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The Effect of Differentiated Learning Implementation on Learning Motivation and Student Learning Outcomes of SMA Negeri 1 Poto Tano

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Abstract

There are two objectives of this study, first, to explain how the strategy of implementing differentiated learning to improve students' motivation and learning outcomes in Biology subjects in class XI students at SMA Negeri 1 Poto Tano. Second, to analyze how the effect of the application of differentiated learning on student motivation and learning outcomes in biology subjects in class XI students of SMA Negeri 1 Poto Tano. The type of research used in this study is quantitative research with experimental methods. The subjects in this study were all students of class XI-2 as many as 33 people who acted as an experimental class and XI-3 as many as 31 students who acted as a control class. The instruments used in this study were learning outcome tests and student learning motivation questionnaires. The results of data analysis obtained that the significance value < t, namely (0.000 < 0.05), then there is a significant effect in the motivation and learning outcomes of students in biology subjects between the group that applies differentiated learning (experimental group) and the group that applies conventional learning (control group) at SMA Negeri 1 Poto Tano.

Keywords: *Differentiated Learning, Learning Motivation, Learning Outcomes*

Abstrak

Ada dua tujuan dari penelitian ini, pertama, untuk menjelaskan bagaimana strategi penerapan pembelajaran berdiferensiasi untuk meningkatkan motivasi dan hasil belajar siswa dalam mata Pelajaran Biologi pada siswa kelas XI di SMA Negeri 1 Poto Tano. Kedua, untuk menganalisis bagaimana pengaruh penerapan pembelajaran berdiferensiasi terhadap motivasi dan hasil belajar siswa dalam mata pelajaran biologi pada siswa kelas XI SMA Negeri 1 Poto Tano. Jenis penelitian yang digunakan pada penelitian ini adalah penelitian kuantitatif dengan metode eksperimen. Subyek dalam penelitian ini adalah semua siswa kelas XI-2 sebanyak 33 orang yang bertindak sebagai kelas eksperimen dan XI-3 sebanyak 31 siswa yang bertindak sebagai kelas kontrol. Intrumen yang digunakan dalam penelitian ini adalah tes hasil belajar dan angket motivasi belajar siswa. Hasil analisis data diperoleh bahwa nilai signifikansi < t yaitu (0,000 < 0,05), maka terdapat pengaruh yang signifikan dalam motivasi dan hasil belajar siswa dalam mata pelajaran biologi antara kelompok yang menerapkan pembelajaran berdiferensiasi (kelompok eksperimen) dan kelompok yang menerapkan pembelajaran konvensional (kelompok control) di SMA Negeri 1 Poto Tano.

INTRODUCTION

Education is a key factor in the development of a country and determines the future of individuals and the progress of a nation. Through education, human beings learn many things, from the simple to the very complicated. As a proud nation-state, Indonesia realizes the importance of education, and has made education one of the priority goals of the country. This can also be seen by the inclusion of education issues in its own chapter, namely Chapter XIII on Education and Culture in the Constitution, namely the 1945 Constitution of the Republic of Indonesia.

Education in Indonesia is also regulated by its own legislation, namely the National Education System Law No. 20 of 2003. Article 1 paragraph 1 outlines the direction and purpose of education in Indonesia, which reads:

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively balance their potential to have religious spiritual strength, self-discipline, personality, intelligence, noble character, and skills needed by themselves, society, nation and country.

Based on article 1 paragraph 1 of the National Education System Law No. 20 of 2003, it can be concluded that one of the main goals of education is to balance the student's self-possession. In this regard, Ki Hadjar Dewantara had already established the philosophical basis of education. Ki Hadjar Dewantara (Novita Sari, 2022) emphasized that the purpose of education is to guide all the natures that exist in students, so that they can achieve the highest possible safety and happiness both as human beings and as members of society. The nature in question is the nature of nature and the nature of the time of the learners.

Nature codes are related to the basic characteristics of learners. Nature is defined as

the natural environment in which learners live, both their cultural and geo-graphical conditions. Changing times are related to changing times and changing challenges. This means that each learner has their own natural coefficient and coefficient of time so that as an educator we can guide learners so that they can improve their behavior and develop skills that are in line with the balance of the times and the characteristics of each learner so that they can live, work and adapt themselves (Noivita Sariei, 2022).

However, in the reality of teaching in the classroom, especially in Bioscience teaching in class every student has differences in interests, talents, learning styles, and level of understanding of material. Therefore, it is necessary to individualize learning that can meet the individual needs of these students.

For this reason, teachers are required to play an important role in balancing the students' abilities and skills. One of the important aspects in the learning process is the implementation of effective learning strategies to increase student motivation and learning outcomes. Currently, the balance of technology and information has brought about significant changes in the world of education. Teachers are faced with demands to provide learning that is innovative and responsive to the needs of diverse students.

One of the possible learning approaches that can accommodate all the needs of students is usually called differentiated learning. Self-initiated learning is a combination of rational choices made by teachers to meet student needs based on learning objectives, teachers' perceptions of students' learning needs, a learning environment that invites students to learn, effective learning outcomes, and consistent assessment stein (Soipianti Deiwi 2022).

For this reason, it can be concluded that differentiated learning is an individualization of learning that takes into account individual differences in terms of interests, abilities, learning styles and student needs. In differentiated learning, teachers adopt diverse strategies to facilitate effective learning for each student.

Based on the explanation above, this research was carried out to accommodate the needs of students in Bioscience learning by implementing differentiated learning. Self-initiated learning is an effective individualization in increasing student motivation and learning outcomes. Individualized learning is a strategy that allows teachers to adapt learning, contain, and assessment in accordance with the needs and individual characteristics of students. Through the implementation of differentiated learning, students are exposed to a learning environment that is relevant, challenging and interesting in accordance with their needs and interests.

Through this research, it is hoped that a better understanding of the effect of the application of differentiated teaching on students' motivation to learn and learning outcomes in Biology subject at SMA Negeri 1 Poto Tano can provide valuable insights in balancing teaching strategies that are more effective and inclusive. The results of this research can also contribute to the balancing of education and provide practical advice for teachers and education stakeholders in improving the quality of teaching in schools.

METHOD

The type of research used in this research is quantitative research with experimental methods. This research involved two classes that were given different treatments to determine students' biology learning outcomes and these two classes were given tests to test their abilities. One class functions as an experimental class, namely class XI 2 with 33 students and one class as a control class, namely class XI 3.

The learning outcomes test was given twice, namely at the pretest and posttest to determine the ability of students' learning outcomes, while to determine students' learning motivation using differentiated learning strategies, it was carried out using questionnaires. The data analysis techniques carried out are: validity test, reliability test, normality test, average and standard deviation test, and hypothesis test.

RESULTS AND DISCUSSION

1. Implementation of Differentiated Learning

The application of differentiated learning in this research is grouped into two stages, namely:

a. Preparation phase

At this stage the researcher carried out an initial assessment to identify students' learning needs and level of understanding in Biology subjects. When preparing assessments, researchers consider students' interests and learning styles, such as visual, auditory, kinesthetic, or project-based learning. This is important so that learning can be carried out according to students' needs and learning styles. The following are the results of initial assessment data related to student learning styles:

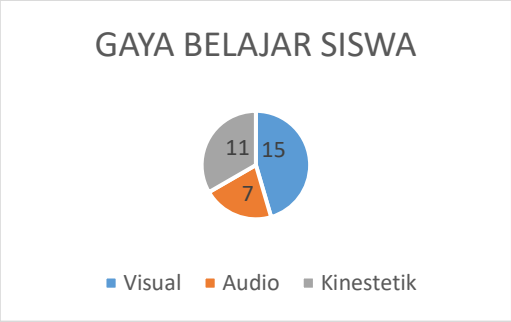

Figure 4.1. Student Learning Style Diagram

Based on the results of the initial assessment, it is known that there are 15 students who have a preference for a visual learning style, 7 people have an audio learning style, and 15 people have a kinesthetic learning style. The data is then used by researchers as a consideration for preparing learning plans, teaching materials and grouping students in learning activities.

At this stage the teacher who is also a researcher prepares learning materials and media that will be used in learning by considering the differentiation of content, processes and products. For this reason, teachers use various types of learning media, such as text, video, images, games and interactive tools. This is aimed at helping students with different learning styles.

b. Implementation Stage

At the stage of implementing differentiated learning, there are several steps taken by the teacher, including:

1. Creating Flexible Groups (Process Differentiation)
   Group students based on their level of understanding, so they can learn with peers who have similar abilities. However, keep in mind that the group remains diverse to allow for healthy social interactions.
2. Providing customized materials (Content Differentiation)
   Providing teaching materials tailored to students' level of understanding. This includes extra material for those who are more advanced or basic material for those who need a stronger foundation. The teaching materials and materials provided are varied in nature from various learning sources such as videos, images and texts to accommodate various learning styles.
3. Task Choice (Product Differentiation)
   When giving assignments, students are given a choice of assignments or projects that allow students to explore biology topics according to their interests. This can increase student motivation because they feel they have control over their learning.
4. Tutoring or Additional Support:
   I personally also provide extra time to help students who have difficulty understanding certain concepts. Apart from that, to anticipate students who are embarrassed to consult directly with me as a teacher, I also get them used to collaborating through individual or small group tutoring activities with peers. I think this can be very helpful.
5. Formative Evaluation:
   To find out students' learning progress, I regularly carry out formative evaluations to monitor student progress. I use the evaluation results as feedback to adjust further learning, both in terms of learning methods and the level of difficulty of the material.
6. Utilization of Technology:
   In the process of implementing differentiated learning I also utilize educational technology, such as

computer-based learning software or online learning platforms, to provide additional materials and resources.

2. The Effects of Differentiated Learning

Differentiated learning, as stated by Tomlinson (in Herwina, 2021) is an attempt to customize the learning process in the classroom to meet the individual learning needs of each student. For this reason, learning must be designed by taking into account students' learning readiness, interests and learning profiles. In this coefficient, I, as a researcher, conducted an initial assessment (diagnostic assessment) to determine the students' learning readiness, interest and learning profile. This stage became the basis for me in planning the teaching and learning process, creating diverse media (coincidental differentiation), creating flexible skills (process differentiation), choice of tasks (product differentiation), affirmative evaluation, tutoring and utilization of technology in teaching and learning.

Through a series of strategies, based on the results of this research, the application of differentiated learning in biology teaching has been successful in improving students' learning motivation and learning outcomes. This can be seen in the increase in students' learning motivation in the experimental class from an average of 63.59 pre-experiment results to 97.21 post-experiment results. The same thing also happened to student learning outcomes in the experimental class which increased from an average of 61.67 to 80, 91.

This result is also substantially in line with the results of several previous studies as I wrote in Chapter II of this research report, where the application of differentiated learning can be an option for teaching guidance that can be used by teachers to meet the learning needs of students who are blind. The differentiated teaching guidance in this study is also in line with Ki Hadjar Dewantara's education philosophy, that teachers in carrying out teaching guidance must pay attention to the natural and current needs of the students.

CONCLUSION

Based on the results of research on the effect of implementing differentiated learning on student motivation and learning outcomes in biology subjects in class XI SMA Negeri 1 Poto Tano, it can be concluded as follows:

1. Student motivation and learning outcomes in biology subjects have increased with the application of differentiated learning. This conclusion was obtained from the results of the research, namely:
   a. The average result of the pre-treatment score was 61.67 and for the co-treatment score was 56.94. After the treatment was established with a different teaching strategy, the average post-test score of the experimental class was 80.91 and for the control class posttest was 69.03. So that from the experimental class learning outcome variable, the percentage increase from 62 to 81 is around 30.65%.
   b. The same thing was also seen in the student learning motivation variable in the experimental class where based on the results of the pre-experiment average students' learning motivation was 63.59, and post-experiment increased to 97.21.

The results of data analysis obtained that the significance value < t, namely (0.000 < 0.05), then there is a significant effect in the motivation and learning outcomes of students in biology subjects between the group that applies differentiated learning (experimental group) and the group that applies conventional learning (control group) at SMA Negeri 1 Poto Tano. There is a significant influence in students' motivation and learning outcomes in biology subject between the group that applies differentiated learning and the group that applies conventional learning at SMA Negeri 1 Poto Tano.

SUGGESTION

Based on the discussion and conclusions in this study, the suggestions are as follows:

1. For further researchers who use differentiated learning strategies, it is recommended that they conduct an initial assessment to find out the learning needs of students, and in the learning process the

teacher must provide clear directions, in groups it is also better to share their respective roles, so that students are more active in the learning process. If you cannot implement all dimensions, you should focus more on process differentiation.

2. For schools, in order to increase the carrying capacity of the school ecosystem for the implementation of differentiated learning, especially in the form of more varied learning materials and resources. Schools should also provide more opportunities for teachers to conduct self-development and innovate in the use of approaches, methods and learning media.
3. For the Department of Education, to pay more attention to meeting the standards of learning support infrastructure. The use of differentiated learning requires the availability of supporting learning infrastructure, especially varied learning resources and the use of technology in learning.

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