NEEDS ANALYSIS OF LEARNING MODEL DEVELOPMENT IN BIOMOLECULAR COURSES

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Abstract

This study aims to analyze student needs for the development of learning models in Biomolecular courses in the Chemistry Education Study Program, Medan State University. Needs analysis is carried out based on the first stage of the ADDIE model, namely analysis. Data collection in this study used a questionnaire with qualitative data types. The questionnaire was distributed using google form so that respondents could fill out the questionnaire online. Based on the results of the needs analysis that has been done, that the model that is often used by lecturers is project-based, while the development of chemistry learning models is still very rarely used. The obstacle is model development and understanding of learning models that are classified as difficult so that lecturers feel less interested in developing a model. So they suggested that an understanding be given in the development of learning models.

Keywords: Needs Analysis, Learning Models, Biomolecular.

A. INTRODUCTION

Knowing biomolecular as an abstract science makes many students think that biomolecular is a difficult course because it requires imagination to understand the concepts (Jannah, 2019). The concept of biomolecular which is considered complex because it requires mastering basic knowledge as well as application in everyday life becomes a problem when the learning process takes place (Yudha, 2024). Particularly in higher education, biomolecular learning has been carried out in discussions and presentations that have been designed with reference to the content or content of the material but often without considering the cognitive demands, attitudes and skills that students must have (Nugerat, 2014). Meanwhile, biomolecular understanding depends on things that are invisible and untouched (Barak, 2013). There are four levels of understanding, namely macroscopic, microscopic, symbolic, and process. Another opinion is that understanding biomolecular as a complex course makes students have difficulty in visualizing microscopic (abstract) phenomena because this micro-complexity is inherent in the nature of chemical concepts that require the incorporation of several tools in representing concepts and also improving students' conceptual understanding (Cai, 2014). For this reason, not only the selection of a learning model is needed but tools are also very important to help students understand biomolecular at various levels.

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One of the materials taught in universities majoring in chemistry education is biomolecular. Biomolecular is the main topic studied by chemistry education students. This course was chosen because it is often encountered in everyday life where misconceptions often occur, so it is important to study the topic (Rahayu, 2011). Along with the development of technology in this century, it has developed very rapidly, making various types of technology appear with different purposes and uses. One of them is used in the world of education, especially during the learning process (Yudha, 2022).

The utilization of technology in the learning model development process can be implemented through the learning process in the classroom. One way to improve quality in learning is by utilizing technology and implementing innovative learning models (Nurfajrini, 2022). However, there are still many educators who are constrained in implementing the development of learning models. For example, the mastery of learning models by lecturers is still minimal, college facilities to access are still limited, teaching schedules are tight, and internet connections are inadequate (Grosch, 2014). Whereas the learning model is a strategy in learning so that learning is easier to implement. The combination of several models is the best suggestion in the learning process will make students interested in learning according to the expected process.

Based on the results of the study, it shows that the development of learning models has a positive impact on improving learning outcomes and improving the quality of learning (Marlina, 2020). Learning models can be realized in the form of classroom learning processes (Onyenemezu, 2014). The combination of learning models is a solution to face educational challenges (Guo, 2013). This is also in line with the results of research (Darmuki, 2023) which states that the Inquiry Collaboration Project-Based Learning model affects student learning achievement in Indonesian language subjects.

Seeing this potential, the development of the right learning model is used by lecturers to carry out learning that is interesting, fun and makes students more active. A better model is also interactive, based on the description above, it can be stated briefly that the learning model is a vehicle for channeling messages or learning information (Jannah, 2019). For this reason, this research is needed with the aim of examining what learning models are used in biomolecular learning and what factors hinder lecturers in developing learning models in the Medan State University college environment.

B. RESEARCH METHOD

This research is a qualitative descriptive research. This research analyzes the needs of teachers in developing learning models. This needs analysis is carried out based on the first stage of the ADDIE model, namely (analyst) or analysis. The method used in this research is survey method. The subjects in this study involved 10 lecturers of the chemistry study program at Medan State University. The selection of this college was carried out by purposive sampling because the lecturer was prepared to be a facilitator in carrying out learning activities from a predetermined population. Data collection was carried out using a questionnaire (questionnaire) with qualitative data types. The questionnaire was distributed using google form so that respondents could fill out the questionnaire online (Rahyu, 2011). The questionnaire data were presented in the form of the percentage of lecturers who answered "yes" and "no" to each question and then analyzed to determine the lecturers' needs for the development of biomolecular learning models.

C. FINDINGS AND DISCUSSION

The distribution of questionnaires to lecturers is the initial stage of a series of development research to determine the needs of lecturers in supporting the learning process, especially biomolecular courses in the classroom. The results of this needs questionnaire are then used as the basis for developing a learning model. The development of this learning model acts as a strategy that will help lecturers and students during the learning process, especially in biomolecular courses. Based on the questionnaire, the data obtained can be seen in Table 1.

Table 1. Analysis of Lecturers' Needs for the Development of Learning Models in Biomolecules

No	Question	Lecturer Response	Percentage (%)
1	Has any chemistry education study program implemented a learning model, especially for biomolecular courses?	Yes No	100% 0%
2	Are the conditions for implementing the biomolecular learning model in this study program adequate?	Yes No	70% 30%
3	Is there a guideline for implementing the learning model in this study program?	Yes No	100% 0%
4	Is there a special arrangement for the implementation of the learning model in this study program?	Yes No	60% 40%
5	Do you often apply learning models in the learning process?	Yes No	80% 20%
6	Has the application of the learning model been maximally utilized in the learning process?	Yes No	80% 20%
7	Are there any obstacles in implementing the learning model in class?	Yes No	30% 70%
8	Do you conduct evaluation after learning according to the syntax of the learning model?	Yes No	80% 20%
9	What learning model do you think is appropriate for the Biomolecular course?	Project-based Problem-based Collaborative Learning based on own experience Discovery Learning Contextualized learning	30% 20% 10% 15% 10% 15%
10	Does the application of this learning model make students play an active role in the learning process?	Yes No	80% 20%

Based on Table 1, there are different percentages for each type of learning model used in biomolecular learning. This table also explains the highest percentage of "yes" and "no" answers for each question. The results of the analysis of the types of models that are often used can be seen in Figure 1.

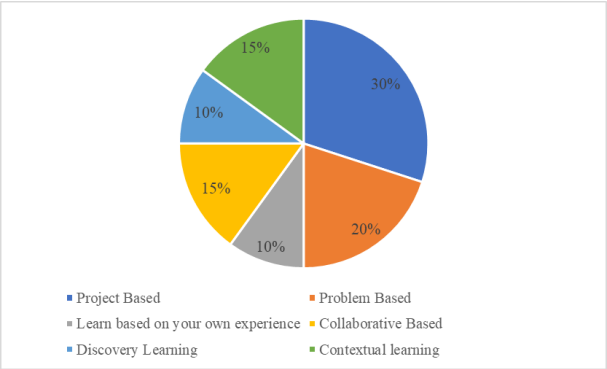

Figure 1. The Results of the Analysis of the Type of Model Used

Judging from the aspect of the type of models that is often used, the data shows that the project-based learning model is the most frequently used model. The model is seen from the overall percentage of 30% as many as 5 lecturers, followed by other models such as problem-based with a percentage of 20% as many as 3 lecturers, while some models are very rarely almost not used. This is because the use of learning models must be in accordance with the criteria of the learning material. In addition, the learning model is also a good intermediary in delivering material to students. The second aspect regarding the frequency of using the model is often used in the learning process because to teach must go through the application of the model and it can be seen that the percentage reaches 100%. This shows that all lecturers have used the biomolecular learning model. In addition to its availability, the model is also able to improve students' abstract understanding in learning.

Based on the advantages and disadvantages of using the learning model, the data shows that the learning model that is often used in higher education facilitates learning because there are some lecturers who have gained basic knowledge about the learning model, but there are also some lecturers who experience difficulties or obstacles in implementing the learning model, especially in developing their own learning model. The results of the analysis of obstacles in the development of learning models are shown in Figure 2.

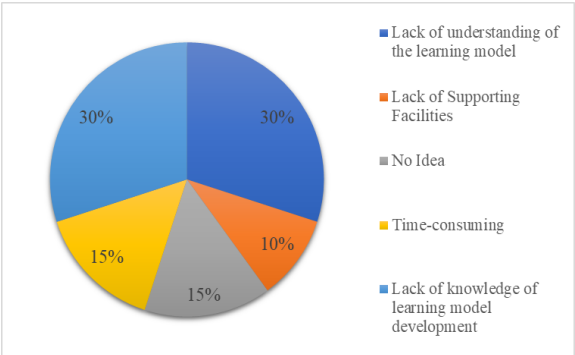

Figure 2. Obstacles to Learning Model Development

The solution to the problem is that lecturers want training in creating, developing and applying learning models so that they are able to develop their own learning models. This is related

to the fact that there are still many lecturers who have not been able to integrate several learning models with the learning process. In addition, there are several factors that hinder the utilization of several models in learning such as lecturers feel burdened because they are required to be more creative, require careful preparation and also require the ability to integrate these learning models. Learning that uses several models will have a significant effect on the learning process (Onyenemezu, 2014). This is also supported by the results of research conducted by Rafiq (2022) that the products produced in the form of a combination of learning models can support students to learn more independently. The responses given by lecturers to the development of learning models as a reference in developing biomolecular learning models.

D. CONCLUSION

Based on the results of the needs analysis as the basis for developing learning models in biomolecular courses, it can be concluded that the most frequently used learning model in the learning process is the project-based model, while model development is very rarely used as a strategy in the learning process. The obstacles for lecturers in implementing several models are due to the lack of supporting facilities, lack of understanding in producing, developing learning models.

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