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Student's Ability to Write Practicum Reports in Plant Morphology and Invertebrate Zoology Practicum

Ita[1], Nurul Himmah[2], Agustina Ambar Pertiwi [3*]
[1,2,3]Department of Biology, UIN Antasari, Banjarmasin, Indonesia

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Abstract: This study aims to describe the writing ability of students. The type of research is descriptive quantitative. The research subjects were Tadris Biology Semester II students who attended the Practicum of Plant Morphology and Invertebrate Zoology Practicum courses totalling 26 people. The object of research is the report on the results of Practicum of Plant Morphology and Practicum of Invertebrate Zoology. The data collection technique in this study is documentation. Documents collected in the form of practicum reports for Plant Morphology Practicum and Invertebrate Zoology Practicum courses prepared by each individual student in each practicum. The data in this study were analysed descriptively quantitatively. The results showed that the percentage of students' ability to write reports on Plant Morphology practicum was 50% in the good category, 50% in the good enough category, 0% in the poor category, and 0% in the very poor category. In the practicum of Invertebrate Zoology, 0% were in the good category, 84.62% were in the good enough category, 15.38% were in the poor category, and 0% were very poor. Based on these data, it can be concluded that the average ability to write reports in the practicum courses of Plant Morphology Practicum and Invertebrate Zoology Practicum is in the good enough category.

Corresponding Author:
Author Name*: Agustina Ambar Pertiwi
Email*: ambarpertiwi@uin-antasari.ac.id

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INTRODUCTION

Science studies the universe and the processes that exist in it as the object of study. Science learning has a goal to develop a science concept skill, then can develop scientific attitude skills, innovative, creative and apply it in society. One way that educators can do to achieve these science goals by learning science through laboratory experiments.

An experiment is an attempt to prove a hypothesis or a particular question. Experimental activities can be carried out in a laboratory or outside the laboratory. Science learning with experimental activities in the laboratory can hone science process skills in students. The design of the experiment from data collection, analysis and the final stage communicates the findings through writing a report (Sanjewa & Wilson, 2016). In addition, laboratory experiments can develop attitudes towards science, scientific attitudes, scientific inquiry, concept development, and technical skills (Collette & Chiappetta, 1993). Writing ability is the process of pouring an idea, idea, thought and experience in the form of writing with the aim of informing some information, convincing readers, as an entertainer, and expressing feelings as a form of responding to phenomena in everyday life Zulkarnaini (2014). Writing skills are one of the competencies that students must have, because writing activities cannot be separated from student academic life. So writing competence must be owned by students in all disciplines, especially in the field of science. Science learning in the performance of scientific inquiry (practicum) can build competence in cognitive, affective and psychomotor aspects in students (Hoffa & Freeman, 2007). Writing is what cannot be separated from practicum activities, namely writing reports.

Practicum reports are a form of accountability by students after practicum activities take place and can be used as a place for students to develop their language skills in writing. The practicum report aims to teach students how to communicate as scientists, as well as provide a way for academic staff to measure learning achieved in the laboratory (Sanjeewa & Wilson, 2016). Kholifudin (2014) mentioned that the ability to write a practicum report is needed by students so that what has been obtained in practicum activities can be conveyed to others. In addition, practicum activities can also train argumentation skills, the ability to write student reports. Communication skills are one of the science process skills that must be trained and possessed by students, especially students majoring in biology education, because it is an effort to develop the potential that exists in students (Astuti & Suciati, 2017).

According to Kapka et al. (2001) that writing skills are uneven and still weak. Students find it difficult to describe their ideas in writing, language writing is not appropriate and paragraph layout arrangements (Cahyani,

2010). According to Astuti & Suciati (2017) that the ability to communicate students in making reports still needs to be honed in terms of linking the theory with the results of practicum activities and using references from trusted sources.

Plant Morphology and Invertebrate Zoology courses are courses presented in semester 2 at Tadris Biology, Faculty of Tarbiyah and Keguruan UIN Antasari and are practicum courses where students in addition to getting theory about Plant Morphology and Invertebrate Zoology, Students are also strengthened by practicum activities in the laboratory to develop attitudes towards science, concept development, scientific attitudes, scientific inquiry and technical skills Practicum course activities in the laboratory are the first time they have been followed during their time as Tadris Biology students by the class of 2022, so this is also the first time they have made a report on the results of practicum activities. The Practicum of Plant Morphology course discusses various kinds of plant morphology from roots, stems, leaves, fruits and flowers, so there are 9 topics of discussion of practicum activities that students must follow. The Invertebrate Zoology Practicum course discusses invertebrate animals, there are 8 topics of practicum activities that must be followed by students.

Based on the explanation above, writing skills are one of the competencies that students must have. This is because writing activities are inseparable from the academic life of students, one of which is writing practicum reports. The ability to write a practicum report is needed by students so that what has been obtained in practicum activities can be conveyed to others. Based on this, researchers are interested in conducting research with the title "Students' Ability to Write Reports in Plant Morphology and Invertebrate Zoology Practicum Courses".

RESEARCH METHODS

This type of research is quantitative descriptive research. This study aims to describe the writing ability of students. The research subjects were Tadris Biology Semester II students who attended the Practicum of Plant Morphology and Invertebrate Zoology Practicum courses totalling 28 people. The object of this research is the Practicum Report of Plant Morphology and Invertebrate Zoology Practicum. The data collection technique in this study is documentation. The documents collected in the form of practicum reports for Plant Morphology Practicum and Invertebrate Zoology Practicum courses prepared by each individual student in each practicum. Research data in the form of practicum reports have been completed and collected to the lecturer. In the practicum report, analysis and scoring were carried out. Grading is done using instruments based on predetermined research criteria. The instrument used in this analysis is divided into five assessment criteria, namely: report format, observation results, analysis of observation results, conclusions and attachments/evaluation. The data is formulated in the form of Table 1. analysis of practicum report writing assessment criteria, as follows:

Table 1. Practicum Report Assessment Sheet

No.	Aspects assessed	Maximum Score
1	Report format	20
2	Observation results	20
3	Report analysis	20
4	Conclusion	20
5	Atachment/ evaluation	20
	Total	100

There are five categories in scoring the practicum reports analysed. Furthermore, after the practicum report is read and assessed, the researcher will use Table 2. to enter the assessment category of students' practicum report writing ability as follows:

Table 2. Categories of Students' Writing Ability

Report value	Category
85-100	Very good
70-84	Good
56-69	Good enough
45-55	Less good
1-44	Not good

Source: Modified from Nurgiyantoro (2010)

RESEARCH RESULTS

The ability of students in writing practicum reports is extracted from the assessment of reports on Plant Morphology Practicum and Invertebrate Zoology Practicum. The results of the assessment are presented in table 3 below:

Table 3. Plant Morphology Practicum Report Score

No	Name	Report Value for Each Practicum									Average
		I	II	III	IV	V	VI	VII	VIII	IX	
1	Hlpn	71	69	60	67	65	67	64	60	78	67
2	AR	66	58	67	70	70	69	75	69	77	69
3	RS	68	68	60	73	74	68	80	68	79	71
4	NR	73	67	70	84	87	67	84	68	80	76
5	GMUA	70	60	58	57	76	65	61	60	74	65
6	PN	71	66	61	73	78	70	79	70	70	71
7	NKA	68	63	59	72	80	70	82	70	78	71
8	NK	68	62	58	66	70	65	61	65	71	65
9	TM	62	49	55	68	69	65	77	65	78	65
10	NH	63	64	59	57	60	67	62	60	68	62
11	NM	65	65	61	67	73	67	75	70	70	68
12	AN	64	61	77	76	68	70	86	65	78	72
13	Yln	69	63	63	82	67	69	72	69	79	70
14	ANz	65	60	72	75	70	69	72	70	75	70
15	SNA	75	75	71	76	82	69	83	67	80	75
16	NA	56	54	58	70	64	68	70	68	78	65
17	Hla	70	62	60	69	81	69	75	67	79	70
18	EAS	62	60	60	75	73	72	84	73	72	70
19	IWP	67	59	58	55	63	68	74	65	65	64
20	ANb	73	62	60	72	67	68	65	65	80	68
21	Wnd	63	58	59	69	66	67	60	67	67	64
22	MM	62	53	56	65	53	66	65	67	65	61
23	Mfh	70	56	59	63	65	60	78	59	66	64
24	DNP	73	69	60	77	73	68	72	68	79	71
25	Nrhkm	71	61	68	78	65	67	73	70	78	70
26	DKP	65	68	62	83	71	71	89	71	74	73
		Class Average									68

Table 4. Invertebrate Zoology Practicum Report Score

No	Name	Report Value for Each Practicum								Average
		I	II	III	IV	V	VI	VII	VIII	
1	Hlpn	63	71	52	61	60	56	68	70	63
2	AR	50	58	51	60	68	64	57	62	59
3	RS	56	58	54	51	67	50	69	69	59
4	NR	63	62	67	67	77	69	69	72	68
5	GMUA	52	30	56	61	50	58	65	68	55
6	PN	59	64	66	63	68	71	69	70	66
7	NKA	59	54	58	58	73	62	71	72	63
8	NK	45	53	58	60	35	67	50	63	54
9	TM	49	56	61	61	66	69	68	69	62
10	NH	63	60	62	53	57	57	67	67	61
11	NM	59	61	54	63	64	60	62	65	61
12	AN	62	68	63	67	72	64	75	73	68
13	Yln	59	65	64	58	68	71	62	74	65
14	Anz	60	71	62	59	71	62	67	68	65
15	SNA	62	62	68	63	72	72	70	70	67
16	NA	34	38	48	45	59	64	69	68	53
17	Hla	58	59	55	55	68	61	70	70	62
18	EAS	55	60	61	56	66	63	66	69	62
19	IWP	54	58	57	63	50	60	65	64	59
20	Anb	53	55	53	60	60	66	60	70	60
21	Wnd	49	49	52	59	62	62	60	65	57
22	MM	50	46	63	58	30	57	40	71	52
23	Mfh	49	60	51	63	61	58	69	70	60
24	DNP	58	50	62	60	54	64	74	75	62
25	Nrhkm	60	63	56	67	70	65	70	69	65
26	DKP	46	57	69	65	72	68	75	70	65
		Class Average								61

Based on the data above, it was found that the class average percentage of the ability to write reports on plant morphology practicum and invertebrate zoology practicum was in the good enough category. However, individually there are some students who are able to obtain a good category in writing reports on plant morphology practicum. There are also some students who fall into the poor category in writing the Invertebrate Zoology practicum report. Details of the data are presented in Tables 5 and 6 below.

Table 5. Categories of Ability to Write Plant Morphology Practicum Report

Report value	Student frequency	Category
85-100	0	Very good
70-84	13	Good
56-69	13	Good enough
Number of students	26	

Table 5. above shows that there are 13 students who are able to write a practicum report on Plant Morphology in the good category and 13 others in the good enough category. While the results for the writing of the Invertebrate Zoology practicum report are as follows.

Table 6. Categories of Invertebrate Zoology Practicum Report Writing Ability

Report Value	Student Frequency	Category
85-100	0	Very good
70-84	0	Good
56-69	22	Good enough
45-55	4	Less good
Number of students	26	

Table 6. above shows that there is a slight difference with the results of the report writing ability category obtained in the practicum of Plant Morphology. There are 22 students who are categorized as quite good and 4 others are categorized as less good in writing the practicum report on Invertebrate Zoology. Based on the two tables above, the graph of the acquisition of the category of ability to write reports on the practicum of Plant Morphology and Invertebrate Zoology is as follows.

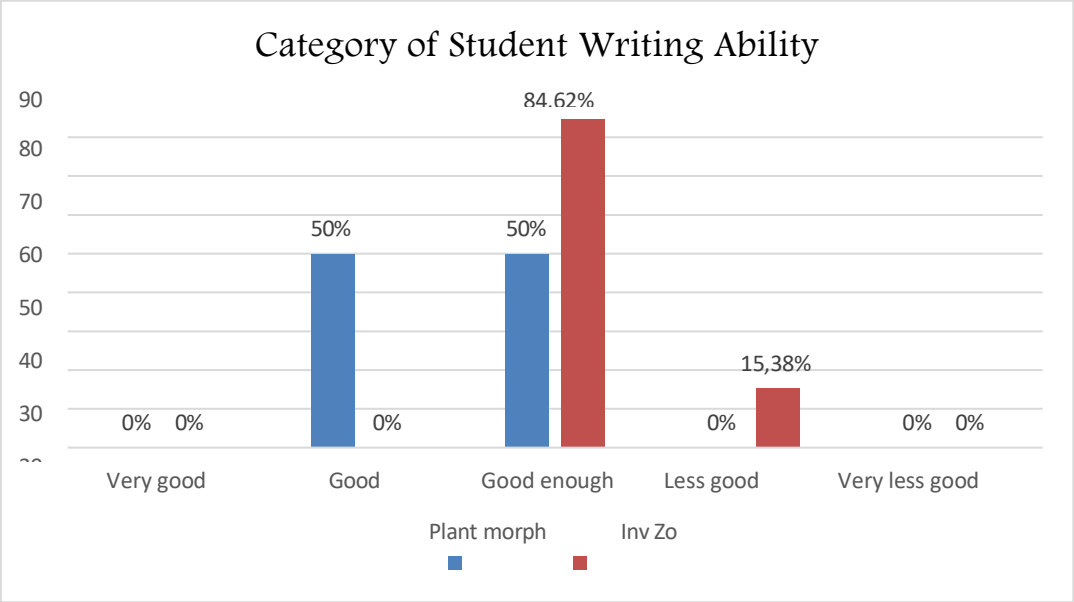

Figure 1: Percentage of Practicum Report Writing Ability Categories

The graph shown in Figure 1. is the percentage category of the ability to write practicum reports on Plant Morphology and Invertebrate Zoology. Based on the figure, it is known that there are no students who have obtained a very good category (0%) in writing practicum reports for both Plant Morphology and Invertebrate Zoology practicums. In the practicum of Plant Morphology, 50% of students were able to reach the good category, the other 50% were categorized as quite good, 0% were not good enough, and 0% were very poor.

In the practicum of Invertebrate Zoology, 0% were in the good category, 84.62% were in the good enough category, 15.38% were in the poor category, and 0% were very poor. This is because in the practicum of Invertebrate Zoology in practicum 1 with the topic of protozoan practicum, the ability to write a practicum report gets the lowest score, because the protozoan practicum is an initial practicum and there are still many mistakes in terms of report format, drawing observation results, providing information in the observation picture and analyzing data. Based on the percentage of the two practicum reports assessed, it can be seen that the average percentage of the practicum report writing ability category by students is in the good enough category.

The following is a snapshot of some student errors in writing practicum reports both from formatting errors and deficiencies in providing analysis of observations/findings during practicum.

	aquatca L.)									
8.	Bunga Pepaya (*Carica papaya* L.)	✓	-	✓	-	✓	✓	✓	Berbatas	Malai Tangga
9.	Bunga Tasbih (*Canna sp.)*	✓	✓	✓	-	✓	✓	✓	Berbatas	Berseling
10.	Bunga Mangga (*Mangifera sp.)*	✓	-	✓	-	✓	✓	✓	Tak berbatas	Malai

E. ANALISIS

1. Bunga Melati (*Jaminum sambac* L.)

Klasifikasi:

Kingdom : Plantae

Figure 2. Example of Margin Setting Error in a Report

Figure 2. Above shows that there are still students who are less careful in terms of report format. The margins used when compiling the report have not been arranged in accordance with the guidelines contained in the practicum guide.

Bunga akan terlihat layu ketika matahari terbenam, dan ketika matahari terbit maka bunga akan terlihat seperti mekar kembali. (Sumber: Agrotek, 2019)

Bunga berbentuk bulat seperti bola, warnanya merah muda dan bertangkai serta bentuk bunga berambut. Putik berwarna kuning dan tangkai bunga berbulu halus. Pada saat matahari tenggelam, bunga akan menutup seakan layu dan mati, tapi jika terkena sinar matahari lagi maka bunga itu akan kembali mekar. (Sumber: Agrotek, 2019)

Buah dari putri malu menyerupai buah kedelai dalam ukuran kecil. Pada buah putri malu, terdapat bulu-bulu halus berwarna merah, namun hanya terdapat pada bagian tertentu saja. Tangkai buah memiliki panjang tangkai sekitar 3 – 4 cm dengan diameter 1 – 2 mm. Pada satu tangkai buah, terdapat 10 – 20 buah dengan pangkal buah melekat pada ujung tangkai. Ketika buah telah masak, buah tersebut akan pecah sehingga bijinya akan jatuh dan menyebar ke segala arah. Biji ini nantinya akan tumbuh menjadi tunas baru. Buah yang mentah maupun telah masak berwarna hijau. (Sumber: Agrotek, 2019)

3. Bunga Sirih (*aPiper betle* L.)

Klasifikasi:

Kingdom : Plantae
Divisi : Magnoliopsida
Class : Magnoliopsida
Sub class : Magnoliidae
Ordo : Piperales
Famili : Piperaceae
Genus : Piper
Spesies : *Piper betle* L.
Sumber : Agrotek

Bunga dari tanaman daun sirih ini termasuk juga dalam jenis bunga majemuk. Berupa biji-bijian yang mana biji-bijian tersebut berdiri sendiri dan diketahui berada di ujung cabang dan menghadap ke daun tanaman. Pada bunga jantan tanaman ini biji-bijiannya mempunyai sifat dengan panjang gagang yaitu sekitar 1,5-3 cm dan ukuran dari benang sari yang pendek. (Sumber: Agrotek, 2019)

Kepala bunga betina mempunyai pegangan yang terlihat sedikit lebih panjang jika dibandingkan dengan kepala bunga jantan. Panjangnya yaitu sekitar 2,5 – 6 cm dan untuk panjang cap mempunyai ukuran sekitar 3-5 cm. Buah daun tanaman ini sirih berbentuk seperti halnya bentuk telur yang mempunyai ukuran kecil – kecil. (Sumber: Agrotek, 2019)

ada bagian ujungnya botak dan terluhat berwarna abu-abu sampai hitam dan juga mempunyai warna berbulu.Selain itu, pada bagian dalam dari buahnya berbentuk bulat, pipih, dan biji dengan warna hitam. Terdapat sekitar 10 sampai 20 biji dalam 1 buah. (Sumber: Agrotek, 2019)

Figure 3. Example of Lack of Analysis of Observation Results using various Reference Sources

Figure 3. Shows an example of a student report when analyzing the results of observations. Based on the example above, it can be seen that the reference source used is only one and the source is less relevant. One species that is the object of observation has not been discussed in depth about its morphology. This is because students are still not maximizing in finding relevant references.

DISCUSSION

The ability of Biology Tadris Study Program students in writing practicum reports in the Plant Morphology Practicum course ranges between the categories of good enough and good. The acquisition of these two categories is balanced at 50% each. It has not been found that there are students who can reach the excellent category in preparing practicum reports. The main problem that is a factor in not maximizing the value of practicum reports is the lack of student ability to analyze the results of practicum findings. This is an indicator that students are still not maximized in connecting the practicum results with the theory studied. This finding is in line with Anwar, Al Idrus, & Siahaan (2020) and Jannah, Nuraini, & Ulum (2021) who stated that students have difficulty connecting theory with practicum results. This is due to the lack of basic theoretical studies studied to strengthen the analysis of practicum results (Yani et al., 2021).

Students who compile this plant morphology practicum report are in the second semester, so their experience in compiling practicum reports at the university level is the first experience so that there are still a number of students who do not understand in detail how to prepare the right practicum report. This finding is in line with Ita & Saputri's (2021) explanation which states that students' understanding of the systematics of report writing is still low and has an impact on the quality of the reports prepared. In addition, the data presented by students is still not much related to the theory that has been learned (Astuti & Suciati, 2017).

The ability of students to string sentences to analyze practical findings data is also an obstacle when compiling plant morphology practicum reports. The references used are still relatively few so that the reports prepared seem to have a lot in common with textbooks. The findings in this study are relevant to those stated by Siti (2020) that some of the shortcomings of students in writing reports are limited references and the difficulty of compiling effective sentences in their preparation.

The ability of Biology Tadris Study Program students in writing practicum reports in the Invertebrate Zoology Practicum course is categorized as quite good at 84.62% and 15, 38% is not yet found students who reach the excellent category in the preparation of practicum reports. This is because the preparation of practicum reports is carried out by new students for the first time this semester including and there are still errors in terms of report format, observation results, data analysis, conclusions and evaluation. In assessing the format of the practicum report, students were still found who did not follow the practicum report format in the practicum guide from errors in setting paper margins, fonts used that did not match the format and typing errors. According to Ita & Saputri (2021) that the position of the student's academic level affects the student's ability to communicate writing. Errors in writing practicum reports are found in typing, the use of a punctuation mark, the choice of a sentence and word and an absorption word (Leksono, 2019).

Observation results presented by students have not presented pictures of observations of invertebrate zoology animals properly. This is because there is still a lack of ability to draw the results of observations properly, do not provide information on the observation picture, put the wrong information on the observation picture, do not provide information arrows on the observation picture, do not add supporting literature images and do not include references to the literature image. According to Wulandari & Kusumaningrum (2013) Errors that occur by students in presenting data are errors written by students in presenting observation data, namely the results of observations presented do not show all the data found during observation.

The skill of composing an analysis of the results of observations by students is still not very good. Students' mistakes in making an analysis of the results of observations are not describing the analysis of the observation data in detail, besides that the analysis is made by only presenting data analysis, not supported by other supporting references. In fact, students should be able to conduct in-depth analysis of their findings by making comparisons to other references. This is in line with what was stated by Yuwono (2009) that the low ability of students in analyzing the results of observations and linking the results of practicum observations with theory is due to the lack of reading sources by students regarding the practicum they do. In addition, students also have not practiced much so it needs repeated practice so that students get used to doing the analysis (Ariyati, 2010).

The conclusions presented by students in the practicum report on Invertebrate Zoology also have errors, as most students make conclusions that do not refer to the objectives of the practicum conducted. According to Ita & Saputri (2021) that most students in practicum writing do not pay attention to the objectives of the practicum at the beginning, conclusions are compiled only based on interesting things. The evaluation in the practicum report is the student's ability to answer questions related to the practicum performed. So if students carry out practicum activities with their groups well and are supported by the references they read about the practicum topic, then they can answer the evaluation in the practicum report properly and correctly.

The ability to write a practicum report on Plant Morphology which is classified as quite good and good and a report on Invertebrate Zoology which is less good and quite good shows a slight difference in the results of the two courses. This difference is because students find it easier to analyze the results of observations in Plant Morphology practicum compared to Invertebrate Zoology. According to students, references in the form of scientific articles related to the species that are the object of observation of the practicum of Plant Morphology are easier to find compared to the study species of Invertebrate Zoology so that the discussion of the species found is more in-depth in Plant Morphology.

CONCLUSIONS

The conclusion that can be obtained from the results of this study is that in general the average ability of students in writing reports in the Practicum of Plant Morphology and Invertebrate Zoology courses is in the good enough category.

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