksheets with interactive elements outperform conventional or static resources in fostering engagement and enhancing numeracy skills (Amaliya et al., 2024; Miller, 2018; Ramdhani et al., 2024). This synergy between context and interactivity not only supports skill acquisition but also contributes to meaningful learning, as students can directly relate mathematical concepts to real-life situations, reinforcing both comprehension and motivation (Hidayana & Lianingsih, 2025; Nasrulloh et al., 2021; Pratiwi et al., 2024).

The results of this study indicate that iterative refinement of the digital worksheets through one-to-one and small-group trials enhanced clarity, ease of use, and task sequencing. Students, particularly those with lower initial numeracy skills, benefited from step-by-step scaffolding, which helped them navigate complex problem-solving tasks and engage more

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effectively with the material. The summative evaluation further demonstrated that students were able to identify relevant information, apply appropriate mathematical operations, and interpret results in real-life contexts. Although minor gaps remained in fully contextualizing conclusions, overall, the worksheets effectively supported numeracy literacy, critical thinking, and reasoning skills. These findings are consistent with Rathburn (2015), who emphasizes that structured and gradual learning materials facilitate students' understanding of mathematical concepts, and align with the Winarni et al (2025) numeracy framework, which highlights the importance of active engagement and real-world contexts in developing numeracy competencies.

The numeracy test results in this study were very positive: students consistently demonstrated strong performance in understanding, applying, and reasoning through statistical problems rooted in familiar, real-life contexts. Many students accurately identified relevant information, performed correct calculations, and drew meaningful interpretations from their data — a clear sign that the digital worksheets effectively fostered their numeracy literacy. These findings align with prior research showing that contextualized learning, especially when tied to students' cultural or local environments, can significantly boost numeracy skills (Musyafak et al., 2024; Salsa & Suriani, 2025). For example, Musyafak et al. (2024) found that a contextual teaching approach led to a statistically significant increase in students' numeracy literacy, while Salsa and Suriani (2025) observed improvements when integrating local cultural contexts into numeracy instruction. The success observed here suggests that embedding authentic, local contexts into digital materials not only enhances conceptual understanding but also supports higher-order thinking, such as reasoning and critical interpretation.

Limitation

The weakness of this study lies in the fact that several features provided by the Wizer.me platform have not been fully utilized. In addition, the use of mathematical formulas within the platform still presents certain limitations. However, these issues can be minimized by using the image-insertion feature, which allows students to upload images of their written solutions as responses to the questions in the digital teaching materials.

Implication

Digital teaching materials offer numerous advantages in supporting mathematics learning, particularly in strengthening numeracy skills within contextual statistics topics. Through engaging visual elements and flexible accessibility, these materials can enhance student engagement and motivate learners to study independently anytime and anywhere. Teachers also benefit from the convenience of delivering instructional content interactively and systematically, including the ability to connect statistical concepts with real and relevant data drawn from the local context, such as social and economic information from the Musi Banyuasin region. Moreover, digital teaching materials can be easily updated and adapted to students' needs and curriculum changes, making them highly supportive of differentiated learning principles.

CONCLUSION

Based on the results obtained, it can be concluded that this study produced two numeracy-based digital teaching materials on statistics contextualized with Musi Banyuasin data. Both products fall into the very valid category, with validity scores of 86.37% for the teaching materials used in Meeting 1 and 84% for those used in Meeting 2. In addition, the developed digital teaching materials also met the practicality criteria, obtaining scores of 82% for

Meeting 1 and 82.66% for Meeting 2, both of which fall into the very practical category. The advantages offered by these digital teaching materials are that they have a variety of features available and have strong potential to support and enhance students' numeracy skills.

REFERENCES

Agra, G., Formiga, N. S., Oliveira, P. S. D., Costa, M. M. L., Fernandes, M. D. G. M., & Nóbrega, M. M. L. D. (2019). Analysis of the concept of Meaningful Learning in light of the Ausubel's Theory. *Revista Brasileira de Enfermagem*, *72*(1), 248–255. https://doi.org/10.1590/0034-7167-2017-0691

Aini, V., Hidayat, T., Kusnadi, K., Williams, C., & Hadibarata, T. (2024). Analysis Numeracy Literacy Skills of High School Students in Biodiversity Material Based on Minimum Competency Assessment Questions. *Jurnal Pendidikan IPA Indonesia*, *13*(1), 128–136. https://doi.org/10.15294/jpii.v13i1.49265

Albuquerque, A. G. (2019). A importância da contextualização na prática pedagógica. *Research, Society and Development*, *8*(11), e488111472. https://doi.org/10.33448/rsd-v8i11.1472

Amaliya, I., Suraya, A., Sumaji, Utaminingsih, S., & Pratama, H. (2024). The Effectiveness of Digital Interactive Media Worksheets in Improving Elementary School Students' Mathematical Literacy. *Studies in Technology and Education*, *3*(3), 1–8. https://doi.org/10.55687/ste.v3i3.112

Bolstad, O. H. (2023). Lower secondary students' encounters with mathematical literacy. *Mathematics Education Research Journal*, *35*(1), 237–253. https://doi.org/10.1007/s13394-021-00386-7

Chen, Y. (2022). Measurement, Evaluation, and Model Construction of Mathematical Literacy Based on IoT and PISA. *Mathematical Problems in Engineering*, *2022*, 1–8. https://doi.org/10.1155/2022/3278401

Díez-Palomar, J., Ramis-Salas, M., Močnik, I., Simonič, M., & Hoogland, K. (2023). Challenges for numeracy awareness in the 21st century: Making visible the invisible. *Frontiers in Education*, *8*, 1295781. https://doi.org/10.3389/feduc.2023.1295781

Gantiyani, H., Hobri, Cahya P., A., Atika S., D., & Hariati, A. (2022). *Student's critical thinking ability in solving AKM numeration problems with three different cognitive levels*. 030019. https://doi.org/10.1063/5.0109966

Geiger, V., & Schmid, M. (2024). A critical turn in numeracy education and practice. *Frontiers in Education*, *9*, 1363566. https://doi.org/10.3389/feduc.2024.1363566

Gloriani, Y., Setiyani, S., Firmasari, S., & Erawati, T. (2023). Relationship between Literacy and Numeracy for Junior High School Students. *AL-ISHLAH: Jurnal Pendidikan*, *15*(4). https://doi.org/10.35445/alishlah.v15i4.3096

Hidayana, R. A., & Lianingsih, N. (2025). Contextual Learning as a Means to Improve Elementary School Students' Mathematical Literacy Skills. *International Journal of Ethno-Sciences and Education Research*, *5*(2), 46–50. https://doi.org/10.46336/ijeer.v5i2.935

Hilda Nur Alifah Setyo Utami & Lailatul Inayah. (2024). Teacher Welfare Management and Its Implications for Improving Students' Numeracy Literacy in Indonesia: Literature Review. *International Journal of Educational Research*, *1*(3), 87–98. https://doi.org/10.62951/ijer.v1i3.359

Kohar, A. W., Rahaju, E. B., & Rohim, A. (2022). Prospective teachers' design of numeracy tasks

… using a physical distancing context. *Journal on Mathematics Education*, *13*(2), 191–210. https://doi.org/10.22342/jme.v13i2.pp191-210

Kurniati, D., Wahyuna, I., Sepeng, P., Osman, S., & Dwi, D. (2024). Development of Numeracy Problems Based on Education for Sustainable Development (ESD) to Measure Critical Thinking Ability. *TEM Journal*, 1916–1926. https://doi.org/10.18421/TEM133-19

Leton, S. I., Lakapu, M., Dosinaeng, W. B. N., & Fitriani, N. (2025). Integrating local wisdoms for improving students' mathematical literacy: The promising context in learning whole numbers. *Infinity Journal*, *14*(2), 369–392. https://doi.org/10.22460/infinity.v14i2.p369-392

Lisnani, Putri, R. I. I., Zulkardi, & Somakim. (2023). Web-based realistic mathematics learning environment for 21st-century skills in primary school students. *Journal on Mathematics Education*, *14*(2), 253–274. https://doi.org/10.22342/jme.v14i2.pp253-274

Martin, S. N., Suryadi, D., & Juandi, D. (2019). Students' difficulties in solving the mathematics word problems with the context of *Education for Sustainable Development* (ESD). *Journal of Physics: Conference Series*, *1157*, 042051. https://doi.org/10.1088/1742-6596/1157/4/042051

Mikidas, E. O., Bitok, E., & Syonthi, J. (2024). Parental Role in Providing Learning Materials for Numeracy Acquisition among Pre-Primary II Learners in Suba Sub-County, Kenya. *Journal of Research Innovation and Implications in Education*. https://doi.org/10.59765/prywb4295

Miller, T. (2018). Developing numeracy skills using interactive technology in a play-based learning environment. *International Journal of STEM Education*, *5*(1), 39. https://doi.org/10.1186/s40594-018-0135-2

Muhaimin, L. H., Sholikhakh, R. A., Yulianti, S., Ardani, A., Hendriyanto, A., & Sahara, S. (2024). Unlocking the secrets of students' mathematical literacy to solve mathematical problems: A systematic literature review. *Eurasia Journal of Mathematics, Science and Technology Education*, *20*(4), em2428. https://doi.org/10.29333/ejmste/14404

Mulyono., M., Yaumi, M., Ibrahim, M. M., Achruh, A., Ituga, A. S., Permana, I., & . A. (2025). Development of Contextual Numeracy Literacy Tool based on 21st Century Skills in MI Al-Ishlah Kota Sorong Southwest Papua. *Journal of Posthumanism*, *5*(7). https://doi.org/10.63332/joph.v5i7.2768

Nasrulloh, I., Rahadian, D., Hamdani, N. A., Imania, K. A. N., & Rikaldi, P. B. R. (2021). A comparative study: Multimedia interactive use on contextual and cooperative approaches in increasing mathematical understanding. *Journal of Physics: Conference Series*, *1987*(1), 012015. https://doi.org/10.1088/1742-6596/1987/1/012015

Nugraha, M. R., & Basuki, B. (2021). Kesulitan Kemampuan Pemecahan Masalah Matematis Siswa SMP di Desa Mulyasari pada Materi Statistika. *Plusminus: Jurnal Pendidikan Matematika*, *1*(2), 235–248. https://doi.org/10.31980/plusminus.v1i2.1259

OECD. (2024). *PISA 2022 Technical Report*. OECD. https://doi.org/10.1787/01820d6d-en

O'Meara, N., O'Sullivan, K., Hoogland, K., & Diez-Palomer, J. (2024). European Study investigating Adult Numeracy Education: Identifying challenges and possible responses. *European Journal for Research on the Education and Learning of Adults*. https://doi.org/10.3384/rela.2000-7426.4833

Pallauta, J. D., Arteaga, P., & Garzón-Guerrero, J. A. (2021). Secondary School Students' Construction and Interpretation of Statistical Tables. *Mathematics*, *9*(24), 3197. https://doi.org/10.3390/math9243197

Pratiwi, K. H., Situmorang, R.-, & Iriani, T. (2024). The potential of interactive multimedia with

contextual teaching and learning approaches in mathematics learning: A systematic literature review. *Jurnal EDUCATIO: Jurnal Pendidikan Indonesia*, *10*(2), 69. https://doi.org/10.29210/1202424526

Rakhmawati, Y., & Mustadi, A. (2022). The circumstances of literacy numeracy skill: Between notion and fact from elementary school students. *Jurnal Prima Edukasia*, *10*(1), 9–18. https://doi.org/10.21831/jpe.v10i1.36427

Ramdhani, L. I., Soeharno, S., Refni, E., Sarifah, I., & Mahdiyah, M. (2024). Meta-Analysis The Effectiveness of Digital Learning Media on Literacy Numeracy: Implications for Education Based Technology. *Jurnal Penelitian Pendidikan*, *41*(2), 153–161. https://doi.org/10.15294/jpp.v41i2.18926

Rathburn, M. K. (2015). Building Connections Through Contextualized Learning in an Undergraduate Course on Scientific and Mathematical Literacy. *Georgia Educational Researcher*, *9*(1). https://doi.org/10.20429/ijsotl.2015.090111

Santia, I., & Dwi Handayani, A. (2023). Exploring Students' Numerical Literacy on Statistical Problem-Solving in Indonesia. *Qubahan Academic Journal*, *3*(4), 289–297. https://doi.org/10.58429/qaj.v3n4a181

Sari, I. K., Nasriadi, A., & Salmina, M. (2018). Students' understanding of charts: The study of PISA's problem-solving in the content of data. *Journal of Physics: Conference Series*, *1088*, 012108. https://doi.org/10.1088/1742-6596/1088/1/012108

Setiawan, E. P., & Sukoco, H. (2021). Exploring first year university students' statistical literacy: A case on describing and visualizing data. *Journal on Mathematics Education*, *12*(3), 427–448. https://doi.org/10.22342/jme.12.3.13202.427-448

Shufa, N. K. F., & Adji, T. P. (2024). Integrating Local Wisdom in Independent Learning: Urgency and Innovative Strategies. *PrimaryEdu : Journal of Primary Education*, *8*(2), 22–39. https://doi.org/10.22460/pej.v8i2.4937

Sugiharni, G. A. D., Ardana, I. M., Suharta, I. G. P., & Sudiarta, I. G. P. (2022). Development of Mathematics Web-based Learning on Table Set-Up Activities. *International Journal of Advanced Computer Science and Applications*, *13*(3). https://doi.org/10.14569/IJACSA.2022.0130314

Susanta, A., Sumardi, H., Susanto, E., & Retnawati, H. (2023). Mathematics literacy task on number pattern using Bengkulu context for junior high school students. *Journal on Mathematics Education*, *14*(1), 85–102. https://doi.org/10.22342/jme.v14i1.pp85-102

Winarni, S., Kamid, Marzal, J., & Asrial. (2025). Numeracy skill development in prospective mathematics teachers: Challenges and opportunities in real-world contexts. *Journal on Mathematics Education*, *16*(1), 91–110. https://doi.org/10.22342/jme.v16i1.pp91-110

Windi, W., & Suryaman, M. (2022). Improving Students' Ability in Writing Descriptive Text Through Contextual Teaching and Learning Approach. *Jurnal Ilmiah Profesi Pendidikan*, *7*(1), 151–155. https://doi.org/10.29303/jipp.v7i1.399

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