



Analysis of The Use of Discussion And Question And Answer Methods As an Effort to Improve Student Physics Learning Outcomes

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Abstract: This study aims to find out how the views of teachers and students regarding the use of discussion and question-and-answer methods in learning physics as an effort to improve student learning outcomes, especially in the wave material on class XI MIA students at Madrasah Aliyah Negeri 2 Muaro Jambi for the 2022/2023 academic year. The population in this study were students of class XI MIA with a total of 22 students, with 11 male students and 11 female students. Sampling in research This method uses total sampling, where the entire population is used as a sample. Data was collected through observation through a questionnaire containing items, questions, and teacher interviews. Research results show that the views of teachers and students on how to use the discussion and question method answer in physics subjects are categorized quite well. The average students say that this method is suitable for use in physics lessons but still hesitate to say that using this method of discussion and question and answer can help them better understand the material. Still, the students also do not think negatively about the method. This too was put forward by the physics subject teacher at the school; he said that the use of discussion and question-and-answer methods is quite good and effective

INTRODUCTION

One of the efforts that can be made to prepare the younger generation to welcome and deal with the times is with education (Nurrita, 2018), in formal education at schools there are many subjects that are taught to teach knowledge to the younger generation in order to improve human resources (HR), so that our country is not far behind from other countries. Learning is a conscious effort to change human attitudes and behavior (Emda, 2018). One science subject that has a fairly close relationship with our daily lives is physics. Physics learning learns about the natural surroundings with the aim of looking for human regularity in observing the natural world around them. Various physical symptoms of natural phenomena that occur, both calculations and The theory of all of that is explained in physics (Diani & Syafitri, 2016) for physics learning, a teacher can start by giving teaching that is easy to understand, by choosing the right learning model and media, it can help students understand the material easily (Febnasari et al. al., 2019; Malone, 2008; Ramlo, 2008; Scott & Schumayer, 2017). For solving problems in the concept of physics, it really requires the ability and creativity of students, the methods used in the learning

process also greatly affect the abilities of students, choosing the right method will be able to influence the ability of students to be channeled according to their talents and interests, so that the learning outcomes of participants students increase.

The purpose of learning physics is none other than to develop knowledge, analytical skills and students' understanding of the environment around them (Azizah et al., 2015), as well as to improve learning outcomes, thus it can be said that physics is one of the subjects that important for students to improve human resources, especially among students. But in today's reality, physics is a subject that gets poor grades in the eyes of students, because some students brand physics as a subject that is very difficult, uninteresting, boring, and abstract (Mbonyiryivuze, Agnes et al., 2021). This can be the same as we see that there are lots of students whose grades are below average. Researchers found that there may be several factors that become obstacles, this is caused by several factors, both internal factors and external factors (students, teachers and the environment). Formulation of competency standards is one that hinders teachers in achieving learning objectives (Hayes, 2015; Heinrich et al., 2015; Lawson et al., 2015). Other things can also be in the form of KD formulation, indicators, learning objectives, and learning methods. For the students themselves, these obstacles arise because students do not understand the goals to be achieved and the delivery of the subject matter of each lesson. In terms of the environment, the reason is that the distribution of lessons to each school is slow and uneven, the environment is not conducive, and there are other obstacles (Rezeki, 2018).

In this study, the researcher hopes to be able to find possible causes and barriers to students' physics learning achievement that have not been optimal, and ways to deal with these obstacles. The possible obstacles are in the form of First, educators tend to use inappropriate learning models. Second, students' lack of interest in physics lessons, thirdly, students have labeled physics as a difficult subject, fourthly, students lack the courage to express opinions and ask questions. This has an impact on the low quality of students' grades, because they do not receive well what is conveyed in the lesson. We can see this with the large number of student scores, which are in (KKM) is 75. In the process of learning physics, to achieve maximum learning outcomes for students, attention and improvement are needed in the learning process, this can be from the selection of learning methods. The method is defined as the method used by the teacher in the learning process to achieve goals. learning, by choosing the right method, learning will get better (Handayani, 2022) The teacher must be able to choose a model or method that is appropriate to the circumstances of students, this can influence students' interest in physics lessons, if the selection of appropriate learning methods and models can increase students' interest in physics. Students' understanding and interest in wave material is categorized as very low, students find it difficult, especially in understanding the material. Then the method used by the teacher is mostly only the Lecture method, this makes students less interested and lazy to follow the learning process. To overcome existing problems related to this context, here the researcher tries to find out how to apply the Question and Answer Method to improve student learning outcomes in physics learning according to the views of students and teachers themselves.

The discussion method is a way or effort that is done to solve a problem quickly and correctly, the discussion is a process to discuss a problem or topic, which is discussed with several people, the results of the discussion will be an alternative answer in solving the problem so as to get the desired result. Satisfy (Purba, 2020), and broaden and add to students' discourse and insights about knowledge more broadly. The question-and-answer method itself is a question, statement or explanation and review that is conveyed, or presented by the presenter or the first party, to the audience or the second party, in the form of learning materials or other matters (Suminem & Khaeriyah, 2009), after which they will receive a systematic and regular reply or answer. In order to stimulate student interest and motivation to use the question and answer method properly and appropriately it can be used (Suwela, 2018). As for this study, the researcher wanted to see how students and teachers viewed the use of the discussion and question and answer method, and see how the learning outcomes of the students used the discussion and question and answer method in learning (Munawwarah & Arafah, 2018).

Researchers here want to see how the use of the discussion and question and answer method according to teachers and students at Madrasah Aliyah Negeri 2 Muaro Jambi, the application of the question and answer method is expected to provide an excellent solution for improving student learning outcomes. The question and answer method can not only attract attention, stimulate thinking, encourage courage, train speaking skills, but also provide a tool for objectively assessing student achievement. Therefore, in order to attract students' attention so that they are more focused and easier to understand learning physics in wave material, the discussion and question and answer methods are used, so that they can help students to be active in class.

By looking at the opinions of students in using a method in learning, the teacher can further improve the quality of student learning outcomes, because if the teacher knows how the methods and forms of the learning process are liked by students, of course the teacher will be able to choose the use of learning methods and models that are suitable for students. Adjusted with learners. With this, of course, it is hoped that it can further enhance the participants' understanding learn about the material being studied. Based on the background above, the authors are interested in conducting research with the title "Analysis of the Use of Discussion and Question and Answer Methods As Efforts to Improve Student Physics Learning Outcomes"

METHOD

The design used in this study is a qualitative approach. In this study the aim was to obtain an overview and information about how the views of teachers and students regarding the use of discussion and learning methods Question and answer. The population in this study were all students of class XI Mia at Madrasah Aliyah Negri 2 Muaro Jambi, with a total of 22 students with 11 male students and 11 female students. The sampling technique in this study was total sampling, where the entire population was used as the research sample. The sample used for the research was class XI MIA Madrasah Aliyah Negri 2 Muaro Jambi with a total of 22 students. For researchers data collection techniques are the most important step because the purpose of research is to collect data, while the

data collection techniques in this study are interviews, questionnaires. Interview and questionnaire techniques were carried out to see how the views and opinions of teachers and students regarding the effectiveness or not of using the discussion and question and answer method as an effort to increase learning outcomes.

The research instrument used was a questionnaire of students' views on the effectiveness of the use of discussion and question and answer methods. The questionnaire used uses a Likert scale. The questionnaire that was distributed was in the form of a questionnaire link, a Likert scale was made by clicking on one of the answers that were considered according to their wishes (Rais & Ferinaldi, 2019). From each item or question selected there are 3 answer choices, namely agree = 4, undecided = 3, disagree = 2.

RESULT AND DISCUSSION

Data from the research results obtained from distributing questionnaires to students, as well as interviews with teachers of related subjects, the questionnaire distributed had 15 questions, consisting of 12 optional questions containing the answer choices "agree", "no" and "maybe" (unsure), and 3 questions containing questions that are asking for opinions or explanations of respondents regarding the results of the purpose of this research. The questionnaire was filled in by 22 students as a sample who were at Madrasah Aliyah Negeri 2 Muaro Jambi. After the questionnaire that the researcher distributed to the students had been collected, the researcher then processed the questionnaire into data using the percentage formula. Then after the data is obtained, the data can be presented in tabular form.

Discussion method and question and answer according to students

Questionnaire of students' views on the use of the discussion and question and answer method was carried out by assessing the average score, the highest Xmax score and the lowest score. Xmin. To find out what students think about the use of the discussion and question and answer method, the questionnaire data of students' views in class XI MIA can be seen in the following table 1:

Table 1. Questionnaire Analysis of Student Views

No	Analysis Category	Score
1.	Total Value	943
2.	Minimum Value	37
3.	Maximum Value	48
4.	Midle Value	43
5.	Average Value	42,86
6.	Mode	44
7	Standar Deviation	2,550350

From the table above it can be seen that the average score obtained by students from the questionnaire is 42.86 and this is actually in a fairly low category, with a minimum score of 37 and a maximum score of 48. In other words there must be improvements made so that the child's ability students in providing and understanding a material presented by the teacher can run optimally. In this study the researcher wanted to see the views or

opinions of students and also teachers or teaching staff regarding how to use the discussion or question and answer method, as an effort by the teacher to be able to improve student learning outcomes, which then the data obtained was analyzed and elaborated.

The results of the analyzed data are then presented by adding up and dividing by the expected amount. So that the percentage of each question item in the questionnaire can be obtained. The results of the percentages above are then translated into qualitative sentences, this aims to make it easier to understand, it can be seen in the table that the highest score obtained by students is 48, and the lowest score is 37, while the average score obtained by students here is 42,86. In writing the results of this questionnaire, the researcher only describes a number of questions which in this case the researcher considers to be able to represent the results of the questionnaire, where the question items are considered to be able to interpret and represent answers to other question items, in this case the question items are considered appropriate or in line with the research objectives to be achieved.

On the first question containing "have you previously learned to use the discussion and question and answer method?" on this question a lot respondents who said that they had studied using this method, almost all respondents answered the "agree" option, where there were 20 respondents who answered agreed, and the rest answered (no), there were 2 respondents who answered "no" it can be seen that there were 91.3% who had used the question and answer method during lessons and 8.3% said that they had never used this method. In the next question which contains the question "when the teacher uses the discussion and question and answer method, have you ever answered and helped friends to answer questions given, either by the teacher or classmates?" there are 3 respondents here who answered the "no" option and 19 other respondents answered the "agree" option where as many (13%) answered that they had never answered the teacher's questions in class, and as many as (87%) answered that they had a role in answering and helping answer questions given by the teacher. In the next question the researcher asked about "do you think the use of the discussion method is suitable for use in physics lessons?"

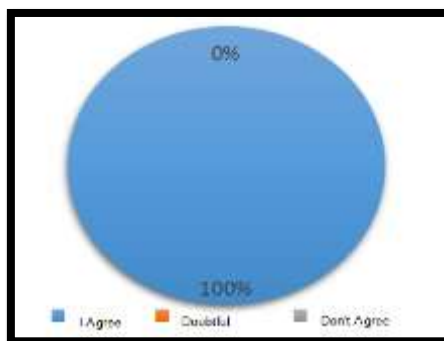


Diagram 1. The use of the discussion method is suitable

From diagram 1, information is obtained that all respondents answered "agree". From the diagram above, it can be seen that students agree that the discussion and question and answer method is suitable for use in physics subjects. It can also be seen from the

observation that the use of the discussion method helps to better understand the learning material, which can be seen in diagram 2

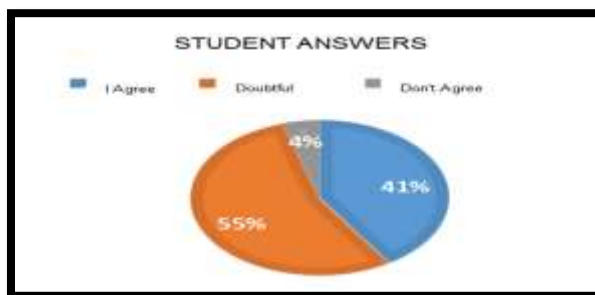


Diagram 2: The use of the discussion method helps better understand the learning material

Then on another question, namely "whether by using the method discussion and question and answer, can make you understand more about the material delivered by the teacher?" There were 9 respondents who chose the answer to the "agree" option, and 1 other respondent answered with the "no" option while 12 other students answered "maybe" in this question students can be said to be still hesitant to say that this method can make them understand the material better However, the students' responses also did not say that this method could not help them understand the material, we can see the percentage of student answers in diagram 2, where as many (55%) were in doubt and as many as (41%) chose the agree option and 4% others he replied agree.

In the next question item, "is this method effectively used to help you understand physics lessons, especially in wave material, here there are 8 people answering "agree", and 14 students answer maybe" or it can be said that they are still not too sure whether the method is effectively used, then we can see the results of the percentage of student answers in diagram 3. Based on diagram 3 below, there ia around (36%) of respondents agree that this method is effective to use, but there are still many respondents who are hesitant to say whether this method is effective or not here around (64%) respondents answered the "maybe" option. The researcher also asked students what their reasons were for choosing answers to the question indicators above, and on average students answered, when the discussion method was carried out they thought it might indeed help understand the material, but they were not sure, or rather could not say whether the method is good and effective to use in the material, which can be seen in diagram 3

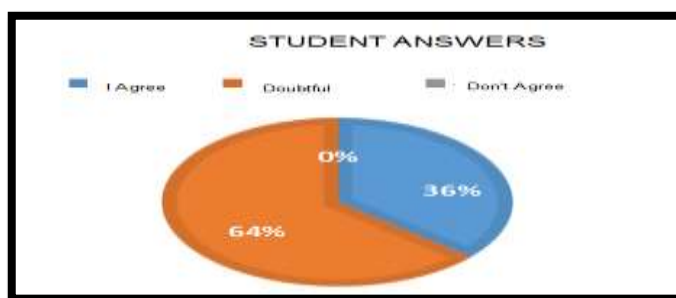


Diagram 3. Discussion and question and answer methods are effective to use

Next, the researcher posed a question in the form of "can the learning process using the discussion and question and answer method increase your learning motivation?" We can see the results of student answers in Diagram 4.

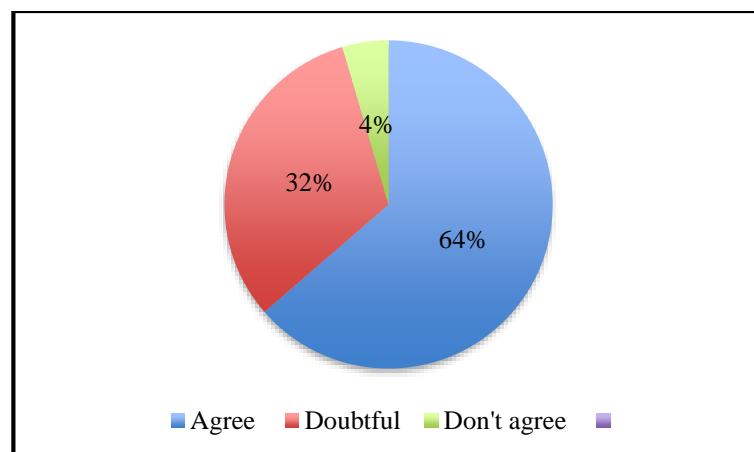


Diagram 4. The use of the discussion method helps to better understand the learning material

In table 4, as many as 64% of students agree that the use of discussion and question and answer methods can increase their learning motivation, and as many as 32% of students answer doubtfully, and 4% of students disagree. From the diagram it can be seen that according to students the use of the discussion and question and answer method can help them in increasing their learning motivation, students consider discussion as an interesting way to do so that students can be more enthusiastic about taking lessons, but indeed not all students think that same.

Based on the average data points obtained by students which are in the range of 42,86, and from the results of the percentage of student answers for each of the indicators above, it is known that students' views of the discussion and question and answer methods can be said to be quite good, from the indicators that described above, students are still a little hesitant to think that the use of this question and answer method can make or help them understand lessons and explanations from the teacher or their friends, but students also do not say that they disagree about this. In carrying out learning there are very many methods that are usually carried out or used by teachers in order to improve student learning achievement, and can streamline the ongoing lesson hours, teachers here are required to master various teaching methods, so that these methods can be applied appropriately, and so that the teacher can carry out the teaching and learning process effectively, the teacher is also required to be able to understand the situation and condition of the students, what is the state of the class, how is the enthusiasm of the students in the state of the learning process going on, the teacher must be able to find the right way so that the learning objectives to be achieved can be realized, and student learning outcomes can be optimal.

In this study the researcher gave a questionnaire to students, the questionnaire consisted of 12 questions with options, and 3 questions that were opinion from the respondents. Here we took the average answers given by the respondents regarding the

questions asked. Some of the questions the researchers asked were as follows: The first question is "in your opinion, is answering questions from the teacher, or helping to provide answers, make you understand the material presented better?" all respondents thought that by answering or helping to provide answers to teacher or classmate questions, it could make them better able to understand the material being taught, even though the reasons given by the respondents varied slightly, some respondents explained that by helping answer questions from friends, make them understand more, they know better which answer is right, because when they answer questions that are asked incorrectly or incorrectly, their teacher will explain in more detail about the question and the errors of their answers, so that the answers to questions or problems that are there can be more attached to them. The second question is regarding "in your opinion what kind of learning method is interesting and can make it easier for you in physics lessons, especially wave material", more than half of the respondents said that one of the interesting methods to apply was the discussion and question and answer method, because by holding this discussion and question and answer method, students or students are more able to express their opinions and results of their thoughts, they say that using this discussion method is fun and fun, by using methods that can provoke students to be more active in class, either by asking, refute, or help provide answers, the class atmosphere can run livelier.

However, there are indeed a number of student or student opinions regarding interesting learning methods to apply, for example, such as the teacher giving quizzes, practice questions, practice, and so on. From the explanation above, from the students' answers through a questionnaire with optional selection, and questions regarding the opinions of the respondents, the researcher can see and conclude that, in the students' view, the use of the discussion and question and answer method is very interesting to apply, this method is also quite effective because it can We can see from the results of the questionnaire above, that students think that using the discussion and question and answer method can help and make it easier for them to understand the material and when the discussion process takes place the material is more easily attached to students (Masrukin & Arba'i, 2018).

Through the discussion method students can better understand the concepts and principles of the material. This is in line with what was stated by Rusman (2010) which the researcher quoted from his research (Aminah, 2018) that learning that uses discussion and question and answer methods will encourage or make learning more lively, it can also encourage deeper learning processes and learning outcomes and broad (Johnston, 2014; Lehavi & Eylon, 2018). However, there are indeed some students who think that the use of this method is somewhat ineffective, because sometimes in the process of the discussion there are several factors that can make students or students somewhat confused (A & Nurhatta, 2021). From this description, we can conclude that in a teaching and learning process a teacher or teacher may not only use one teaching method, the teacher must use a variety of methods, because the methods used in learning must also consider the interests of students and the enthusiasm of their students, because by using varied teaching methods, it can assist in the smooth learning process and the learning outcomes and objectives of learning can be carried out effectively and optimally.

The use of discussion and question and answer methods according to the teacher's view

Data collection in this study was not only limited to students as data sources, but here researchers also collected data from the teacher as the data source, in this study, the researcher conducted interviews with the physics subject teacher at Madrasah Aliyah Negeri 2 Muaro Jambi, where here the researcher hopes to get more concrete data regarding using the discussion and question and answer method. Here the researcher asks several questions to the teacher, where the questions the researcher considers can be used as a source of data that the researcher wants. As for some of the questions that the researchers asked, namely: “ How was the condition of your class when the lesson took place? ” The teacher answered that our class situation was quite conducive and organized, because we teachers always try in such a way as to make students comfortable so that the subject goes well. In the second question the researcher asked about “ what learning method do you often use? ” and the teacher answered that he often uses the scientific method, but also adapts it to the material being taught. The next question is: “ Have you ever used the discussion and question and answer method? Is the use of discussion and question and answer methods effective for use in physics subjects? ” the teacher's answer: I quite often use the discussion and question and answer method, in my opinion this method is quite effective. Then the researcher asks about “ how are student learning outcomes when using the method you mentioned earlier? ” The teacher explained that the results were quite good and satisfying, there were even some of our students who got Olympic medals, and international certificates as well. ” The last question the researchers asked was “when the physics subject took place how was the enthusiasm of the students, especially in the wave material?”As for the answers what duru gave was "enthusiastic enough, especially when using tools that can be used to demonstrate the material."

From the results of the interviews we can see that, there are several factors that the teacher must always pay attention to when the lesson takes place, one of which is on the first question, from the teacher's explanation we can see that class arrangement really must be considered, so that students can be comfortable and the subject can take place well. Conducive and good, so as to increase the possibility of good residual learning outcomes as well. In the second question, the researcher asked what learning methods were often used by the teacher, here the teacher used the scientific method more often, but sometimes he also adjusted it to the subject matter to be taught, where this method is a learning method that uses scientific beliefs that it contains a series of data collection activities through observation, questioning, experimentation, processing information and then communicating it, in this scientific method there are several ways that a teacher can do to provide teaching, such as experiments (Hayes, 2015; Lawson et al., 2015). Observation and others. This second question is related to question 4, where the researcher asks about how student learning outcomes are using the method that is often used by the teacher. From the teacher's answer we can see that the learning model is quite good and effective to use, because from the teacher's explanation there are several students who won Olympic medals.

Furthermore, in the third question the researcher asked what the teacher's opinion was regarding the discussion and question and answer method, and how enthusiastic the students were when physics lessons took place, especially here when learning wave material. Here, in the opinion of the teacher, learning using the method of discussion and question and answer is quite effective, and it is also added if the teacher includes a media that can help explain or demonstrate the material. Through discussion, the teacher can dig up information about how students actually understand the material being taught, this can also generate student responses and the teacher can find out how enthusiastic students are and how curious students are by asking more questions. This agrees with the statement (Aminah, 2018), that learning will be more meaningful and memorable, students can also generate learning experiences by exchanging opinions with their friends.

From the various explanations drawn from the teacher's answers at Madrasah Aliyah Negeri 2 Muaro Jambi, we can see that using the question and answer method is quite effective for increasing student learning outcomes, but indeed the teacher cannot only use one method, because the method used must also be in accordance with the circumstances and the material being taught, varied methods will make students easily bored, it is different if from the beginning the teacher only uses one method. One more thing that researchers can conclude from the results of the interviews above, that it is no less important to pay attention to by teacher is, creating conditions that are conducive, comfortable and adequate for students. Because in this case even if the teacher has used various methods, but students never feel comfortable, the lessons conveyed by the teacher cannot be absorbed by students properly, so learning outcomes students cannot maximize and the learning objectives expected by the teacher are not k can never be achieved.

CONCLUSION

From the results of the above study it can be concluded that in the discussion and question and answer method as an effort to improve student physics learning outcomes it is categorized as quite good, from the data that has been collected by researchers some students say the discussion and question and answer method is an interesting method to apply in learning physics. With this method of discussion and question and answer, students can express their opinions to the teacher or fellow students, and also if there is material that students do not understand, students can ask the teacher. So as in the opinion of the teacher, this method is quite good and effective to use because student discussion can be more active in asking questions and giving opinions in class. Furthermore, the suggestions that the researcher can give in connection with the results of this study are the discussion and question and answer methods which are quite good to use because they are a variation of learning so that students do not feel bored and bored during the learning process going on. However, teachers should not only use one method (method discussion and question and answer), because as a teacher, the teacher must know the situation students and teachers know what method to give. Then, the researcher provides suggestions so that future researchers who will research or raise topics regarding the same problem in order to be able to use instruments and questionnaires that are more validated, and are truly considered appropriate to the topic of discussion regarding the use of

discussion and question and answer methods. this, so that further researchers can get more valid and much better results.

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