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A portrait of prospective mathematics teachers' readiness in statistical literacy of school students

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ABSTRACT

The problem and the aim of the study. Statistical literacy is a crucial skill for the general public in the current era of big data and poses a significant challenge for future educators, particularly prospective mathematics teachers. Proficiency in statistical literacy is essential for these teachers as they enhance students' statistical literacy in schools. Inadequate readiness in statistical literacy among prospective mathematics teachers can adversely affect students' statistical literacy levels, leading to a less prepared society to deal with statistical data in the future. Therefore, evaluating the statistical literacy of prospective mathematics teachers and assessing their preparedness is of utmost importance. This study aimed to elucidate and elaborate on the statistical literacy of prospective mathematics educators, encompassing a spectrum from basic statistical comprehension to the capacity for critical evaluation of information.

Research methods. The study involved 70 prospective mathematics teacher students at a private university in Indonesia from the first to the last semester. A qualitative descriptive approach was used, with a statistical literacy test comprising ten multiple-choice and three essay questions. The essay and multiple-choice questions were validated and reliable with an SEM value of 1.293. The data analysis will evaluate students' responses to assess four aspects of statistical literacy: understanding statistical and probability terms, data interpretation, decision-making based on data, and critical evaluation of information.

Results. The findings of this study indicate that the average statistical literacy competency among prospective mathematics teachers is 40.6%. The participants understood basic statistical terminology and probability, scoring 63.2%. However, their performance in data representation and interpretation was subpar, with a score of 36.8%, and their ability to conclude decision-making was notably low, scoring 31.6%. The most significant deficiency was observed in the critical evaluation of information, which garnered a score of only 16.4%. This inadequacy can be attributed primarily to many students' reliance on idiosyncratic reasoning, who tended to draw conclusions based on personal experiences and attitudes rather than employing contextual reasoning appropriate for the tasks. The results of this study highlight the urgent need for prospective mathematics teachers to enhance their competencies in critical evaluation, particularly in the contextual understanding of mathematical tasks and principles.

Conclusion. The findings of a comprehensive qualitative analysis of the four dimensions of statistical literacy assessed in this research indicate that prospective mathematics teachers demonstrated the lowest proficiency in critically evaluating information, concluding, and making decisions. These results raise concerns for institutions responsible for educating mathematics teacher candidates. It is anticipated that an enhanced level of statistical literacy among prospective mathematics teachers will positively impact students' proficiency in the school and contribute to advancing statistical literacy within Indonesian society.

KEYWORDS

statistical literacy, prospective mathematics teacher, a case study

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INTRODUCTION

The PISA 2022 Assessment and Analytical Framework states that today's world is increasingly complex, with its various dimensions represented by terabytes of data. Understanding data is considered one of the greatest challenges humanity will face in the future [4]. In an increasingly data-driven world, statistical literacy is becoming an essential competency, not only for researchers performing formal statistical analysis but also for informed citizens making decisions [5]. Statistical literacy is crucial due to the exponential growth of data in various fields [6]. The Organization for Economic Co-operation and Development (OECD) emphasizes that students should be prepared at school by familiarizing themselves with the nature of data and making informed decisions. Students preparing to become part of a modern society must understand a world increasingly shaped and driven by data-driven arguments. Therefore, possessing the essential competency of statistical literacy is crucial for the decision-making process [7; 8].

Statistical literacy (SL) is the ability to read, understand, and use basic statistical terms, recognize simple statistical symbols, interpret data, communicate statistical information, and represent data [9; 10]. SL goes beyond the mechanical application of statistics; it involves critically interpreting information, using statistics as evidence in arguments, and employing statistical thinking to inform personal, public, and professional decisions [11; 12]. SL entails interpreting and critically evaluating statistical information, and it is considered a high-level literacy competency that involves critical thinking [13].

SL is crucial for prospective teacher education, particularly for mathematics teachers who are expected to provide support in statistics in schools [14; 15]. Teacher education programs can enhance the preparation of educators to effectively support student learning in statistics [16]. Prospective mathematics teachers play a significant role in SL by demonstrating data orientation, interpretation processes, developing assessments, and enhancing the ability to evaluate student learning outcomes [16; 17]. It is the responsibility of prospective mathematics teachers to develop strong SL competencies to facilitate students' SL development in schools. Prospective mathematics teachers with inadequate SL skills will negatively impact students in school.

The statistical literacy achievement of students in secondary schools is still very concerning, as indicated in previous research reports. [18; 19] revealed that middle school students' statistical literacy scores were generally low. Students lack the conceptual ability to interpret and draw conclusions from graphs to make appropriate calculation decisions [20]. While students can define the concept, they struggle to apply their ideas in interpreting the concept [2]. Indonesia, in particular, also shows similar results regarding student performance in statistics. Most students have difficulty interpreting data presented in the form in the form of a pie chart and cannot critically analyze information [1]. Kurnia [21] also found that most secondary school students with statistical literacy levels were in the non-critical thinking category.

Based on the importance of statistical literacy (SL) competencies that prospective mathematics teachers must possess to enhance students' statistical literacy at school, the researcher is interested in exploring the readiness of prospective mathematics teacher students. This exploration involves examining various aspects of statistical literacy, ranging from understanding basic statistical terminology to the ability to critically evaluate information. The anticipated benefits of this study include: first, providing insights for teacher education programs to implement interventions effectively for the optimal development of statistical literacy competencies. Second, offering data for mathematics education observers or future statistical researchers to assess the statistical literacy abilities of prospective teacher students on a broader scale. Third, the study results are expected to serve as valuable input for curriculum developers and researchers to create learning tools that enhance the statistical literacy of prospective teacher students, particularly in the field of mathematics, which inherently supports learning statistical literacy students in schools.

MATERIALS AND METHODS

This research employed a qualitative approach with a case study design. The primary objective of the researcher was to describe students' proficiency in solving statistical literacy problems that assess

four key aspects: understanding fundamental statistics and probability terminology; interpreting data; drawing conclusions based on data and making decisions; and critically evaluating information.

The subjects of this study were 70 prospective mathematics teacher students from a private university in East Java, Indonesia, with diverse characteristics. The research procedure consisted of three stages. Initially, researchers selected the research subjects and developed statistical literacy (SL) questionnaires. In the second stage, students worked on the SL questions. In the final stage, the researchers analyzed the students' answers using descriptive statistics to assess the statistical literacy abilities of prospective mathematics teachers.

During the data analysis stage, researchers will analyze student answers based on 13 questions submitted to measure four aspects of student statistical literacy. The first step in systematic data analysis is collecting data or grouping information provided by the subjects. After the data is collected, the average number of students answering correctly is calculated, and the percentage is determined. The results of the calculation are then analyzed by describing the collected data. Second, unnecessary or irrelevant data is eliminated. Third, presenting and interpreting data involves writing data in the assessment that is converted to statistical literacy aspects. Fourth, the conclusion aims to describe the statistical literacy abilities of prospective mathematics teachers. The process of concluding involves formulating research results based on the discussion and research findings derived from the collected data.

Statistical Literacy Test Instrument

The statistical literacy instrument used to collect data consists of 10 multiple-choice questions and 3 descriptive questions. The multiple-choice questions to measure students' statistical literacy are adapted from [1] which has valid and reliable evidence with a standard error of measurement (SEM) value of 1.293. The descriptive questions are adapted from [2; 3]. The preparation of statistical literacy questions goes through stages of assessing statistical literacy aspects, which are then detailed in the question indicators to measure students' statistical literacy skills. The array of statistical literacy questions is presented in Table 1.

Table 1

Statistical Literacy Instrument Question Grid

Statistical Literacy Aspects	Question Indicator	Context SL			Number
		Private	School	Society	
Understanding of basic terminology of statistics and probability	Distinguish effective ways to collect data		V		1
	Distinguishing effective data presentation techniques			V	2
	Differentiating the use of data presentation techniques			V	3
	Distinguishing between population and sample			V	12
Representing Data and Interpreting Statistical Information	Representing data from table form to diagram		V		4
	Interpret data in line and pie charts		V		5,9
	Make predictions based on data interpretation			V	7
Draw conclusions and make decisions	Draw conclusions based on data			V	8
	Make decisions based on information presented in the form of tables or diagrams	V	V		6,10
Critically evaluate information	Evaluate claims from information presented in the form of tables or diagrams			V	11,13

RESEARCH RESULTS

The description of statistical literacy among prospective mathematics teachers is assessed by analyzing their performance on statistical literacy tests across four key areas, ranging from understanding basic terminology to critically evaluating information. Student achievement in all aspects of statistical literacy is determined by the frequency of correct answers and the percentage of students who answer each item correctly. A detailed review of each element of statistical literacy will be provided in the following section to characterize the statistical literacy of prospective teacher students. A summary of the percentage of correct answers by students for each multiple-choice question is presented in the Table 2.

Tabel 2

Student performance on each aspect of statistical literacy

Statistical Literacy Aspects	Question Number	Students answered correctly	Percentage of correct responses	Average Percentage per Aspect
Understanding of basic terminology of statistics and probability	1	33	47,1%	63,2%
	2	41	58,6%	
	3	43	61,4%	
	12	18	85,7%	
Representing data and Interpreting Statistical Information	4	30	42,9%	36,8%
	5	35	50%	
	7	25	35,7%	
	9	13	18,6%	
Draw conclusions and make decisions	8	31	44,3%	31,6%
	6	20	29%	
	10	15	21,4%	
Critically evaluate information	11	9	12,8%	16,4%
	13	14	20%	
Average Score			40,6%	

Based on Table 2, students' average performance reflecting their statistical literacy competency is relatively low at 40.6%. Students showed better performance in understanding basic statistical terminology and chance, with a percentage of 63.2% compared to other aspects. In the next sub-discussion, the results of students' statistical literacy will be explained in detail and in-depth to identify the weakest aspects for students.

Aspects of understanding the basic terminology of statistics and probability

First, students must answer questions about understanding basic statistics and probability terminology. The indicators of the first aspect are presented in Table 1. Upon analyzing the four indicators in the first aspect, it was found that students performed weakest in distinguishing effective ways to collect data, particularly in question number 1. In this question, students were tasked with selecting the most suitable method among questionnaires, recordings, interviews, observations, and tests to gather personal data on 35 classmates. The correct choice is a questionnaire. Surprisingly, 34.3% of students chose interviews to collect data, while 17.1% chose observation. The analysis of the responses reveals that half of the students should have considered the effectiveness and time efficiency of the data collection method.

In questions 2 and 3, prospective mathematics teacher students have better statistical literacy in distinguishing the most effective and efficient data presentation techniques. Students are given a case of continuous data to be presented as a diagram or table. The options are bar charts, line charts, pie charts, tables, and pictograms. The correct answer when dealing with continuous data should be a line chart. Students who need an understanding of the difference between the most

appropriate form of data presentation will get stuck on distractors and assume all data presentation techniques can be used for all types of data. The results of the analysis of student work are above 50% on these two questions, but it is still unfortunate that around 40% of students do not understand the usefulness of the form of data presentation.

In terms of comprehension, students are evaluated on their understanding of populations and samples. Question number 12 is a descriptive question aimed at distinguishing between populations and samples. In addition to this distinction, students are expected to predict data using the information gathered from the population and sample. An analysis of student responses revealed that 85.7% of students successfully differentiated between populations and samples and provided the corresponding numbers. However, some students needed to correct their predictions based on their sample data. A notable observation from the prediction outcomes is that students often need to pay more attention to the importance of units, leading to incorrect results. These findings underscore the necessity of solid mathematical knowledge to achieve statistical literacy proficiency. Figure 1 illustrates the responses of most students who could differentiate between populations and samples but struggled with predictions due to a lack of understanding of units. Conversely, Figure 2 showcases a student's response to question 12, where they accurately distinguished between populations and samples and made a successful prediction.

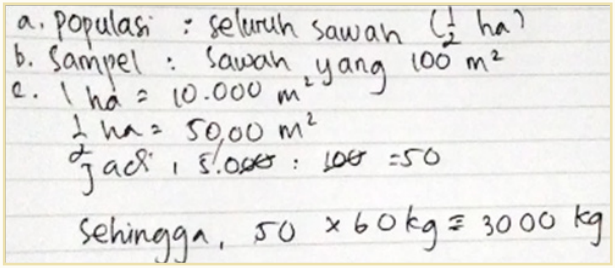


Figure 1 AD Students

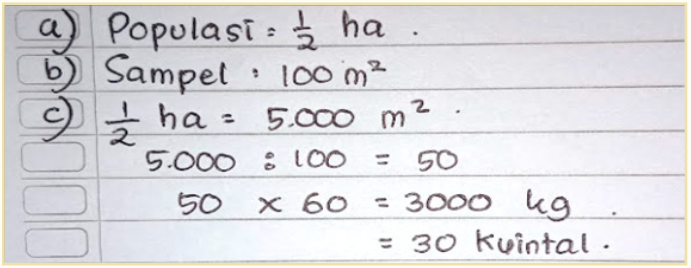


Figure 2 TE Students

Aspects of Data Representation and Interpreting Data

In the second aspect, statistical literacy involves students' ability to represent and interpret data. Problem 4 assesses students' skills in transforming data from tabular form to the most suitable diagram. In this question, students are provided with tabular data and asked to choose the most appropriate diagram as the answer. The correct answer is a pie chart. Analysis of the responses reveals that only 30 students (42.9%) answered correctly, while 57.1% selected distractor answers that closely resembled the correct one. This indicates that many students needed to differentiate between similar-looking options and carefully consider all elements and values in the diagram when representing data from tables to diagrams.

Furthermore, the second indicator in interpreting data involves analyzing data represented by questions 5, 7, and 9, each presented in the form of bar charts, line charts, and pie charts. According to the analysis, students' ability to interpret pie charts in statistical problem-solving needs to improve. Specifically, only 13 students, accounting for 18.6% of the total 70 students, answered question 9 correctly. The question number 9, shown in Figure 3

The analysis of question 9 indicates that students are prone to selecting the incorrect answer and getting stuck on distractors. The correct answer is option "A," yet many students are still misled by options B, C, D, or E. Some students mistakenly use the information in the question, misinterpreting it as 20%. Consequently, they select option "B" by calculating 20/200 x 100 = 10. The most commonly chosen option by students is "C," with 25 students (35.7%) falling for it, mistakenly interpreting the 20% question information as 20. Option D was intentionally included to form a logical sequence of multiple choices. Students who chose "E" failed to carefully consider the question, neglecting to calculate 20% of the number of students who like chocolate, which is 15/100 x 200 = 30, and failing to proceed with calculating 20% of 30.

The diagram on the side shows the preferences of 200 students for snacks in the school canteen. There are twice as many students who like donuts as there are students who like noodles. If 20% of students who like chocolate are female students, the number of female students who like chocolate is . . . child.

A. 6 B. 10 C. 20 D. 25 E. 30

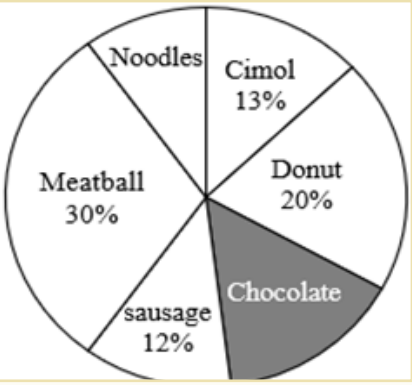


Figure 3 Question number 9

Aspects of Concluding and Making Decisions

The quantification of this variable is evaluated through three inquiries. In question 8, students are presented with a line graph illustrating peanut productivity data. They are tasked with choosing the appropriate statement that summarizes the information presented in the graph. According to Table 2, 31 students (44.3%) provided accurate responses. Analysis of the multiple-choice options reveals that many students made errors in their selections. These discrepancies may arise from inaccuracies, beginning with the misinterpretation of data, which could result in computational mistakes. As a result, students may need help in concluding and may select incorrect answers.

The next indicator relates to using data presented in tabular format for decision-making purposes. This problem involves a highly relevant scenario for aspiring mathematics educators, particularly about school remedial learning. The problem, as depicted in Figure 4, requires proficiency in statistical literacy, understanding of contextual information, and basic mathematical calculations to obtain an accurate solution. Upon observing all students' answers, it was seen that only 29% of the students answered correctly, while 71% stuck to the distractor answers. In addition, some students chose answer choice B, citing idiosyncratic rationales.

Kriteria Ketuntasan Minimal (KKM) untuk pelajaran matematika adalah 75. Perhatikan tabel di samping, nilai hasil ulangan siswa kelas VII SMP Bhayangkara. Guru matematika akan mengambil keputusan dari hasil tersebut. Manakah keputusan yang tepat?

Nilai	Frekuensi
55	2
60	7
70	9
75	4
80	6
85	2
90	0

A. Pembelajaran remedial tidak perlu dilakukan karena banyaknya siswa yang tuntas lebih dari yang tidak tuntas KKM
B. Pembelajaran remidial tetap dilaksanakan setiap akhir pokok bahasan
C. Perlu adanya pembelajaran remidial karena 60% siswa tidak tuntas KKM
D. Tidak perlu diadakan pembelajaran remidial karena perbandingan siswa tuntas dan tidak tuntas KKM adalah 3 : 2
E. Perlu adanya pembelajaran remidial karena hanya 50% siswa yang mencapai nilai KKM.

Figure 4 Question number 6

The subsequent assessment of decision-making skills pertains to question number 10. This question presents a scenario requiring comprehension of information conveyed through tables and pie charts. While all answer options in question 10 are technically correct, students must discern the most optimal solution. The question challenges students to make data-based decisions, emphasizing the importance of effective and efficient decision-making. Upon evaluation, it was found that only 15 students (21.4%) could select the most effective and efficient response. Most students were misled

by incorrect answer choices, demonstrating a lack of attentiveness and failure to utilize all available information from the provided tables and pie charts in their decision-making process.

Aspects of Critically Evaluating Information

In critically evaluating information represented by questions 11 and 13, both questions aim to assess the ability to analyze data by scrutinizing claims. Figure 5 illustrates problem 11.

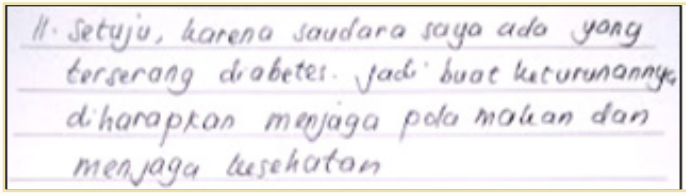
The following information was obtained from survey data conducted on 250 people who have offspring with diabetes and those who do not have offspring with diabetes.

	Having hereditary diabetes	No hereditary diabetes	Total
Diabetics	90	60	150
Not a diabetic	60	40	100
Total	150	100	250

Using this data information, a reader concluded that "if you look at the number of diabetes sufferers, more people suffer from diabetes due to hereditary factors." Do you agree with this conclusion? Give your reasons.

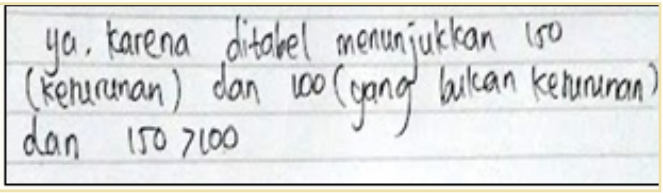
Figure 5 Question number 11

Based on the results of the analysis obtained from the students' answers, most students can evaluate information claims. Students agree with the claims given, but the arguments presented by most students are still «idiosyncratic,» meaning that they provide reasons based on their own experiences and attitudes. Examples of student responses are illustrated in Figure 6. In addition to these answers, some students gave arguments by considering the data, only reading the data in the table without involving mathematical calculations. However, students showed mathematical understanding by using the symbol «more than» (>). Student responses are illustrated in Figure 7.



Agreed, since my brother has diabetes due to genetics, it is essential to prioritize diet and health with a family history of the condition.

Figure 6 ER students

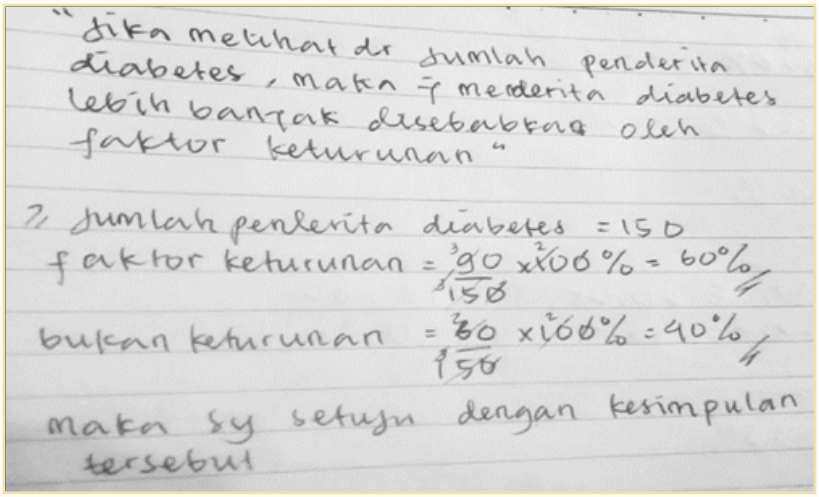


Agreed, the table indicates 150 (hereditary) and 100 (non-hereditary), showing that 150 is greater than 100.

Figure 7 FA students

Students who can answer questions correctly and evaluate information critically achieve the highest level of statistical literacy. The analysis revealed that only 12.8% of students reached this level of performance. The expected ability from answering question number 11 is for students to not only interpret the data. Figure 8 illustrates one student who demonstrates statistical literacy at the highest level. Students exhibit statistical literacy by considering all components of the given problem. Consequently, students' responses are not solely based on their experiences but are backed by accurate calculations to argue and interpret data, enabling them to evaluate information critically.

For question 13, students are asked to make decisions by considering data presented in the form of a line graph. In this problem, students are expected to be able to calculate the average and variation of data to make a decision. The line graph in Figure 9 below shows the training time records of two short-distance runners.



When considering the prevalence of diabetes, a significant number of individuals are affected by the condition due to genetic factors. The number of diabetes patients is 150.
The hereditary factor is calculated as (90/150) x 100% = 60%.
Non-hereditary = (60/150) x 100% = 40%.
So, I agree with the claim.

Figure 8 GL Students

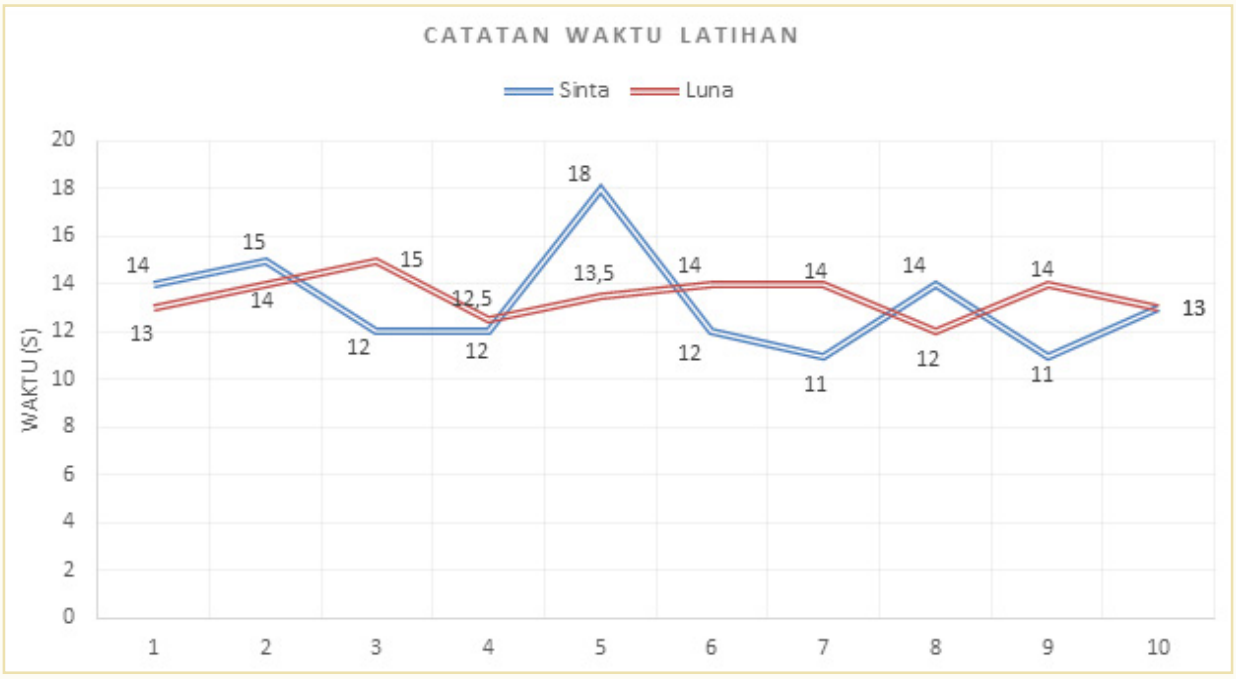
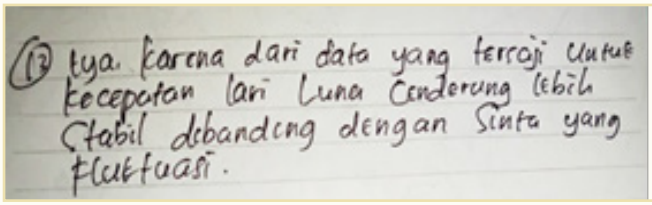


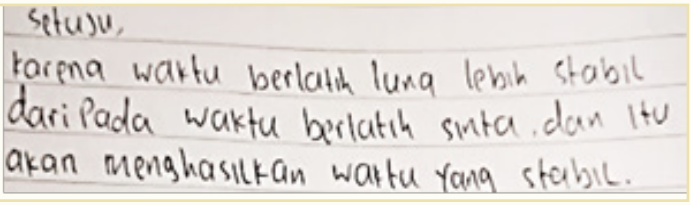
Figure 9 2-runner training time record

Based on the diagram in number 13, there is a claim in the question that the coach selected Luna to represent the team in the championship. The students were assigned to evaluate the coach's decision. After analyzing the students' answers, it was found that most of them focused solely on the variance of the data, neglecting other factors and concentrating only on Luna's consistency over time. Examples of student responses are illustrated in Figures 10 and 11.



Yes, I Agree. Luna's speed data seems more stable compared to Sinta's, which fluctuates.

Figure 10 OR students



I agree because Luna's more consistent training compared to Sinta's is likely to lead to more stable results.

Figure 11 JK students

DISCUSSION

This study reveals four essential aspects for prospective mathematics teachers to prepare themselves to enhance students' statistical literacy in schools. In terms of understanding terminology, the focus is on the ability of prospective teachers to differentiate between populations and samples, select the most appropriate data presentation to represent data and identify the most effective way to collect data. Overall, prospective mathematics teacher students are pretty proficient in the first aspect. However, they still need to gain the necessary skills to be considered prepared as prospective mathematics teachers. These findings are consistent with [22; 23], mentioned that students' statistical abilities have yet to achieve the expected results, and this is due to the lack of basic statistics and math skills. Furthermore, according to the study's findings, most prospective teacher students can identify populations and samples. Nevertheless, when asked to make predictions using their population and sample data, students provided incorrect answers by overlooking the concept of units. Previous research has also highlighted a similar issue with the sample concept, indicating that prospective teacher students need help selecting samples [24]. This contradicts the expectation that prospective mathematics teacher students should develop statistical literacy to comprehend sampling, graphical representation, averaging, probability, inference, and variability for decision-making, which will be taught to students in schools [25; 26].

In terms of interpreting data, researchers evaluated the proficiency of prospective mathematics teacher students in representing and analyzing data using line, bar, and circle diagrams. The analysis revealed that only 50% of students answered question 5 correctly out of questions 4, 5, 7, and 9. However, less than 50% of students provided correct answers for the other three questions, indicating a deficiency in interpreting statistical messages. This deficiency underscores the necessity for more practice to improve statistical literacy in this domain. Mastering this skill is essential for students aspiring to become prospective mathematics teachers and novices. According to [20] prospective mathematics teachers need training and preparation in statistical literacy to interpret graphs and conduct accurate and appropriate analyses. These findings are consistent with previous research indicating that prospective teachers encounter challenges in presenting and interpreting their research data [23].

Inference and decision-making are aspects of statistical literacy essential for every individual, not just for researchers conducting formal statistical analysis. Prospective mathematics teachers need to recognize that the ability to draw conclusions and make decisions is crucial to teaching students in schools [5; 20]. This study's findings indicate that prospective mathematics teachers' capability to draw conclusions and make decisions based on data still needs to be improved and requires improvement. This is evident in the analysis of student responses, where arguments for drawing conclusions and making decisions remain idiosyncratic. Medova et al. [27] explained that at the most basic level of statistical literacy, there is only a limited idiosyncratic understanding, indicating that students do not consider the task context and base their conclusions on personal experiences and attitudes.

The highest level of statistical literacy involves critically evaluating information. Koga [13] defined statistical literacy as interpreting and critically assessing statistical information, which requires critical thinking. However, this study shows that less than 25% of prospective teacher students have yet to reach this level of competency. Analyzing students' responses when verifying information in tables or diagrams led to this conclusion. Many student teachers needed knowledge of mathematical concepts and calculations when assessing claims. Like previous findings, students tended to use subjective opinions and focus only on specific data points. Catman et al. [2] argued that students cannot be considered critical evaluators if they base decisions on the relationship between two values and concentrate solely on specific data points. These results are consistent with [28] research, which found that students struggle with statistical calculations, connecting concepts in hypothesis testing, and describing analysis results. Prospective teacher students also encounter challenges in sample selection, data interpretation, and overall statistical literacy, affecting their competence [24]. This underscores the importance of improving the statistical literacy of prospective mathematics teachers.

Recommendations for improving the education of prospective mathematics educators in statistical literacy

Enhancing statistical literacy in higher education is crucial, with educators playing a pivotal role in guiding students to critically engage with statistical information from various sources, including media and research findings. This guidance fosters interpretation, critical evaluation, concluding, and decision-making skills. As students internalize these practices, it facilitates a significant learning journey. The ultimate goal is to create a high-quality learning environment that boosts students' statistical literacy throughout their academic journey and equips them for future roles as mathematics educators. Retnawati et al. [28] have suggested further research and development to explore diverse statistical learning models in lectures to enhance students' statistical literacy. Innovative curricula, supported by statistical organizations, focus on improving the statistical literacy of educators and students alike, utilizing technology as an effective tool for this purpose [11; 29]. Consequently, there is an urgent need to develop customized teaching materials that integrate technology to enhance students' statistical literacy within the framework of statistics lectures.

CONCLUSION

Based on the findings obtained in this study, prospective mathematics teachers' statistical literacy responded quite well to understanding the basic terminology of statistics and probability. However, students must still improve their interpretation of data, especially when presented as pie charts. Most students must evaluate information gained critically, draw conclusions, and make effective decisions. The arguments students present to verify information claims are often idiosyncratic. That is, students do not think in the context of the task, and they draw conclusions based on their own experiences and attitudes.

The generalizability of the study examining the proficiency of prospective mathematics teachers may be limited due to the sample being selected from a single university in the East Java region of Indonesia. Nevertheless, the study's conclusions are corroborated by research conducted in diverse locations throughout Indonesia. For instance, Takaria et al. [23] observed in their research that prospective mathematics teacher candidates encounter difficulties in data interpretation. Similarly, [28] identified challenges students face in elucidating statistical analysis and computational outcomes. Furthermore, a recent investigation by [30] encompassing 970 participants from 21 Indonesian universities disclosed that the statistical literacy of prospective mathematics teachers needs to be improved, particularly in grasping the concept of margin of error. The findings of this study align with previous research on the performance of students in statistical literacy in Indonesia, underscoring the necessity of specific interventions to bolster it. This is essential for improving students' statistical literacy in future educational settings, particularly for individuals aspiring to become mathematics educators.

The study examines the statistical literacy level among prospective mathematics teachers and their readiness to improve students' statistical literacy in the school. A particular emphasis is placed on the pressing need for higher education institutions in Indonesia to address this deficiency promptly. More statistical literacy among prospective mathematics teachers is expected to affect future students' competencies and the advancement of statistical literacy in Indonesian society, particularly in the age of big data. Subsequent research could further explore the statistical literacy of prospective mathematics teachers, concentrating on the four aspects identified in this study and encompassing a larger sample size from various universities across diverse provinces in Indonesia. Additionally, it might be advantageous to consider students' mathematical proficiency and contextual knowledge.

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