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Exploring Science Student's Perceptions during Practical Work on Animal Structure Courses using a Rasch Modeling Approach

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Abstract

Practicum is an essential component of science learning at all levels of learning. However, in its implementation, there are still many who report the difficulties experienced by students. This study explores students' perceptions of the difficulty of practicum at the University. This research uses a quantitative approach. A total of 61 Science students were selected by sampling saturated with the criteria of having carried out animal structure practicum activities. The 30 items of the multilevel Likert scale statement were developed from three practicum indicators and six supporting factor indicators. The three indicators are preparation, implementation, and reporting. Respondents' responses were tabulated in Ms.Excel and analyzed with the Rasch model via Winstep 4.4.4. Students' perceptions of the difficulty of the practicum are good. It can be seen from the scheduled practicum activities and students' motivation to carry out the practicum well. However, in preparing the report, many students are still experiencing difficulties, and the practicum requires high concentration accuracy. Interestingly, men have better readiness to carry out practicum than women. Good time management and completeness of infrastructure need to be considered so that practicum activities can be carried out correctly and efficiently so that difficulties during practicum can be minimized.

Keywords: perception, practicum, Rasch model, science students

INTRODUCTION

Practicum in science learning can improve the quality of the learning process (Agustina & Ningsih, 2017). The practicum method consistently contributes to student interest (Triado-Ivern et al., 2018), student attitudes toward Learning (Barrie et al., 2015; Lal et al., 2019), and improving student motivation (Vereijken, Rijst, Beaufort, Driel, & Dekker, 2018). The practicum method aims to help to learn in students in the psychomotor, cognitive, and affective realms (Ningrum et al., 2019; Vereijken et al., 2018) such as understanding scientific concepts, interests and motivations, scientific-practical skills (Brockman et al., 2020), scientific investigation and understanding the nature of science (Lee et al., 2015). Practicum activities foster a real understanding of the scientific process so that they can connect the concept of knowledge gained with real phenomena experienced by students (Fajariningtyas & Hidayat, 2020).

According to Nasution & Hasairin (2016), practicum effectively improves students' observation skills to practice using the equipment. Practicum can develop curiosity, be active, creative, innovative, and foster students' scientific attitudes. Practicum learning provides opportunities for students to use tools and materials to compile knowledge from the phenomena found and relate them to existing scientific concepts (Fajariningtyas & Hidayat, 2020). The success of practicum activities in schools is also influenced by the availability of supporting facilities in the laboratory. According to Lubis & Rizkika (2017), laboratory facilities that are adequate in the availability of tools and materials provide better motivation for students to do the practicum.

The management of laboratory facilities and infrastructure has not been carried out correctly, especially in the utilization, maintenance, and use of tools and materials (Ayu et al., 2014). According to Ilhamdi et al., (2020) one of the problems in the laboratory is the increasing number of students who use the laboratory but the facilities and infrastructure do not increase. The practicum implementation has not been carried out optimally and has not been done by the essential competencies in the 2013 Curriculum syllabus (Damayanti et al., 2019). According to Siti et al. (2019), 76.1% of students experienced difficulties when doing biology practicum in school caused by internal and external factors. The internal factor is learners' skills, with an indicator of 19%.

Meanwhile, in external factors, 12% are in the laboratory or teaching load of teachers (Siti et al., 2019). In addition, students experienced obstacles in practicum activities which obtained results of 66.26% (Puspita, 2016). This proves that the process of implementing a Practicum in universities still experiencing difficulties. Although research on the difficulties of practicum has been carried out at the high school level, research at the university level is still rarely done. The research topic is also more specific, namely about animal structure practicum. This paper will discuss students' personal views regarding the difficulty of practicum in higher education.

This research is designed to determine students' perceptions of the level of practicum difficulty in higher education. This research focuses on students' views on difficulties in implementing practicum activities. The information obtained from this study can be used by academic practitioners and researchers who want to develop related to practicum learning. The research results are expected to be an evaluation and input material for educators and students in practicum activities in higher education.

RESEARCH METHODS

Participant

This quantitative research investigates the level of difficulty of practicum in higher education in one of the metropolitan cities in Indonesia, seen from students' points of view. A total of 61 biology education study students were involved in filling out a questionnaire that was selected by saturated sampling. Sampling is based on criteria that have been carried out on animal structure practicum activities. This research was conducted at one of the Islamic Universities in one of the metropolitan cities in Indonesia. Respondents participated for 30 minutes in filling out a statement and a reason. Respondents' answers were collected from March 29, 2021, to April 13, 2021. The characteristics of respondents' demographic information can be seen in Table 1.

Table 1. Demographic Characteristics of Respondents (N=61).

Demographics	Respondents	Percentage (%)
	Gender	
Female	55	90
Male	6	10

Research Instruments

This study used instruments in the form of questionnaires containing demographic data, multilevel scales, and checklists. The questionnaire is presented in an Indonesian-language google form to facilitate research in obtaining data. This questionnaire was developed and modified from the study (Siti et al., 2019). This statement questionnaire sheet is compiled and distributed online through the WhatsApp application. Questionnaires are compiled based on the degree of difficulty and causal factors. The difficulty level consists of 3 indicators, namely a) preparation (3 items); b) implementation (4 items); c) reporting (2 items). Factors causing difficulties are divided into two factors: internal and external factors. Internal factors are divided into 3 indicators, namely a) student readiness (4 items); b) student motivation (4 items); c) scientific attitude (1 item). External factors are divided into 3 indicators,

namely: a) lecturer competence (7 items); b) infrastructure (3 items); c) time allocation (2 items). Respondents were asked to choose answers on a scale of 1 to 4 (1: Strongly Disagree, 2: Disagree, 3: Agree, and 4: Strongly Agree). All respondents were provided with detailed information regarding the study: the purpose of the study, the researchers involved, the data's confidentiality, and the respondents' voluntary participation. The item of the statement of students' perception of practicum activities can be seen in table 2.

Table 2. Instruments of Student Perception of Practicum Difficulties

Indicator	Label	Code	Item	Logit Value
Demography	P	P	Gender	
Practicum Preparation Stage	A	A1	Mastering Practicum Theory	0,34
		A2	Mastering how practicum works	-0,13
		A3	Practicum Materials	0,86
Implementation Stage of Practicum Activities	B	B1	Ability to use tools and materials	1,76
		B2	Ability to perform animal surgery	0,76
		B3	Healthy in participating in practicum activities	-1,82
		B4	Observing surgical organs	-0,44
Practicum reporting Phase	C	C1	Prepare a practicum report	0,71
		C2	Timely collection of reports	2,83
Student Readiness	D	D1	Readiness in carrying out Practicum	-2,01
		D2	Have a high curiosity	-0,87
		D3	Prepare practicum reports independently	3,53
		D4	Looking for references to deliver results	0,39
Student Motivation	E	E1	Motivated to do Practicum	-1,65
		E2	Interested in Practicum	2,91
		E3	Enthusiastic in participating in the Practicum	-1,19
		E4	Passionate about participating in Practicum	-1,08
Scientific Attitude	F	F	Accuracy of concentration	-2,41
Lecturer Competence	G	G1	The lecturer gives directions	3,21
		G2	Lecturers hold pre-tests	0,08
		G3	The lecturer demonstrates how the practicum works	-0,23
		G4	Question and answer session during Practicum	1,58
		G5	Lecturers master the material being practiced	-2,01
		G6	Lecturers accompany and guide students	-1,25
		G7	Lecturers supervise each group	-1,19
Infrastructure	H	H1	There is a practicum manual	-2,07
		H2	Adequate practicum tools and materials	-0,87
		H3	Practicum tools and materials are worth using	1,64
Time Allocation	I	I1	Practicum is carried out as scheduled	-1,30
		I2	Insufficient time allocation	-0,08

Data Collection and Data Analysis

This study analyzed students' perceptions of the level of difficulty of practicum at the University. Therefore, Rasch's analysis was used to answer research questions. Research data in the form of respondent responses were input into Ms. Excel 2019 to code items and facilitate the analysis of results. The collected data were analyzed using the Rasch model through Winstep 4.4.4 application. To answer the research questions, we analyzed the difficulty of item items, respondents' ability to answer, and the differences in respondents' views based on their demographic data. Summary Statistics is used to find information about the average value, standard deviation, quality of items used,

interactions between items and persons, respondent logit values, item logit values, and item logit grouping and grouping respondent logits as a whole. The data is used to investigate students' personal views on the difficulties of practicum at the University. To determine the level of distribution of student perceptions and find out the level of distribution of item difficulties on the questionnaire, an analysis of Wright Maps (Apezetxea et al., 2018; Boone & Noltemeyer, 2017; Goh et al., 2015). Differential Item Function (DIF) analysis is used to determine the diversity of respondents' responses based on respondents' demographics with a specified probability value.

RESULT

Summary Statistics

Questionnaires with 30 items of statements have been distributed to 61 students to gauge their perception of the difficulties of practicum activities at the College. The collected data was analyzed with Rasch Model. Rasch's analysis was conducted to determine the respondent's ability to answer statements and see the item's difficulty. Statistical suitability analysis is used to see the quality and interaction between respondents and items. To ensure that the instrument runs well, we first examine the validity and reliability of the instrument.

Table 3. Validity and Reliability Criteria based on the Rasch Model

Criteria	Statistical Data	Minimal
Item validity	Item polarity	PTM Corr > 0
Item	Item fit	Nilai MNSQ infit dan outfit antara 0,6 – 1,4 Nilai ZSTD antara -2 sampai 2
Item misfit	Separation index	Logit ≥ 2
	Person reliability	Logit > 0.8
	Item reliability	Logit > 0.8
Reliability	Cronbach alpha	Logit > 0.7

Table 4 shows the person reliability result of 0.81, which means that respondents have good reliability in answering the questionnaire. Item reliability shows a value of 0.98, meaning the item's condition is of good quality. That is, the instrument has excellent reliability in measuring respondents' perceptions. Furthermore, the person measure value of 1.78 > 0.00 means that respondents tend to agree more on statements in various items.

Table 4. Summary of Respondent Measurement Statistics

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SUMMARY OF 61 MEASURED Person

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	MNSQ	INFIT ZSTD	MNSQ	OUTFIT ZSTD
MEAN	88.6	30.0	1.78	.35	1.00	-.23	1.02	-.27
SEM	.9	.0	.11	.00	.07	-.25	.09	.24
P. SD	7.1	.0	.88	.02	.53	1.94	.66	1.83
S. SD	7.1	.0	.89	.02	.53	1.95	.67	1.85
MAX.	113.0	30.0	5.37	.51	3.29	6.07	4.30	5.84
MTN.	77.0	30.0	.43	.34	.30	-3.85	.28	-3.84
REAL RMSE	.38	TRUE SD	.79	SEPARATION	2.07	Person RELIABILITY	.81	
MODEL RMSE	.35	TRUE SD	.81	SEPARATION	2.33	Person RELIABILITY	.84	
S.E. OF Person MEAN = .11								

Person RAW SCORE-TO-MEASURE CORRELATION = 1.00
 CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .83 SEM = 2.96

SUMMARY OF 30 MEASURED Item

	TOTAL	COUNT	MEASURE	MODEL	INFIT		OUTFIT	
	SCORE			S.E.	MNSQ	ZSTD	MNSQ	ZSTD
MEAN	180.1	61.0	0.00	.24	.98	-.28	1.02	.00
SEM	5.4	.0	.31	.00	.05	.33	.08	.37
P. SD	29.3	.0	1.86	.02	.29	1.78	.41	1.99
S. SD	29.8	.0	1.69	.02	.30	1.81	.41	2.03
MAX.	222.0	61.0	3.53	.28	1.60	3.01	2.50	6.00
MTN.	122.0	61.0	-2.41	.23	.53	-3.62	.53	-2.99
REAL RMSE	.26	TRUE SD	1.64	SEPARATION	6.40	Item	RELIABILITY	.98
MODEL RMSE	.24	TRUE SD	1.64	SEPARATION	6.76	Item	RELIABILITY	.98
S.E. OF Item	MEAN = .31							

Item RAW SCORE-TO-MEASURE CORRELATION = -1.00

The quality of the instrument in measuring student perceptions is on the criteria very well, with a Cronbach Alpha score of 0.83. The research instrument is in a suitable category by looking at the Mean Square (MNSQ) infit outfit value of 0.98 and the Z-Standard infit outfit (ZSTD) value showing a value of -0.28 and 0.00 which means that the instrument is not easy for respondents to answer. The overall item validity is in the excellent category, where the PTMEA Corr value of the total statement item is greater than 0 (APPENDIX 3).

Table 5. The Value of Cronbach Alpha and Its Interpretation

Nilai Cronbach Alpha	Tingkat Reliabilitas
0,8 – 1,0	Sangat Baik
0,7 – 0,8	Baik
0,6 – 0,7	Cukup
0,0 – 0,6	Buruk

(Sumintono & Widhiarso, 2015)

The grouping of respondents based on the degree of consistency can be known through their separation values entered into the formula $H = \frac{[(2,07 \times 4)+1]}{3} = 3,09$, the results show three groups of respondents with high, medium, and low consistency. Item items can be grouped by their level of difficulty. The grouping of items can be seen from the value of the item separation and entered into the equation: $H = \frac{[(6,40 \times 4)+1]}{3} = 8,86$, the result shows that there are eight groups of items with certain criteria.

Characteristics of Respondents

The logit values in the person measure are used to describe and investigate the difficulties in students with practicum activities. The characteristics of the 61 respondents can be analyzed through distribution on Wright Maps (Figure 1), which can be seen based on the mean and Standard Deviation (S.D.) criteria. The mean value obtained was 1.78, and for the S.D. value, it was 0.88 (Table 4). 26 respondents answered the statement items quickly, on a scale of 6 - 2. As many as 42.62% of the 61 respondents with the most specific criteria agreed with the statements, meaning that these respondents had difficulty in practicum activities. The characteristics of the 61 respondents can be seen in (Table 6).

Table 6. Characteristics of Respondents

Measure	Frequency	Percentage	Description
6 – 2	26 Person	42,62 %	> Mean + SD Respondents most easily agree on statements
2 – 0	35 Person	57,37 %	> SD Respondents are in the process of approving the statement.

The results on Wright Maps show that male students with sequence number 07 (07M) are at the top of the position as respondents who quickly agree on all statement items with a logit value of

5.37.07M respondents experienced serious difficulties in practicum activities. Respondents with codes 21F and 37F have the same logit value of 0.43 on Wright Maps, meaning they have complex criteria to approve statement items. Respondents 21F and 37F experienced low difficulties in the implementation of practicum activities. The following is a distribution of respondent characteristics based on Wright Maps (Figure 1).

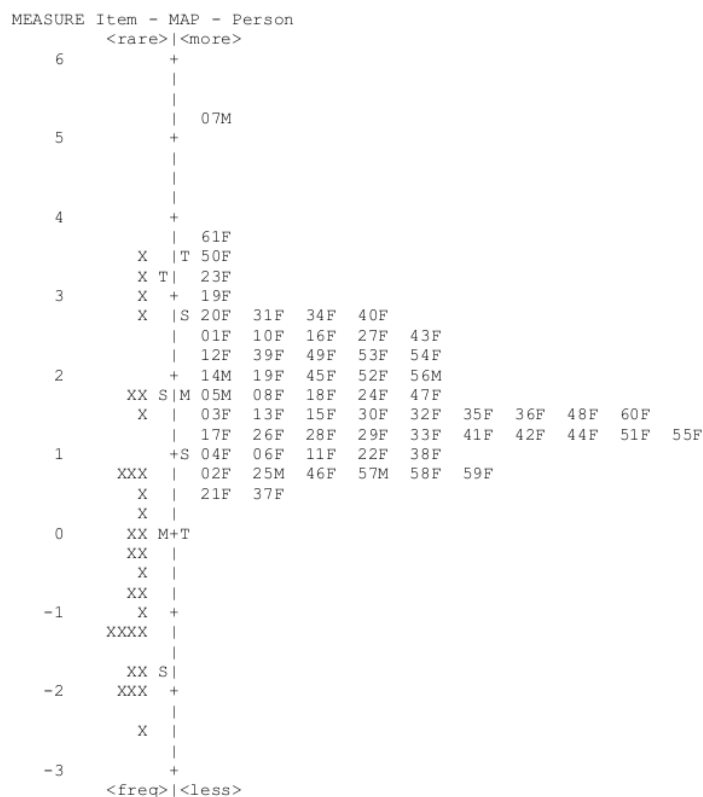


Figure 1. Distribution Map of Respondent Characteristics

The Difficulty Level of Practicum Activities According to Students

Logit values obtained from item scores are used to make it easier to investigate student difficulties when carrying out practicum activities. Rasch presc¹⁹ outputs to make it easier for us to identify statement items that students consider essential (Figure 2).

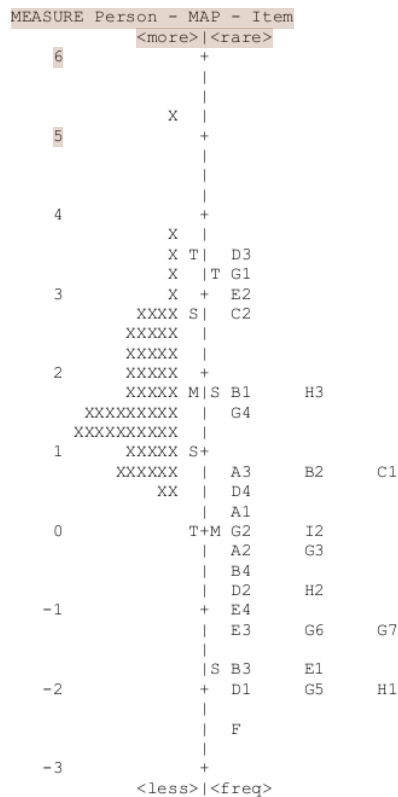


Figure 2. Map of The Distribution of Student Responses Related to Practicum Difficulties

20 The item distribution map, or deal also with Item-Person Maps presented in Figure 2, shows the left side of the interval line, which is the distribution of students' ability to assess statement items. While on the right side of the interval line is a distribution of items sorted by LVI. When analyzing students' difficulty by looking at the difficulty level in the statement item, an analysis of the measured item is needed. Items are sorted based on the logit value item (LVI) obtained from the student's answer. The distribution of items on the logit scale is helpful for grouping statement items into three criteria: easy, medium, and problematic (Table 7). The criterion is to display the quality of all items regarding the item's difficulty for the respondent to approve. The mean value (0.00) and the standard deviation value (1.66) are used as benchmarks for the division of criteria on items. Item items considered difficult if the LVI value is above the S.D. value (1.66) are considered moderate if the LVI is between 1.66 to -1.66, while items considered easy LVI are below the S.D. value (1.66).

Table 7. Item Difficulty Level

Logit Scale	Frequency	Percentage (%)	Description
4 - 2	5	16,66	Items are challenging to approve.
2 - (-2)	19	63,33	Medium-only items are approved.
-2 - (-3)	6	20	Items are easy to approve.

Figure 2 shows six statement items (F, D1, G5, H1, B3, E1) that students easily approve during practicum activities. In statement F "accuracy of concentration" (LVI = -2.41), D1 "readiness in

carrying out practicum" (LVI = -2.01), G5 "Lecturers master the material being practiced" (LVI = -2.01), H1 "There is a practicum manual" (LVI = -2.07), B3 "healthy in participating in practicum activities" (LVI = -1.82), and E1 "Motivated to do practicum" (LVI = -1.65). Six items are easier to approve because they have a negative value LVI, so the position of the items on the map is below the average value of the logit.

There are five statement items (D3, G1, E2, C2, B1) that students pay little attention to in the implementation of practicum, namely D3, "Compiling practicum reports independently" (LVI = 3.53), G1 "Directions given by lecturers" (LVI = 3.21), E2 "Interested in practicum" (LVI = 2.91), C2 "Timely report collection" (LVI = 2.83), B1 "Ability to use tools and materials" (LVI = 1.76). The position of the five items is above the average logit value because lvi is positive, making the items difficult for students to approve.

Analysis of Differences in Student Perceptions Based on Demographic Data

Rasch's methodology was used to analyze differences in item function (DIF) and identify items that were not working and contained biases within different groups of participants against one of the demographic data (Apezetxea et al., 2013) it is a consistent error in estimating a value. An instrument called bias is if there is one individual with specific characteristics benefits more than an individual with other characteristics. An item is said to be biased if it has an item probability value < 0.05 or 5% (Qin & Torres, 2018). That is, the item has a significant difference in one of the demographic data of those respondents. DIF can find differences in perception based on demographic data, for example, gender (Adams et al., 2018).

Students' Personal Views By Gender

Gender can influence how students view the difficulties of biology practicum in Higher Education. Figure 3 shows partial data according to the gender of the respondents. In this case, there is 1 item, namely G7, which is identified as having habits because the probability value of the item is 0.4060, which means the probability value is > 0.05. Then the graph also shows the difference in ability based on gender and looks at the item's difficulty illustratively.

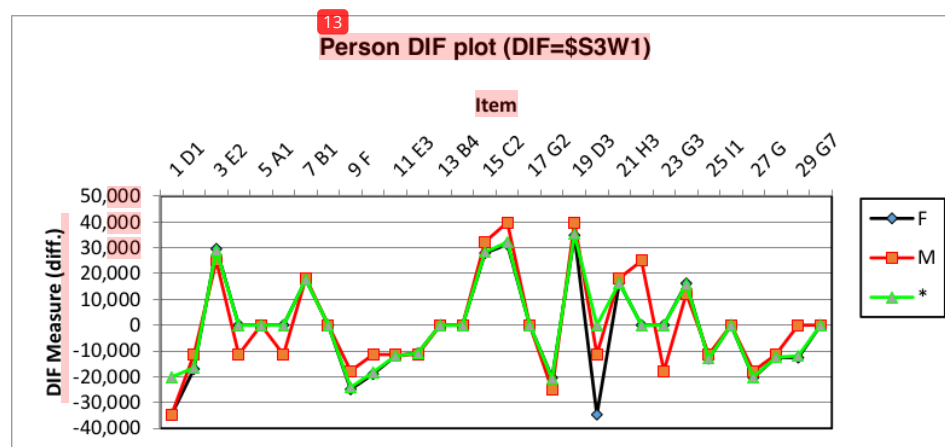


Figure 3. Students' personal views by gender on four indicators. Note: F = Female, M = male

DISCUSSION

This study explains the level of student difficulty related to implementing practicum activities in biology learning at the University using implementation indicators consisting of preparatory, implementation, and reporting stages. Supporting factors include student readiness, motivation, scientific attitudes, lecturer competence, infrastructure, and time allocation. Specifically assessed significant differences based on gender. Data on practicum difficulties in students were analyzed using the Rasch Model.

In the practicum preparation stage indicators, students know how the practicum works, especially during the animal surgery process, so students do not find it difficult. This can be seen in the A2 statement item "mastering how practicum works," quickly approved by students (Table 2). The statement (A2, LVI = -0.13) indicates that the item has a low logit value, meaning that the item has been carried out during practicum activities. But on item A1 it isn't easy to approve, which means the item is not doing well enough. Students have not mastered the theory taught by lecturers related to Practicum (A1, LVI = 0.34). This is an obstacle in undergoing practicum activities, so students find it challenging to identify surgical organs. According to some students, the theory of knowledge is difficult to understand if they have not carried out the practicum. This is to the research of Ningrum, Lengkana, & Yolida, 2019; Vereijken et al. (2018) that the practicum method aims to help to learn in students in the psychomotor, cognitive, and affective realms and the process of practicum activities can involve understanding knowledge before experimentation (Donovan et al., 2015). Pada item (A3 = 0.86) "practicum materials are difficult to find," is difficult to approve because, according to students, practicum materials are pretty easy to find even though the price is relatively high as buying animals.

Students are in good health and do not have the slightest defect in carrying out the practicum properly (B3, LVI = -1.82). Students also know how to use practicum tools and materials because they are already contained in the guidebook. This can be seen in the item (B1, LVI = 1.76), "I have difficulty in using the tools and materials used in the practicum" this statement is complex for students to agree. But during the observation process, students have a lot of difficulty in observing organs from animal surgery (B4, LVI = -0.44) because sometimes there are parts of the organ in animals that are difficult to observe or identify. This is in line with the research of Lina & Arif (2019) that the activity of observing organs is still considered difficult by students, especially in identifying the characteristics of surgical org²² morphologically.

Many students still have difficulty compiling reports in the reporting indicators, especially when looking for references and comparing theories. This can be seen in the item (C1, LVI = 0.71). Item C1 is relatively challenging to approve, so the item is not running well enough. Ninety percent of students in the Animal Structure course have not been able to make a table of practicum results clearly and precisely. The content of the table is not for the Practicum (Astuti & Suciati, 2017). his shows that students' ability to communicate practicum results is still low. But if given time in one week to make a report, students have no difficulty (C2, LVI = 2.83). "I find it difficult to make a practicum report if given time in one week by the lecturer" the statement is difficult for students to approve.

Students are quite prepared to carry out the Practicum (D1, LVI = -2.01); item D1, "before starting practicum activities, I prepared everything well," is relatively easy for students to agree with. Some students prepare tools and materials and read references before the practicum activity; adequate laboratory facilities and infrastructure are needed to achieve practicum objectives and do not hinder practicum performance (Abas & Marasigan, 2020; Agu & Iyamu, 2018). However, students are not yet independent in preparing reports, so they are still glued to the guidebook. This can be seen in the D3 item, which is relatively complex for students to approve.

Students are reasonably interested in carrying out practicum well (E1, LVI = -1.65). This item is relatively approved. However, most students argue that theory and practicum must be balanced (E2, LVI= 2.91). This can be seen from item E2, "I feel more enthusiastic in following learning theory than

participating in practicum activities," which has a high logit value, meaning that the item is complicated for respondents to approve. In line with the research of Teo & Goh (2019), the ability to conclude is obtained from drawing information relevant to the previous theory to explain the events observed in the practicum. Students feel more enthusiastic and severe in carrying out practicum if guided by lecturers (E4).

Indicator of concentration accuracy (F, LV1 = -2.41). Most students agree with the statement, "In the process of animal surgery, it requires high concentration accuracy," because if you are not careful during the surgical process, there will be bleeding, and one of the organs will be torn or slashed. This results in the identified organ being damaged due to a surgical error. Therefore, in the process of animal surgery, it requires high concentration accuracy. This is in line with Siti (2019) that accuracy and weakened concentration can cause students to experience difficulties due to impaired concentration. Thus, the teacher must provide motivation or encouragement that can increase the concentration of students during the practicum.

When practicum, lecturers immediately start practicum without holding a pre-test first (G2, LV1 = 0.08). For lecturers to know the extent of students' abilities in practicum activities, it should be necessary to hold a pre-test. Students also argue that before starting practicum activities, lecturers only explain the procedure or use of practicum tools and materials without demonstrating them. So that student are left to practice on their own. This is contrary to the results of the lecturer questionnaire, which states that there are demonstration activities related to procedures or the use of practicum tools and materials at the time of the practicum. Lecturers accompany students even though they cannot reach every group. Mentoring aims to make students actively involved in practicum activities. One of the indicators of lecturer competence is that lecturers master the material being practiced. This is in line with the opinions of students and lecturers.

The tools contained in the laboratory are still suitable for use (H3, although they still have to be added and updated. The available tools also lack maintenance, so some tools are damaged and do not work. Sometimes some tools are lost due to the lack of responsibility of students in using the tools available in the laboratory. Such as not returning the tool to its original place after finishing dissecting. Limited laboratory equipment causes not all students to be able to hone motor skills in the laboratory (Bernhard, 2018). Daba & Anbesaw, (2016). Practicum will be carried out properly if you pay attention to adequate laboratory facilities and infrastructure (Agustina et al., 2019).

Practicum activities are carried out according to the schedule (I1, LV1 = -1.30). Students relatively approve of this item. However, the allocation of practicum time is not sufficient (I2, LV = 0.08) because practicum activities require much time, especially during the animal surgery process. After all, it requires high accuracy and limited space for movement so that it is enough to take more time during practicum so that the time given will not feel sufficient; a brief period causes anxiety in students, so the practicum is only considered a mere observation, thus allowing errors to occur when conducting experiments (Donovan et al., 2015; Sarmouk et al., 2019). Limited practicum time can be influenced by different laboratory skills and student-catching abilities (Babalola et al., 2019; Darling-Hammond et al., 2020).

Based on the results of measuring respondents' characteristics analysis through demographic data, namely gender, using DIF analysis on the Winstep application with the Rasch model, male and female respondents had different views on several statement items. Figure 3 shows the uniqueness in the male student's answer where he has difficulty agreeing with item A3 "animal structure practicum materials are difficult to find" (A3, diff F = 0.7113, diff M = 24.900). However, according to female students, the tools and practicum materials contained in the laboratory are not adequate (H2, diff F = -0.8426, diff M = -11403). Similar to Sari et al. (2014) that the practicum equipment in the available laboratories has not been used optimally; some practicum tools have also been damaged, so they cannot be used again as they should be. Male students are better prepared to carry out practicum (D1, diff F = -19,010, diff

M = -34,690), master how practicum works (A2, diff F = -0.0329, diff M = -11.425). However, female students concentrate more on doing practicum (F, diff F = -24.876, diff M = -17.738). Male students argue that lecturers demonstrate what will be practiced (G3, diff F = -0.009, diff M = 17.778), female students mention that lecturers supervise to each group (G7, diff F = -12.618, diff M = -0.5328).

CONCLUSION

Students' perception of the level of difficulty of animal structure practicum in biology learning at the higher education level has a relatively good response. However, some problems were still found, such as difficulty finding references in preparing reports, the lack of infrastructure related to practicum tools and materials, and insufficient allocation of practicum time. The obstacle that students feel the most is poor time management. Further studies are expected so that practicum activities can be carried out efficiently so that obstacles and difficulties of practicum can be minimized.

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