Proceedings of International Conference on Education Technology and Social Science
Universitas Jabal Ghafur **ISSN: 2964-7762**

ANALYSIS OF STUDENTS' LEARNING RESOURCES AND INDEPENDENCE NEEDS IN THE CONCEPT OF ANIMAL TISSUES STRUCTURE AND FUNCTION

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ABSTRACT

This research is a preliminary study to obtain information about students' needs for learning resources and independent learning on the concept of structure and function of animal tissues. This data will be used as a basic for developing new learning resources in the form of research-based electronic modules (e-modules). It integrates relevant research results and is compiled systematically. This research is an exploratory research. Respondents used were Biology subject teachers and high school students of class XII. Respondents came from three high schools (SMA) located in Pidie Regency, namely SMAN 1 Sakti, SMAN 1 Mila and SMAN 1 Indrajaya. The instrument used is an interview sheet for teacher needs analysis, and student needs analysis questionnaire. The results showed that from a total of 68 respondents representing the 3 target schools, 74.31% of students had a handbook to learn the concept of Structure and Function of Animal Tissues and 70.66% of students had a strong motivation for self-study. However, according to 54.32% of students the handbook has not been able to complete the material. 59.98% of students think that the concept of structure and function of animal tissue is difficult to learn, so 71.76% of students need new learning resources as additional learning support and can be used independently. It is also seen that 57.76 % of students have never used e-modules and 72.47% of students are eager to try to learn to use research-based e-modules. It can be concluded that it is very necessary to develop new learning resources in the form of research-based e-modules for the concept of Structure and Function of Animal Tissues.]

Keywords: *"E-Modul", "Learning resources", "independent learning 3", "concept of Structure and Function of Animal Tissues "*

INTRODUCTION

Learning is an activity that makes everyone continue to change into a more perfect human being. Changes that are permanent can be shown by behavior as a result of experience or practice or the interaction between stimulus (input) and response (output).

Entering the 5.0 era, the development of science and technology is very demanding that the learning process must be flexible, varied, and meet process standards. This is in accordance with Permendiknas No. 41 of 2007 concerning Standards for the Learning Process. For this reason, the learning process that is carried out must involve maximum student activity and independence, both with teacher centered learning and student centered learning approaches. The key to success lies in how the learning process is more contextual and scientific in nature

Biology subjects are the main subjects in every school whose knowledge continues to develop according to the times. Science literacy is a demand for students when studying biology. Biology learning requires students to have high-level skills, think creatively, and be able to solve problems through the scientific method. In addition, he is skilled in communicating scientific knowledge, and applying Biology concepts in real life (1). The concept of structure and function of animal tissue is a concept that must be

studied in Biology subjects. This concept is classified as abstract so it really requires innovation in the learning process in order to be able to improve understanding of the concept.

Field studies conducted in several senior high schools in Pidie District provided information that the posttest results for the concept of structure and function of animal tissues were below the minimum completeness score set by the school. Students have difficulty in learning the concept. Students only read the material without understanding the content. This is because there are too many scientific terms and names that they have to memorize. Students also feel very bored when learning the concept. Nurmilawati (2019)(2) explained that this concept is abstract in nature, where students cannot see the real thing because the object is microscopic and only based on an image. This can be seen from the low percentage of student scores that reached the KKM (50% of the total number of students). The research results of Triani *et al*., (2018)(3) show that all learning outcomes have not reached the KKM. The results of interviews with students who have studied this concept show that 85% expect teaching materials other than textbooks. Interest in reading biology textbooks is also low (4). And, 76.7% of students were unable to recall the material that had been taught (5).

This research is a preliminary study, and is the basis for consideration for developing research-based electronic learning modules (E-modules). In this module, various research results that are relevant to the concept of structure and function of animal tissues will be integrated. It is hoped that this e-module will become an additional learning resource that is more interesting to learn because it uses language that is easy to understand and is equipped with histology descriptions. The material presented in the module does not only come from reference books, but also articles from national and international journals(6). The research-based module that will be developed in this study uses previous research articles which are the property of the researcher and contains procedures for making preserved animal tissue preparations (preparate). This study aims to analyze the needs of learning resources and student learning independence, especially in the subject of Biology, the Concept of Structure and Function of Animal Tissues.

Research on the analysis of learning resource needs and student learning independence, especially on the concept of structure and function of animal tissue in Pidie, has never been carried out, so this research is very necessary to be carried out. Similar research was carried out by Gustiani, 2021(7), that an analysis of learning needs is needed as a basis for developing teaching materials. Thus, it is necessary to analyze student needs in order to improve student learning outcomes, especially the need for learning resources and student independence on the concept of structure and function of animal tissues. It is hoped that this research-based module can be used by all high school students in the province of Aceh.

LITERATURE REVIEW

1. Concept of Structure and Function of Animal Tissue

The concept of structure and function of animal tissue is a concept that must be learned in Biology by high school students in class XI. The learning achievement indicators targeted are to explain the structure of tissues in animals, to explain the location and function of tissues in animals and to analyze the relationship between the structure of cells in tissues and the function of organs in animals.

Animal tissue is composed of cells with smooth membranes and complex structures. The main tissues in animals are epithelial tissue, connective tissue (connectors), muscle tissue and nervous tissue(8). All of these networks have special properties in carrying out their functions. Networks with special structures allow them to perform specific functions.

Epithelial tissue is tissue that is located on the outermost and innermost parts of the body (endothelium). This network is directly related to the external environment. Epithelial tissue consists of tightly knit polyhedral cells with little intercellular substance. Epithelial tissue forms a layer that covers the surface of the body and lines the cavities. Epithelial tissue serves to cover and coat the surface, absorption, secretion, sensory, contractile and protection (9).

Connective tissue allows movement and provides support for other tissues. Connective tissue consists of cells that are separated from each other by an extracellular matrix. Connective tissue serves to cover and protect other tissues, bind one tissue to another, support and move body parts and store substances(9).

Muscle tissue functions for contraction so it is known as active locomotion. Muscle contraction requires energy in the form of ATP. Furthermore, the neural network functions to generate and conduct impulses. Neural network activity allows to understand the environment and adapt to changing conditions, be sensitive to stimuli and control emotions(8).

2. Learning Resources

Learning resources are learning components that play an important role in improving the quality of learning. According to Samsinar (2019)(10), learning is a process of interaction between educators, students, and learning resources. The teacher is the main learning resource in the learning process. Educators are required in addition to acting as a learning resource, they are also required to design other learning resources including media or multimedia as a support in learning to improve the quality of learning.

Gustiani (2021) (7) concluded that new learning resources were developed based on student needs. One source of learning is teaching materials or modules (11). This learning resource is able to make learning more efficient (12). This is caused by teaching materials can replace the teacher's role as a source of learning (13).

3. Independent Learning

Learning independence is independent learning, not depending on others, especially teachers. Students are required to be active and take the initiative to learn on their own. Students who have high learning independence are relatively able to face all problems in learning and are able to solve existing problems. According to Supanti and Hartutik (2016)(14), learning independence is student awareness to want to learn without coercion in order to realize responsibility as a student in facing learning difficulties.

The results of research by Rafika *et al*. (2017)(15) explains that, to increase student learning independence, teachers must be skilled in using multiple methods in teaching, able to foster a sense of pleasure in learning, creative in utilizing various learning resources (environment, internet, and teaching aids in schools). and always provide motivation to learn.

Independent learning is closely related to learning outcomes (16). The relationship is the higher the level of learning independence, the higher the learning outcomes. On the other hand, the lower the level of learning independence, the lower the learning outcomes. High student learning independence is shown by the ability of these students to face existing problems, and not to depend on their friends. Results of Nurrahmah's research (2016)(17), learning independence can improve students' mathematics learning achievement.

METHODS

This research is an descriptive exploratory research with a qualitative approach. This research was conducted from June to August 2022. The respondents in this study were Biology subject teachers and high school students who had studied the concept of structure and function of animal tissues. Respondents came from 3 Senior High Schools located in Pidie Regency. Respondent's data are listed in Table 1. The target schools were selected by purposive sampling method by considering

the location of the schools around Jabal Ghafur University. Because the number of high schools around Jabal Ghafur university is 5 (five) schools, the number of target schools is 50% of the number of schools, namely 3 (three) schools.

Table 1. Respondent Data

No	School Name	Number of Respondents (People)	
		Teacher	Students
1	SMAN 1 Mila, Kecamatan Mila	1	25
2	SMAN 1 Sakti , Kecamatan Sakti	3	30
3	SMAN 1 Indrajaya, Kecamatan Indrajaya	1	13
Total Respondents		**5**	**68**

1. Preparation stage

Observations and preparation of research instruments are arranged at this stage. Instruments for data collection in the form of observation sheets of the learning process, interview sheets and questionnaires on learning resource needs and learning independence. Observation of the learning process includes aspects of learning devices, learning processes and students. Observations were made when learning the concept of animal tissue structure took place.

Interviews were addressed to Biology subject teachers and questionnaires were given to students who had studied the concept of structure and function of animal tissues. The type of questionnaire used is a Linkert scale questionnaire with 5 categories, namely: Scale 1: Strongly Disagree category, Scale 2: Disagree category, Scale 3: Agree category and Scale 4: Strongly Agree category. The instrument used was compiled by adopting the questionnaire items in Aziz's research (2019). The adoption of questionnaire items is carried out to obtain the validity of each questionnaire item used

2. Implementation stage

The distribution of questionnaires and interviews with Biology subject teachers were carried out at this stage. Questionnaires were distributed to students who acted as respondents, totaling 68 students and having studied the concept of structure and function of animal tissues (Students of class XII). It aims to obtain accurate information about the obstacles experienced by students and find out what is needed by students to support learning. Interviews were conducted with the class XI Biology teacher.

3. Evaluation Stage

At this stage, data analysis was carried out from the distribution of questionnaires to students and interviews with teachers. The parameters measured were data on the need for learning resources and student learning independence on the Concept of Structure and Function of Animal Tissues. The research data were analyzed descriptively and presented in a table.

RESULTS AND DISCUSSION

1. Observation Results

The results of observations on the learning process show that the Biology subject, especially the concept of structure and function of animal tissue, has been delivered in accordance with the syllabus and lesson plans. Learning uses textbook media and PowerPoint media as an effort to increase students' understanding of concepts. Learning is still centered on the teacher and does not involve student activity. 50% of students have not reached the minimum completeness score determined by the school. The low student achievement

is caused by the lack of student concentration during the learning process and the low understanding of student concepts (18).

2. Teacher Needs Analysis

Analysis of teacher needs through interviews on the concept of structure and function of animal tissues is presented in Table 2. Table 2 shows that the 3 (three) schools used as research locations have provided a number of textbooks and supporting books to help improve the competence of their students. The school also has skilled and innovative teachers in preparing learning materials. However, it has not been able to increase the learning independence of all students.

Analysis of teacher needs is useful for knowing the problems faced, identifying priorities, identifying abilities, identifying attitudes and solutions (19). Atmojo (20) added that the results of the analysis of teacher needs provide an overview of the learning process and its supporting factors for improvement.

Table 2. Results of Interview Analysis of Biology Subject Teachers

No	Question	Result
1	What teaching materials do you use during the learning process?	The teaching materials that have been used so far are in the form of textbooks, worksheets, materials in the form of power points.
2	What are your reasons for choosing these teaching materials?	Package books are used because all students have these books. So that the delivery of material is more traceable, learning is assisted with power points
3	After using these teaching materials, how are the students' abilities?	After learning is complete, students' mastery of concepts increases, but there are still students who still need further guidance. Students are more interested in learning to use multimedia
4	What do you think about the student handbook from the aspect of appearance and completeness of the information?	The textbook provided by the school has sentences that are difficult to understand. Students who have the Erlanga handbook have a better understanding of the concept than just using the package.
5	Have you previously used application-based teaching materials or used applications during the learning process?	75% of Biology subject teachers have used application-based teaching materials. The teaching materials used are in the form of power points and learning videos.

(Source: Research Data, 2022)

2. Student Needs Analysis

The results of the distribution of the questionnaire to 68 students on the need for learning resources and learning independence can be seen in Table 3. 74.31% of students already have a handbook to learn the concept of structure and function of animal tissues. The handbooks that students have are package books and several supporting books that have been provided at the school. This book is available at the school library. The existence of literature books as a support aims to improve students' understanding. However, 54.32% of students thought that the supporting book had not been able to complete the material on the structure and function of animal tissues.

Table 3. Analysis of Student Needs Questionnaire Data

No	Statement	Average (%)
1	Students already have handbooks other than textbooks	74,31
2	The handbook has not been able to complete	54,32
3	Students have a strong motivation to learn independently	70,66
4	The concept of structure and function of Animals is very difficult to learn	59,98
5	Students need new learning resources	71,76
6	Students have never used e-modules	57, 76
7	Students are eager to try learning using research-based e-modules.	72,47

(Source: Research Data, 2022)

59.98% of students think that the concept of structure and function of animal tissues is very difficult to learn. Students tend to memorize this material without understanding the substance being studied. This is evidenced by the number of students who have not reached the minimum completeness score that has been determined by the school. This concept is an abstract concept, where students cannot see the real thing because the object is microscopic and only based on pictures (2). Previous research explained that Biological Materials is a very difficult material to study because it has many definitions, terms, and scientific names that must be memorized (16)(21), so it is very prone to misconceptions.

The results of the analysis of student needs and learning independence show that 71.76% of students need new learning resources as additional learning support and can be used independently and 70.66% of students have strong motivation to learn on their own. These conditions are very supportive to develop new learning resources that are systematically arranged that can be understood independently. Learning resources that will be developed in the form of teaching materials (e-modules) research-based electronic modules. The results of data analysis showed that 57, 76% of students had never used e-modules and 72.47% of students really wanted to try learning using research-based e-modules.

CONCLUSION

Based on the results of the study, it was concluded that students needed new learning resources that could be used independently to improve conceptual understanding of the material structure and function of animal tissues. The right learning resource is a research-based e-module. Thus, this research can be continued by developing research-based e-modules for the concept of structure and function of animal tissues. This research is only limited to knowing the needs of teachers and students in the field of using learning media. It is hoped that there will be further research to analyze the needs of teachers and students regarding online-based media.

ACKNOWLEDGEMENTS

The authors would like to thank the Institute for Research and Community Service (LPPM) Jabal Ghafur University for funding this research. Thanks are also conveyed to the principals of SMAN 1 Sakti, SMAN 1 Mila and SMAN 1 Indrajaya who have given permission to conduct the research.

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