International Conference on Biology Education, Natural Science, and Technology
Vol. 2 No. 1 (2024)
E-ISSN : 3026-5428

Analysis of Animal Structure Practicum Module Based Virtual Lab

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KEYWORDS:
Understanding the material, fish surgery, practicum

ABSTRACT

Practicum as part of the biology learning process plays an important role in developing students' mastery of material concepts. Limitations on the conditions for the practicum implementation, making the practicum module as a guide for activities experiencing more advanced development. The purpose of this study was to find out how students responded to the virtual lab-based practicum module in animal structure courses. The device used is a student response questionnaire consisting of seven aspects related to the virtual lab-based practicum module. The results suggest that 53.7% of student responses agree, and 37% strongly agree with the attachment and use of the virtual lab in practicum. Additional components such as interactive modules that get responses of 55.6% agree and 42.6% strongly agree are further considerations in understanding student responses to practicum activities. The use of a virtual lab as a new development of the animal structure practicum module is considered capable of developing and increasing students' understanding.

1. INTRODUCTION

Practicum as an important part of the learning process which aims to train skills and assess the extent to which students understand the concept of material, actually needs to be implemented in every course. Practical orientation as a practical activity is not only always carried out in the laboratory with various kinds of laboratory equipment as it should be done in courses that contain content such as animal structures. The animal structure course is one of the courses which in its learning is integrated with practicum as many as fourteen meetings in one semester. Animal structure practicum activities are mandatory learning that must be carried out in the framework of implementing the theory that students have learned as well as a step in fulfilling one of the achievements of animal structure practicum learning, namely students are able to know, understand, analyze, distinguish and compare microscopically animal tissues.

Referring to the achievements of the animal structure practicum course as the implementation of theory, especially on the topic of tissue in animals, has its own obstacles in its application. Animal tissue as one of the topics of the animal structure practicum taught in semester three is an obstacle for students, especially when the practicum is carried out online during the Covid-19 pandemic. This is because the Covid-19 pandemic has changed all the arrangements for learning activities, especially the move from offline to online which was carried out for quite a long time for about two years ((Ni Luh Putu Ananda Saraswati, 2020). This is a different condition and this is the first time this has happened requires practicum activities to continue in the midst of completely restricted conditions, including practicum in the laboratory which is temporarily suspended. This is a challenge for educators to prepare all learning tools, especially practicum modules that are in accordance with conditions and needs (Kana Puspita, 2021) The use of a virtual lab in animal structure practicum during a pandemic is a new modification in the animal structure module, which is presented with two options for offline and online practicum methods

Virtual lab as a new practicum method that is chosen as a modification of the animal structure practicum module, can be accessed via the website from cellphones or laptops. Animal tissue material is considered quite difficult material, based on the values of student practicum reports. This is also based on animal tissue practicum which is quite abstract when students observe microscopic objects and requires sufficient accuracy and mastery of material concepts because the material concepts are abstract (Ummul Barokahhuda, 2021), so valid literature is needed such as histology atlases to validate the observation results. The use of the virtual lab practicum model is expected to be one of the opening ways that the learning process can be carried out anywhere in any situation and condition. One of them is practical activities that do not always have to be carried out in the lab. Thus, with these conditions, research was carried out on how students responded to the use of virtual labs in animal structure practicums carried out during a pandemic.

2. METHODS

The method used in the study entitled analysis of animal structure modules based on virtual labs uses a descriptive qualitative approach. Data was collected using a response questionnaire instrument made using a Google form which consisted of seven aspects of the statement with four possible answers in the form of strongly disagree, agree and strongly agree. The data population for this study were all Biology Education students at UIN Sunan Gunung Djati Bandung Class of 2020, totaling 3 classes. The samples taken were 54 students from a combination of the 3 classes, which are expected to be an illustration of the answers from the Biology Education student population Batch 2020 at UIN Sunan Gunung Djati Bandung.

The purpose of this study is to find out how students respond to the virtual lab-based practicum module. Student response data was analyzed descriptively by interpreting the percentage of each aspect of the statement in the response questionnaire.

3. RESULTS AND DISCUSSION

In this study, the results in the form of percentages for each aspect or statement indicators related to the animal structure module and virtual lab were analyzed descriptively one by one to be translated clearly and easily so that conclusions can be obtained that are easily understood by everyone. Eight aspects or statement indicators related to the virtual lab-based animal structure practicum module are presented as follows:

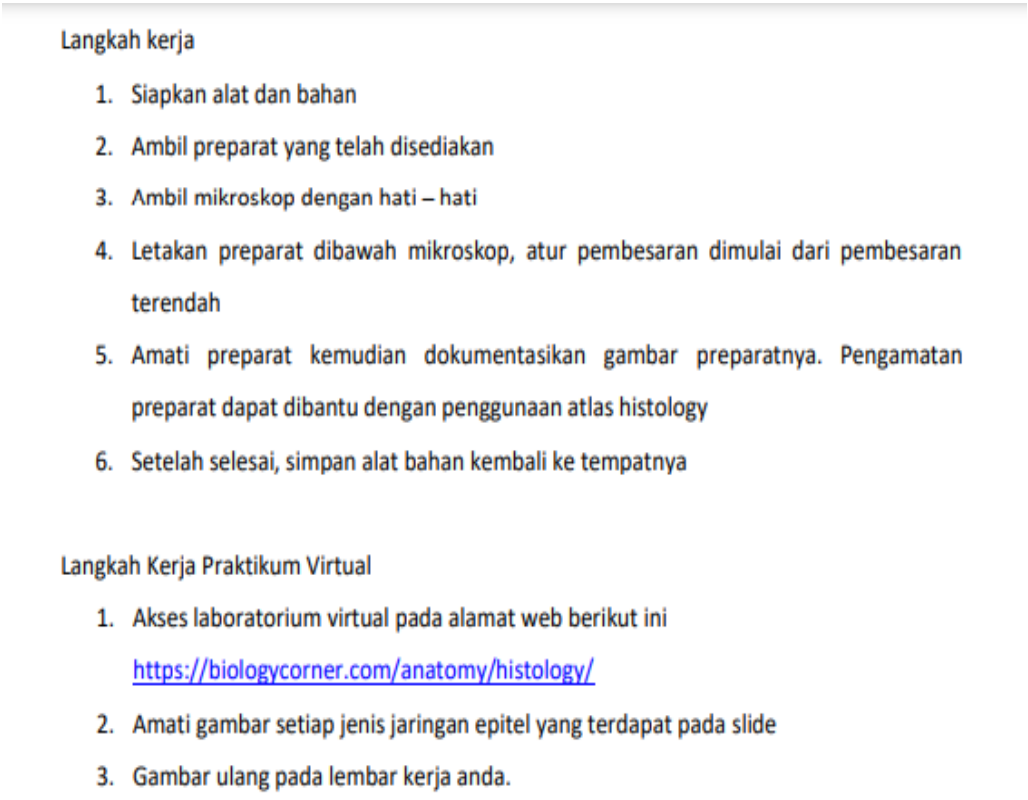
Tabel 1. Results of Student Responses to the Animal Structure Practicum Module Based Virtual Lab

No	PRACTICUM MODULE INDICATORS	STUDENT RESPONSE			
		STS	TS	S	SS
1	Attachment to the Virtual Lab link in the module helps in the process of understanding the material	1.9 %	7.4 %	53.7 %	37%
2	Representative images with the contents of the manuscript (module)		5.6 %	57.4 %	37 %
3	The module is interactive with supporting attachments such as questions and learning support links		1.9 %	55.6 %	42.6 %
4	The module contains learning objectives			46.3 %	53.7 %
5	Load learning material packaged in a specific form/explanation		1.9 %	53.7 %	44.4 %
6	The module contains practice questions that can support students' understanding		1.9 %	50 %	48.1 %
7	The practical steps are clear and easy to understand		3.7 %	50 %	46.3 %

Information :
STS : Strongly Disagree
TS : Disagree
S : Agreed

SS : Totally Agree

In Table 1. There are seven statement indicators, where in indicator 1. the addition of a virtual lab link attachment in the form of a website in the modified animal structure module obtains a response of 53.7% of students agreeing, and 37% strongly agree that the virtual lab helps students in carrying out practicum animal tissue. In line with research that has been conducted by (Hermansyah, 2017) that the use of virtual labs helps in increasing students' understanding of concepts, while research that has been conducted by (Egidius Dewa, 2020) that virtual labs can increase interest in learning. There were only 4 students who disagreed, due to their lack of understanding in using the virtual lab website, so what they were looking for did not find the answer. The following is a virtual lab display in animal tissue practicum:



Langkah kerja

1. Siapkan alat dan bahan
2. Ambil preparat yang telah disediakan
3. Ambil mikroskop dengan hati – hati
4. Letakan preparat dibawah mikroskop, atur pembesaran dimulai dari pembesaran terendah
5. Amati preparat kemudian dokumentasikan gambar preparatnya. Pengamatan preparat dapat dibantu dengan penggunaan atlas histology
6. Setelah selesai, simpan alat bahan kembali ke tempatnya

Langkah Kerja Praktikum Virtual

1. Akses laboratorium virtual pada alamat web berikut ini https://biologycorner.com/anatomy/histology/
2. Amati gambar setiap jenis jaringan epitel yang terdapat pada slide
3. Gambar ulang pada lembar kerja anda.

Figure 1. Display of the Virtual Lab Link on the Module

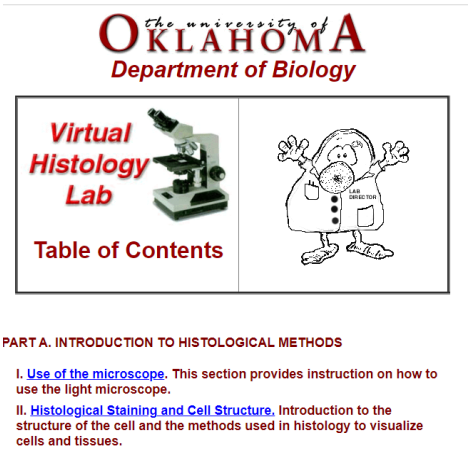
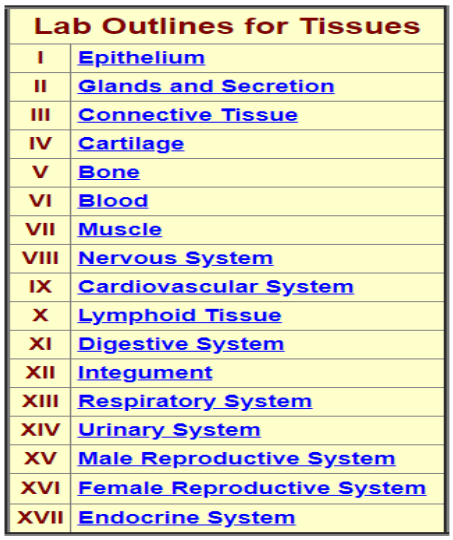


Figure 2. Display Virtual Lab Website



Lab Outlines for Tissues	
I	Epithelium
II	Glands and Secretion
III	Connective Tissue
IV	Cartilage
V	Bone
VI	Blood
VII	Muscle
VIII	Nervous System
IX	Cardiovascular System
X	Lymphoid Tissue
XI	Digestive System
XII	Integument
XIII	Respiratory System
XIV	Urinary System
XV	Male Reproductive System
XVI	Female Reproductive System
XVII	Endocrine System

Figure 3. Histology of Animal Tissue in Virtual Lab

Indicator 2. Obtaining responses 57.4% of students agree and 37% strongly agree with the addition and appearance of material images in the module that are in harmony with the content or materials presented, so that there are no misunderstandings between narration and illustrations. The addition of images related to this material is part of the characteristics of the module itself where the clarity of the material is accompanied by an attractive design (Dinatha, 2019). Indicator 3. The interactive module obtained a fairly high response between agreeing with 55.6% and strongly agreeing as much as 42.6% so that the module is not only one-way communication, but there is reciprocity or feedback for students. Indicator 4. Only very agree and agree responses are obtained, so that the placement of learning objectives in the module becomes a convenience for students in carrying out practicums.

Indicator 5. Obtained results of 53.7% of students agreeing with a brief and clear description of the material that is aligned with the topic of the practicum to be carried out. This is also based on the condition of students who mostly skip reading the material because it is too much and only theory. So that the provision of specific material makes students' reading interest increase slightly, connected with indicator 6. regarding the existence of practice questions in the module which obtain a percentage of 50% agree and 48.1% strongly agree, so that the existence of practice questions becomes feedback for students after carrying out practicum which makes theory and practice well integrated. Indicator 7. as the last indicator, obtained a percentage of 50% agreeing and 46.3% strongly agreeing with the practicum steps which are written neatly and clearly, so there are very few misunderstandings between one anotherConclusions

Conclusions describe the answers of hypotheses and/or research objectives or scientific findings obtained. Conclusions do not contain a repeat of the results and discussion, but rather a summary of the findings as expected in the objectives or hypotheses. If necessary, at the end of the conclusion can also be written things that will be done related to further ideas from the research.

4. CONCLUSIONS

Based on the research that has been done by analyzing the results of student responses to the virtual lab-based animal structure practicum module, it can be concluded that the use of virtual labs in practicums, especially animal tissue material, has a fairly high influence in helping students

understand material and abstract concepts, and students provide excellent response in the use of the virtual lab-based animal structure practicum module, based on the dominance of agree and strongly agree responses in the questionnaire results.

5. ACKNOWLEDGMENTS

We thank the Biology Education students of UIN Sunan Guung Djati Bandung Class of 2020 who have taken the time to fill out this research questionnaire and also provided their responses to the virtual lab-based animal structure practicum module.

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