STATISTICAL LITERACY ABILITY OF BOARDING AND NON-BOARDING STUDENTS AT MAN 1 SURAKARTA

Arif Safta Wijaya, Annisa Swastika

^{1,2}Universitas Muhammadiyah Surakarta, Surakarta, Sukoharjo, Indonesia <u>arifsafta007@gmail.com</u>

Abstract

Boarding and non-boarding students have differences in their daily activities, so there is a possibility that the statistical literacy skills between boarding and non-boarding students at MAN 1 Surakarta are different. Statistical literacy ability is the ability to read involving interpretation of data and understanding of available information. This study used a qualitative descriptive method where the researcher used test and interview techniques which were conducted on boarding and non-boarding students at MAN 1 Surakarta, with the sample used being 46 class XI students with a comparison of 23 boarding students and 23 non-boarding students. the purpose of this study is to describe statistical literacy skills between boarding and non-boarding and non-boarding and non-boarding and non-boarding and non-boarding and non-boarding at MAN 1 Surakarta. The results of this study indicate that the abilities of boarding and non-boarding students at MAN 1 Surakarta are not evenly distributed, with indicators of statistical literacy ability namely understanding data, interpreting data, and communicating data. boarding and non-boarding students have the ability to understand data well, but boarding and non-boarding students have poor data interpretation skills, besides that boarding students have the ability to communicate graphical data better than non-boarding students, but the ability to communicate forms of boarding and non-boarding students at MAN 1 Surakarta have very good abilities.

Keywords: literacy, statistics, boarding, non-boarding

Abstrak

Siswa asrama dan non asrama memiliki perbedaan dalam kegiatan yang dilakukan sehari hari, sehingga ada kemungkinan kemampuan literasi statistik antara siswa boarding dan nonboarding di MAN 1 Surakarta yang berbeda. Kemampuan literasi statistik adalah kemampuan membaca dengan melibatkan interpretasi data dan pemahaman dari informasi yang tersedia. Penelitian ini menggunakan metode diskriptif kualitatif dimana peneliti menggunakan teknik tes dan wawancara yang di lakukan kepada siswa boarding dan nonboarding di MAN 1 Surakarta, dengan sample yang digunakan adalah siswa kelas XI sebanyak 46 orang dengan perbandingan sebanyak 23 siswa boarding dan 23 siswa nonboarding. Tujuan penelitian ini untuk mendeskripsikan kemampuan literasi statistik antara boarding dan non boarding di MAN 1 surakarta. Hasil dari penelitian ini menunjukan bahwa kemampuan siswa boarding dan non boarding di MAN 1 Surakarta belum merata, dengan indicator kemampuan literasi statistik yaitu memahami data, menginterpretasikan data, dan mengkomunikaskan data. siswa boarding memiliki kemampuan interpretasi data yang kurang baik, selain itu siswa boarding memiliki kemampuan memahami data secara baik, akan tetapi siswa boarding dan non boarding memiliki kemampuan memahami data secara baik, akan tetapi siswa boarding memiliki kemampuan interpretasi data yang kurang baik, selain itu siswa boarding memiliki kemampuan mengkomunikasikan data berbentuk grafik lebih baik dari pada siswa non boarding, tetapi kemampuan mengkomunikasikan data dalam bentuk kalimat siswa boarding dan nonboarding di MAN 1 Surakarta memiliki kemampuan mengkomunikasikan data dalam bentuk kalimat siswa boarding dan nonboarding di MAN 1 Surakarta memiliki kemampuan mengkomunikasikan data dalam bentuk kalimat siswa boarding dan nonboarding di MAN 1 Surakarta memiliki kemampuan mengkomunikasikan data dalam bentuk kalimat siswa boarding dan nonboarding di MAN 1 Surakarta memiliki kemampuan mengkomunikasikan data dalam bentuk kalimat siswa boarding dan nonboarding di MAN 1 Surakarta memil

Kata kunci: literasi, statistik, boarding, nonboarding

INTRODUCTION

In the digital era like now, information circulating in society is not only presented through writing, but also in the form of data presentation in the form of graphs, tables or diagrams. Misunderstandings in understanding information can occur in people who do not understand the presentation and interpretation of data. As a result, information manipulation

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was carried out by irresponsible parties (Mahmudah & Setianingsih, 2022). Literacy is a series of learning for individuals that helps an individual to achieve the potential and knowledge of the individual himself in fully participating in the surrounding community and the wider community (Nishfani et al., 2017), The importance of literacy awareness greatly supports a person's success in dealing with various problems. Through literacy skills, a person not only gains knowledge but can also document a piece of experience that will become a reference in the future (Irianto & Febrianti, 2017).

Statistics is a science that studies the properties of data by collecting, processing and interpreting it in numerical form and drawing conclusions from it. There are three important things in statistics : 1). Data, 2). Data treatment, in the form of collection, processing or analysis, interpretation and drawing conclusions; 3). Figures (Nasution, 2017). In modern society, it cannot be denied that everyone needs to have basic knowledge of statistics by the time they graduate from high school. Statistics can be applied to mathematics learning material, namely statistical material. Rini Setraningsih in (Yulindra et al., 2023). Basic statistical knowledge is necessary to perform everyday activities such as surfing the Internet and spotting current trends. (Obrial & Lapinid, 2020).

Statistical literacy ability is the ability to read by involving data interpretation and understanding of available information (Andriatna et al., 2021) (Maryati & Priatna, 2018), specifically statistical literacy ability is the ability to interpret and evaluate data including individual capacity to read data and analyze it based on prior statistical knowledge so that accurate predictions can be made priatna martadiputra in (Yuniawatika, 2018). The statistical literacy ability of high school students is influenced by students' knowledge. student learning motivation, student psychological state, school facilities and infrastructure, the influence of the subject teacher, and the state of the school environment (Hafiyusholeh et al., 2017). One of the materials for class XII SMA is statistics material, many high school students misinterpret data in statistics material (Mika Yunisa, Mik Salmina, 2021), while statistical material is needed for everyday life.

This study focuses on students' statistical literacy skills between boarding and nonboarding in terms of social environmental factors. One of the differences between boarding and non-boarding is social interaction at school, where non-boarding students will more often meet peers than boarding students, such as research conducted by (Wahidah, 2020) which states that non-boarding students are not bound by learning in the boarding environment. The interaction between children and their social environment will occur in a relationship that influences and is influenced by one another. The social environment in question is parents, schools, peers and adults (Utami, 2018).

Every school that uses the boarding system at school must have its own activities so that it has a relatively different environment, such as regulations that boarding students have exit hours set by the school, so that boarding students have hours for social interaction that are more limited compared to non-boarding students. This is also reinforced by research conducted by Maposo which shows that parental involvement has a significant difference between students from Islamic boarding schools and non-Islamic boarding schools (Maphoso & Mahlo, 2014). This basic thing is the benchmark for the fundamental difference between the environment of boarding and non-boarding students in high school schools with the boarding system.

With the differences that occur in boarding and non-boarding it is possible that each student has different statistical literacy abilities, because student statistical literacy is influenced by student knowledge, student motivation, the psychological state of students' facilities and infrastructure at school, the influence of the subject teacher, and the state of the school environment (Nishfani et al., 2017). Other opinions also state that the social environment is a sociological review, meaning the spotlight is based on relations between humans, relations between groups and relations between humans and groups, in the process of social life (Pitoewas, 2018).

METHODS

In this study, researchers used a qualitative descriptive approach. According to (Suardi, 2017) qualitative description (QD) is one of the techniques used in descriptive qualitative research and is also used to describe a social phenomenon. Qualitative research that focuses on phenomena that occur in the social environment quoted form lexy j meleong in (Saleh, 2021), namely voicing the feelings and perceptions of the participants studied. It is based on the belief that knowledge results from social arrangements and understanding social knowledge is a legitimate scientific process. This research is most suitable for using qualitative descriptives where researchers use test and interview techniques conducted on boarding and

non-boarding students at MAN 1 Surakarta, with the sample used being 46 class XI students with a ratio of 23 boarding students and 23 non-boarding students.

This qualitative approach aims to obtain complete information about "the differences in statistical literacy skills that occur between dormitories and non-dormitories". A qualitative approach is an approach what is meant is to understand the phenomena experienced by research subjects, for example behavior, perceptions, interests, motivations and actions by means of descriptions. Triangulation in this study used source triangulation, namely by comparing student test results with student interviews.

The statistical literacy indicator in this study refers to Gall's research in (Maryati, 2021), and the question indicators used in this study refer to research (Sari, 2017).

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Description
Subjects are able to know the information presented in the problem, are able to determine the type of data in the problem so that they can determine the next steps.
Subjects are able to interpret information or data obtained from data processing so as to be able to make the right decisions.
Subjects are able to present back from data processing either in the form of graphs, diagrams, tables or curves. Subjects are able to provide explanations in concluding the decisions taken in solving problems.

	Table 2. question indicators
Indicator	Description
Didactic	The questions developed refer to the KTSP curriculum, support conceptual understanding and help students construct their knowledge
construction	The questions show clarity of learning objectives, use grammar that students can easily understand, and have instructions for use that are easy to understand and show effective use.
Technical	Questions use writing that is clear and easy to understand, contains clear pictures and is appropriate to the subject matter and makes the appearance more attractive

RESULTS AND DISCUSSION

The questions given by students are in accordance with research indicators and pass the validity test of experts, with the following questions.

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Bacalah bacaan dibawah ini dengan seksama!

1. Indonesia memiliki 34 provinsi dan setiap provinsi memiliki perusahaan kecil dan besar yang membantu meningkatkan pendapatan di Indonesia, berikut data terkait perusahaan kecil di setiap provinsi pada tahun 2021

PROVINSI	perusahaan	PROVINSI	perusahaan
ACEH	1 372	KEP. RIAU	147
BALI	2 301	LAMPUNG	1 219
BANTEN	3 568	MALUKU	111
BENGKULU	220	MALUKU UTARA	288
DI YOGYAKARTA	4 332	NUSA TENGGARA BARAT	9 2 7 1
DKI JAKARTA	8 079	NUSA TENGGARA TIMUR	434
GORONTALO	129	PAPUA	168
JAMBI	630	PAPUA BARAT	77
JAWA BARAT	29 434	RIAU	819
JAWA TENGAH	47 195	SULAWESI BARAT	115
JAWA TIMUR	80 573	SULAWESI SELATAN	1 343
KALIMANTAN BARAT	557	SULAWESI TENGAH	1 004
KALIMANTAN SELATAN	1 107	SULAWESI TENGGARA	172
KALIMANTAN TENGAH	423	SULAWESI UTARA	625
KALIMANTAN TIMUR	446	SUMATERA BARAT	2 543
KALIMANTAN UTARA	58	SUMATERA SELATAN	1 621
KEP. BANGKA BELITUNG	574	SUMATERA UTARA	5 650

Sumber : https://www.bps.go.id/indicator/170/440/1/jumlah-perusahaan-menurut-provinsi.html

Figure 1. question 1



- a. Provinsi mana yang memiliki jumlah perusahaan terbanyak di tahun 2021?
- b. Berapakah total perusahaan di Indonesia pada tahun 2021?
- c. Sajikan dalam bentuk grafik batang secara lengkap (nama Provinsi dan jumlah perusahaan), 5 provinsi yang memiliki perusahaan terbanyak!
- d. Jelaskan bagaimana kalian membuat grafik batang terkait dengan soal nomor 1c
- 2. Laporan "We Are Social" mencatat, bahwa pengguna internet di Indonesia pada Januari 2023 sekitar 77%, penggunaan internet rata-rata orang Indonesia selama 7 jam 42 menit setiap harinya. Selain itu, 98,3% pengguna internet di Indonesia menggunakan telepon genggam. Meski demikian, Indonesia menjadi salah satu negara yang banyak penduduknya belum terkoneksi internet. Jumlah itu menjadi yang terbesar kedelapan di dunia. Berikut data terkait jumlah pengguna internet di Indonesia setiap tahunnya.



 $Sumber: { { https://dataindonesia.id/internet/detail/pengguna-internet-di-indonesia-sentuh-212-juta-pada-2023 } } \\$

Dari data diagram pengguna internet di atas jawablah petanyaan di bawah ini

- a. Berapa pengguna internet pada bulan januari 2021? b.
- Tentukan nilai rata rata pengguna internet pada tahun 2012 sampai 2023! c.
- Berikan data penggunaan internet dalam jangka waktu 10 tahun terakhir, dalam d. Jelaskan bagaimana kalian menentukan rata rata terkait soal dengan nomor 2b

Figure 2. question 2

Bacalah bacaan dibawah ini dengan seksama!

3. Di berbagai belahan Negara pastinya ekonomi setiap Negara mengalami perbedaan, hal ini di pengaruhi oleh bermacam macam factor, seperti factor lingkungan, geogafis, juga kualitas penduduk dan sumberdaya alam, berikut ini adalah Negara terkaya menurut versi majalah Global Finance pada tahun 2023.

No	Negara	Pendapatan (US\$)
1	Irlandia	145.196
2	Luxembourg	142.490
3	Singapura	133.895
4	Qatar	124.848
5	Macao	89.558
6	Uni Emirates Arab	88.221
7	Swiss	87.963
8	Norwegia	82.655
9	Amerika Serikat	80.035
10	San Marino	78.926

Sumber :https://finance.detik.com/berita-ekonomi-bisnis/d-6735812/daftar-10-negara-terkaya-di-dunia-2023-adaindonesia#:-:text=Mclansir%20dari%20Majalah%20Global%20Finance.per%20kapita%20sebesar%20US%24%20145%2C196.

Dari data tabel pendapatan setiap Negara di atas jawablah petanyaan di bawah ini

a. Negara manakah yang memiliki pendapatan tertinggi?

b. Tentukan rata rata pendapatan seluruh Negara!

c. Sajikan data dari tabel pendapatan Negara menggunakan gafik lingkaran!

d. Berikan alasan kenapa pendapatan di setiap Negara berbeda

Figure 3. question 3

Non-boarding students have various habits, depending on the student's condition and the student's environment and condition. Related to the family environment, social environment, peer environment, apart from that the condition of students also influences the activities carried out by students on a daily basis. This was reinforced by interviews with nonboarding students who stated that daily activities at home were relatively different from one student to another. In terms of independence, not all students have their own independence, because they still live with their parents, besides that some male students at home prefer to play rather than do activities such as studying.

Boarding students have habits that tend to be the same, and are educated to stand up at all times, besides that students on boarding tend to communicate more often with their peers than with parents or friends outside school, besides that boarding students themselves are not given the freedom to go in and out of boarding freely unless there are things that are needed, besides that the rules in the hostel also affect the activities carried out by students on a daily basis. In terms of the ability to understand the data, all non-boarding students can understand the data properly and correctly and there are no obstacles at all, this is reinforced by student interviews which say that "solving problems number 1a, 2a, 3a is very easy".

Figure 4. answer number 1a boardin a 203 penaguna. Figure 5. answer number 2a boardin 3. a. hlandra – Figure 6. answer number 3a boardin	ng
2.a. 203. peroguna.Figure 5. answer number 2a boardin3. a. hlandiaFigure 6. answer number 3a boardin	ng
Figure 5. answer number 2a boardin 3. a. Itlandia Figure 6. answer number 3a boardin	ng
3- a- klandia – Figure 6. answer number 3a boardin	
Figure 6. answer number 3a boardi	
	ng
11 a. Jawa Timur	
Figure 7. answer number 1a Non-boar	ding
21 a. 203 juta pengguna	
Figure 8. answer number 2a Non-boar	ding

Figure 9. answer number 3a Non-boarding

Based on Figure 4 and Figure 6, it shows that students can understand the data well, but in the answers of non-boarding students, Figure 5 has an error, namely not giving information about million, this is influenced by the relatively low accuracy of non-boarding students, this is reinforced by interviews with students who said "I don't pay attention if there is a million on the side, the important thing is there is a graph, there are questions, so just answer them", but not all students made mistakes in class number 2a, and out of 23 people only 6 people answered correctly.

The ability to understand boarding students is counted as being able to understand data well, because all the answers on boarding students can work on and view data well, but boarding students also have a slight lack of accuracy in understanding data.

(2.)					
r a) 203			V		
\$r'b) +++++++	1604.4	: (33,	٦		
Figure 10. Boardir	ng stude	ents' ai	nswers		
1) b. 25607 + 180 398 = 206.0	605 L				<u></u>
21b. 39,6+60,6+71+89,6+90,7	7+136+14	16+174+	176+202	+305	+212,9
- (453 393	10				
- 1055,787		×			
- 105.378		о. ₁ . н			1.0
				žs.	

Figure 11. Non-boarding students' answers

It can be seen in Figure 10, the student experienced an error in number 2 because the boarding student did not include the millionth unit in the answer, this was reinforced by the student's response when answering questions related to understanding the data, who answered "I don't know bro, I don't think there is units of millions", this shows that boarding students are less thorough in answering questions about understanding data.

The ability to interpret data in non-boarding students is quite good, non-boarding students this can be seen from the average student answers.

6 25607 + 180 998 = 206 605 L

Figure 12. non-boarding student answers 1b

D. 39,6 + 00,6 + 71 + 8916	490,7 + 136 + 196 + 179 + 176 + 202 + 205 + 212 8 = 133,7
	4
Fig	ure 13. non-boarding student answers 2b
3. a. hlandia - 6. 145. 196 + 142.980 + 135	2.895 + 124.848 + 89.558 + 88.221 + 87.963 + 82.655 + 81.035 + 83. 0



40) 206.605 g 56.000-

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Figure 17. boarding student answers 3b

The ability to interpret data in non-boarding students is quite good, non-boarding students this can be seen from the average student answers from Figure 12, Figure 13 and Figure 14 which shows non-boarding students can interpret data well. This is also strengthened by interviews with MAN 1 Surakarta students which states "if the arithmetic questions are easy but quite a lot is counted", but there is an error in number 2b, apart from that the average student number 2b answers are not all correct, because students do not include units of millions, this is caused by non-boarding students who are not careful in understanding the problem.

The ability to interpret boarding student data is also quite good, seen from the average student performance. It's just that some students don't give how to do it.

can be seen from the students' answers in Figure 15, Figure 16, and Figure 17 students tend to be less thorough, because students can answer questions number 1b, 3b, correctly and correctly, but in question number 2b, students answer not entirely correct because boarding students do not include million units, out of 23 boarding students there were only 4 students who answered correctly, from this many boarding students tended to be less thorough in understanding the questions.

The ability of non-boarding students in communicating tabular data tends to be good and the ability of non-boarding students to communicate sentences is very good, seen from the average answers of all non-boarding students.

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NO	tanun	Jumlah pengguna
	Jan 2019	71
	Jan 2015	8916
	Jan 2016	9017
	Jan 2017	
5	300 2018	196
		174
2	Jon 2026	176
	Jan 2021	203
9	Jan 2012	205
	Jan 2023	212,9

Figure 19. non-boarding students' answers 2c and 2d



Figure 20. Non-boarding students' answers 3c and 3d

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) a) Jawa Timur = ~c)	E 80 000 -	80.513	
No) 206.605	1 50-m -	97.195	DE1 8079 JABAR : 29 434
-d) mengunutean dari data ya besar. lalu dipilih 5 data terbesar	20 000 - B. 079 9271	23. 454	АТСИ 47195 20078 - 47195 20078 - 470 271 - 470
Lalu dibuat grafik Seperti 49 dicamping	PEI NTE	JABAR JATENG JATIM	

Figure 21. boarding students' answers 1c and 1d

=	NU.	Bulan dan Tehnun	Data pengguna
a) 203			71
(b) 1604.4 = (33,7	1	JONNALL DE 14	2010
12		100031411 2015	0.910
caranya og menambahkan			9017
semua data dan		JANHAVI 2016	
membaginya 89 jumlah			(560
Bara.			14.60
marino = 78 - 926 . 2600	6	January 2019	174
105-378,7	7	1004 AF1 2020	176
= 26:000	9	January 2021	203
100 278.7 ×360°	9	January 2022	205
28120	10	Januari 2023	212,9

Figure 22. boarding students' answers 2c and 2d



Figure 23. boarding students' answers 3c and 3d

It can be seen from the students' answers in Figure 18 and Figure 19, where for numbers 1c and 2c, non-boarding students can communicate the data correctly but non-boarding students have the wrong answer in answer number 3c in Figure 20, because students do not do the questions including the right way, this was also responded to by students who stated "the formula is kept in the head" apart from that the results of interviews students who like to read also said "I don't like reading books related to numbers and graphs, mostly only textbooks" from thing it can be said that non-boarding students are not familiar with circleshaped graphic questions and non-boarding students are less able to communicate in detail, causing errors. Besides that, in Figure 20 there is question number 3d which shows that students answered correctly, it's just that not all students answered correctly, and the results of the interview said that "for questions number 1d, 2d, and 3d. all easy". In addition, most of the non-boarding students could answer correctly, and of the 23 non-boarding students only 1 answered incorrectly. This shows that most students have very good abilities in communicating data in the form of sentences.

The ability of boarding students to communicate data is considered very good, because the average boarding student answers in solving problems.

From Figure 21, Figure 22, and Figure 23, it can be seen that boarding students are correct in answering questions, besides that boarding students can also communicate graphs well, because boarding students include the process for finding the degree angle of the problem, and besides that boarding students can draw graphs, and also students boarding can provide responses about what is being done, this can be seen in the answers of students in numbers 1d, 2d and 3d where students can fulfill the answers correctly and correctly, besides that out of 23 students there are 16 students who answered questions correctly.

CONCLUSION

Boarding and non-boarding students tend to have different activities, boarding student activities will follow the rules of the boarding system used, and non-boarding student activities have relatively diverse activities. In addition to understanding statistical literacy data, boarding and non-boarding students can understand the data very well because there are no errors that occur in answering question number 2a, while for the ability to interpret data, boarding and non-boarding students have good abilities, but boarding and non-boarding students have good abilities, but boarding and non-boarding students are less thorough in giving information, and for the ability to communicate data boarding and non-boarding students can easily communicate data in the form of sentences but the ability to communicate data in graphical form non-boarding students tend to be less coherent in solving problems, while for boarding students more than half of students who finish coherently.

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