

The Influence of The Debate Learning Method on Population and Environmental Material on Learning Outcomes and Scientific Habits of Mind of Class IX Students at SMP Negeri 1 Ngabang

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Abstract: This study aims to determine the effect of the debate learning method on population and environmental materials on learning outcomes and Scientific habits of mind of class IX students at SMP Negeri 1 Ngabang. This study used the Quasy Experimental method. Tihis research design used Nonequivalent Control Group Design with simple random sampling method with the number of 25 students. The data collection technique uses a learning achievement test and a scientific habits of mind questionnaire. Learning outcomes with an average pretest score in the control class is 36 and the experimental class is 41.6. The average posttest scores in the control and experimental classes were 64.4 and 82.8. The average gain in experimental class learning outcomes is 41.2 while the average gain in control class learning outcomes is 28.4. The effect of the debate method on learning outcomes is 51.6% with an Effect Size value of 0.9 while the debate method on Scientific habits of mind is 81.1% with an Effect Size value of 2.0. So it can be concluded that debate learning has a great influence on student learning outcomes and scientific habits of mind.

Keywords: Learning Outcomes, Debate Methods, Scientific Habits of Mind

1. INTRODUCTION

Learning is the most important process in the classroom. A quality learning process includes various elements of learning. According to (Istrani, 2016), for the succes of learning must first consider the method of approach that will be applied so that the expected goals can be achieved or implemented correctly.

This condition encourages researchers to find and choose teaching methods that are considered more effective than the methods developed so that what is taught in regular classes is more easily understood by students, one of which is the development of critical thinking methods, namely discussion methods. Discussions can develop critical thinking and train students to dare to express opinions, answer

questions, Value opinions, improve cooperative attitudes between students in groups, have fun and streng then students' conceptual understanding of subjects (Dimyati, 2020). Students are given the opportunity to discuss their opinions and ideas, do an exploration of the material being studied and interpret the results together in groups. The activity allows students to actively interact with the environment and their groups, as a medium to develop their abilities (Ninghardjanti, 2020).

A student's curiosity in school will usually be asked by the teacher when learning takes place, but in reality it is not like that. Many students have difficulty in conveying questions to teachers or opinions in response to a material, and the cause can be from internal student

factors, as well as external student factors. Internal factors of students come from within the students themselves, such as lack of confidence, courage, fear and shame, while the external factors are the students' environment, namely teachers and other students ([Arif, 2016](#)).

Based on the results of observations in SMP Negeri 1 Ngabang at the time of learning materials occupation development and environmental impacts showed that biology learning in the classroom is still centered on the teacher, using the method of lectures and discussions. There are some students who pay attention to the teacher explaining the learning material. So that only students who pay attention understand the material presented by the teacher and most students have low mastery of the material and less active participation in learning. During the class, the atmosphere was so quiet.

of fighting two or more parties, both individually and in groups, to discuss and decide issues and differences of opinion. But in the discussion about learning, it is more oriented to the development of certain skills of students, such as the ability to express opinions in a logical, clear and structured way, listening to the opinions of others. The active discussion learning Model is basically a variant of the open discussion model. The method that can be used to train students' critical thinking skills is the debate method. This method can be applied by teachers to train students to find strong arguments in solving a controversial issue and have a democratic attitude and mutual respect for differences of opinion ([Rivai & Wulandari, 2018](#)).

Based on the results of interviews and observations, efforts were made to overcome the problem of mastering the material and the habit of scientific thinking by using argumentative learning methods. Therefore, the purpose of this study is to determine the effect of debate learning methods on population and environmental material on learning outcomes and scientific habits of mind of Class IX students in SMP Negeri 1 Ngabang. Based on the description above, researchers are interested in studying the effect of debate learning methods, namely "the effect of debate learning methods on population and environmental material on learning outcomes and scientific habits of mind of Class

IX students in SMP Negeri 1 Ngabang".

2. RESEARCH METHODS

The research method used is an experimental method with a quantitative approach. This is an example of a randomized, randomized, randomized, randomized controlled trial (Quasy Experimental Design) with plans Nonequivalent Control Group Design. Determination of experimental and control classes using the method simple random sampling. With the number of samples in the experimental and control classes of each 25 students. Independent variables variables that affect or are the cause of the change or the emergence of the dependent variable ([Sugiyono, 2014](#)). The independent variables of this study are: Debate method. The dependent variable is a variable that is influenced or become a result, because of the independent variable ([Sugiyono, 2014](#)). Dependent variables of this study are learning outcomes and *Scientific habits of mind*.

Data collection techniques using measurement techniques, surveys and questionnaires with data collection tools such as learning outcomes test and angket scientific habits of mind with test instruments in the form of validity, reliability and level of difficulty.. Data analysis techniques used are calculate the learning outcomes of learners, counting scientific habits of mind, calculate the influence of learning outcomes, and calculate the influence scientific habits of mind. Activities in data analysis is to classify data based on variables and types of respondents, present data on each variable studied, perform calculations to answer the formulation of the problem and perform calculations to test the hypothesis that has been proposed ([Sugiyono, 2014](#)).

3. RESULTS AND DISCUSSION

The average student learning outcomes in experimental and control classes can be seen in the following table:

Table 1. Student learning outcomes experimental class and control Class

Grade	Average Grade		Percentage Of Completion (%)
	Pretest	Posttest	
Control	36	64.4	20
Experiment	41.6	82.8	92

Based on Table 1. The average value of the *pretest* in class the control class is lower than the value class of the experimental class but the score average value *posttest* class of the experimental class over *posttest* higher than the control class. This means that the methods used in class the experimental class are successful. The minimum completeness criteria (KKM) of Biology subjects applied in SMP Negeri 1 Ngabang is 73. Based on the results value of *post-test scores*, students who completed the experimental class more than control class. The percentage of completeness of learning in the experimental class is 92% while in class the control class, the percentage of completeness is 20%. Based on the data above, it can be concluded that student learning outcomes using method the debate learning method on material population and environmental materials in Class IX at SMP Negeri 1 Ngabang can improve student learning outcomes.

The effect of the debate method on population and environmental material on student learning outcomes in Class IX at SMP Negeri 1 Ngabang can be seen in Table 2 below:

Table 2. Average learning outcomes

Class	Gain Averages	Standard Deviation (Sc)	Effect Size ES $= \frac{X_e - X_c}{Sc}$
Experiment	41,2	13,44	0,9
Control	28,4		

It is known that the average gain learning outcomes of experimental class learning outcomes eksperimenis 41.2 while the average gain learning outcomes of control class learning outcomes kontrolis 28.4 with a control class standard deviation Kontrol of 13.44. The effect of debate learning methods on student learning outcomes was analyzed using Effect size (ES). The result of the calculation of the effect size obtained on hasil belajar student learning outcomes is 0.9 so that the criterion of the magnitude of the Effect size (ES) is classified as large with nilai a percentage value of 51.6%.

The results of *Scientific Habits of Mind* of students on materi population and Environment material of Class IX in SMP Negeri 1 Ngabang can be seen in Table 3.

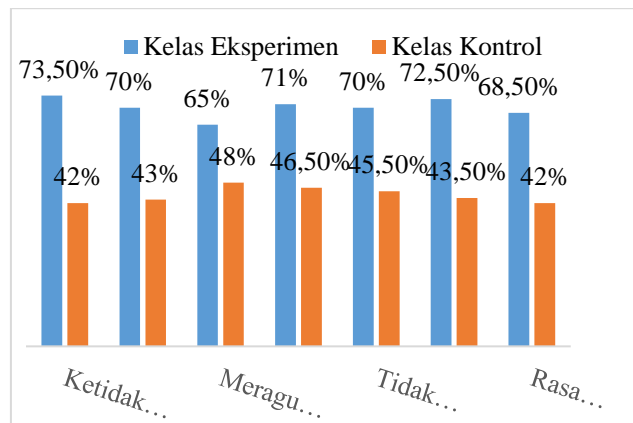


Figure 1: Percentage per indicator *Scientific Habits of Mind* class experimental and class control class IX Di SMP Negeri 1 Ngabang

Figure 1 shows that the indicators class of the experimental class and class the control class consist of the categories of distrust of arguments, being open, doubting reason, rationality, not having partiality, suspending trust and curiosity. From the diagram, it can be analyzed that the average indicator in class the experimental class is higher than in the control class. In class the experimental class indicator the highest indicator is the distrust of the argument that is 73.50%. And indicator the lowest indicator is dubious reasons, which is 65%. While in class the control class indicator, the highest indicator is doubtful reasons, namely 48%. And indicator yang low indicators are distrust of arguments and curiosity at 42%.

1. The effect of debate method on population and Environment material on the learning outcomes of Class IX students in SMP Negeri 1 Ngabang

The reasoning method is a learning method that guides students to channel their thoughts, ideas and opinions through reasoning, either alone or in groups. Each speaker presented his reasons logically and sensibly. It can also be a very suitable and strategic place to develop thinking skills and improve speaking skills. That is (Dimiyati, 2020) In the Indonesian conversation manual it is stated: "conversation is a contradiction of argumentation". The reason why someone supports or opposes an issue. Each subject must have a different point of view.

Teaching and learning activities can run well if

the planning is well prepared and the learning strategy is applied in accordance with the goals to be achieved. Argumentation and refutation is one of the important elements in the debate. The student as a speaker tries to convey his argument so that his entire team agrees with him, be it a counter (opponent). Active learning activities will encourage students to try to do a learning activity, such as students who are looking for answers, students who need information to solve a problem, and students who are trying to do the task given ([Wafi, 2022](#)).

Learning outcomes are the values that students achieve after completing learning. According to ([Sanjaya, 2019](#)) refers to the achievement in the acquisition of skills in accordance with the planned goals. The main task of the teacher in this activity is to design tools that can be used to collect information about the success of students in achieving learning goals. ([Sudjana, 2020](#)) say that "learning outcomes are the skills that students have after gaining their learning experience in evaluating the Cognitive, Affective and psychomotor spheres". this opinion is in line with ([Susanti, 2015](#)) "learning outcomes are the skills that students have after acquiring their learning. Learning outcomes play an important role in learning". The process of assessing learning outcomes can provide information to teachers about student progress in achieving learning goals through learning activities.

Based on student learning outcomes measured by argumentative learning methods from population and environmental materials, the learning outcomes of 9th grade students of SMP Negeri 1 Ngabang can be seen from the test results given. The effect of discussion learning methods is also seen in student responses to ongoing learning. Based on the analysis of the learning outcomes obtained from the results of research it can be said that the argumentative learning method has a positive effect on student learning outcomes. This is supported by the average learning outcomes achieved. Then the results of the study were supported by the calculation of the effect size (ES), which is a test to determine how strong the treatment is.

Active argumentative learning method (debate) is a learning method that involves students to obtain various information and knowledge that is discussed and learned in the learning process in the classroom, so that they can gain various experiences that can improve their knowledge. Students can also teach each other with other students. The skill of

expressing opinions can be trained using the active debate learning model. The shortcomings of the active debate learning model are that it requires additional funds and a long time, requires accuracy in making indicators, and the need for verification, concept application, and utilization ([Sholahuddin & Awaliyah, 2021](#)).

The result of the calculation of the effect size (ES) on student learning outcomes is 0.9, so the criteria for the size of the effect size (ES) are classified as large with a percentage value of 51.6%. Thus the method of discussion of student learning outcomes on population and environmental data IX SMP Negeri 1 Ngabang. The steps used in the argumentative learning model are to ask controversial questions from previously given material, form students into two groups of pros and cons, and give an explanation to the pro group why they support the study. What is the reason in favor of the claim, then the opposing team must defend its opinion with reasonable reasons that are signs of discussion, so that the training discussion does not arise. These measures were successful in teaching class discussions and influenced the study.

This is evidenced by the results of his research journal article ([Fatmawati & Imron, 2017](#)) about Influence Of Active Discussion Learning Methods On Learning Outcomes. The results of his research came to the conclusion that the average student learning outcomes on active conversation learning is very good with a score of 81.17 in the category. There are differences in student learning outcomes between the reference class and the test class. Thus, the learning method of active debate has an effect on student learning outcomes. This shows that learning outcomes are influenced by several factors, including the learning methods used by teachers, who must be selective in choosing the right learning method to convey the subject matter so that learning objectives can be achieved properly. According to ([Sanjaya, 2019](#)), the use of methods is a means to improve learning outcomes.

Learning outcomes are the things that students produce from the learning process. In this case, the learning outcome refers to the acquisition of skills in accordance with the planned specific goals. According to ([Dimiyati, 2020](#)) Learning outcomes are the result of the interaction of learning and teaching and actions ([Sudjana, 2020](#)) states that learning outcomes can be divided into three domains, namely the cognitive domain, the affective domain,

and the psychomotor domain. Based on student learning outcomes, the average pretest score of the experimental class was higher than that of the control class, and the average posttest score of the experimental class was higher than that of the control class. Before you are treated.

From the above information it can be concluded that the influence of debate learning methods on student learning outcomes was analyzed using effect size (ES). The result of the calculation of the effect size (ES) on student learning outcomes is 0.9, so that the criteria for the amount of effect size (ES) is classified as large with a percentage value of 51.6%. Thus, learning with argumentative learning methods has a significant influence on student learning outcomes on population and environmental data.

2. Effect of debate method on population and Environment material on Scientific Habits of Mind Of Class IX students in SMP Negeri 1 Ngabang

The habit of scientific thinking is a feature of thinking like a scientist in doing things, solving problems, and making decisions. The habit of scientific thinking can be practiced through discussion, debate, and topic-based learning (Mulvia, 2021). Discussion method is a teaching method in which students are faced with a problem. The main purpose of this method is to solve a problem, answer questions, expand students' knowledge and understanding and make decisions. Other opinions according to (Riyadi, 2019). The purpose of the discussion method is to be able to speak persuasively and also listen to various opinions and be able to appreciate these differences at the end of the discussion.

The results of the analysis of *Scientific Habits of Mind* on the learning methods of population and environmental debate have a major impact. This is based on the research material presented above on the influence of argumentative learning methods of population and environmental materials on the scientific habits of students IX SMP Negeri 1 Ngabang through various hypothesis tests, as in this discussion section. occurs in relation to the results of research and existing theories.

The results of the analysis of *Scientific Habits of Mind* in the experimental class as a whole have a big effect. The results of Scientific Habits of Mind, based on indicators of distrust of arguments, have sub-indicators from attending biology class with hesitant

opinions or actions to inability to make decisions quickly, giving up easily, clumsy in acting, nervous in foreground presentations and not daring argue. Indicators are open to new ideas, there are sub-indicators who dare to assert themselves, are not afraid to try, take risks and have a high level of empathy and humility (Riyadi, 2019).

The doubt about reason indicator is a sub-indicator that doubts the reasons given in discussions with peers. An indicator of reason (reason), is a partial indicator that has systematic and logical reasons for stating something), an indicator of objectivity (objective), is a partial indicator that does not stand anywhere. *The Breaks Trust Indicator* is a sub-indicator of confidence in something that is not yet clear. And the curiosity indicator is a sub-indicator that shows that students are more curious about the material being discussed (Bashofi & Ferdian, 2019).

Based on population data and environmental materials argumentative learning methods about scientific mood habits of students in the form of percentages given to experimental and control classes, these percentages indicate that the experimental class is higher than the control class. The results showed that the percentage of students in the experimental class were high achievers in *Scientific Habits of Mind*. This is in accordance with (Mulvia, 2021) scientific thinking habits are intelligent behaviors that students master as a result of one of the dimensions of the conceptual learning process in problem solving. Problems are any answers whose answers are not immediately known, but must be resolved through a process such as questions, assignments, explanations of events, and so on (Susanti, 2015).

Students with a good scientific mindset can have good problem solving skills. This is because problem solving involves a process of thinking and applying knowledge that utilizes skills, attitudes, knowledge, personality, past experiences and many other tendencies. Critical thinking involves striving for accuracy and precision; articulate and seeking clarity; open up; do not be impulsive; take a position when information requires it; and be sensitive to the feelings and knowledge of others. Creative thinking involves deep engagement with a task even when the answer or solution is unclear; maximizing knowledge and skills; creating, trusting, and upholding standards of judgment; and creating new perspectives on the situation beyond the bounds of

common practice ([Susanti, 2015](#)).

Based on the results of the study, the average indicators in the categories of distrust of claims, openness, doubt, rationality, arrogance, breach of trust and curiosity were higher in the experimental class than the control class. The highest category of indicators is the category of arguments of distrust.

The first indicator is distrust of claims. Statement distrust occurs when a student does not trust their own opinion about something. Indicators of distrust are sub-indicators of attending a biology class with a hesitant attitude towards opinions or actions, inability to make decisions quickly, hopelessness, clumsiness in performance, nervousness during a presentation in front of the class, and not daring to argue. The percentage of experimental class results was 73.50 in the upper class and 42 in the middle class in the comparison class. [Riyadi \(2019\)](#) states that the characteristics of unreliable children are seen in their every behavior in facing various situations and problems that arise both in themselves and in their environment.

The second indicator is the open mode indicator. Openness is the openness of students to new ideas. Frank has sub-indicators, namely, the courage to express an opinion, the fear of trying, the courage to take risks, as well as a high level of empathy and humility. The percentage of experimental class results was 70% in the high category and 43% in the comparison class at the average level. This is in line with [Susanti \(2015\)](#), which states that open people are brave enough to appear in public and speak clearly and easy. Speaking skills are always related to the other three language skills, namely listening, reading, and writing skills. All of these skills should be taught from an early age ([Wagu & Riko, 2020](#)).

The third indicator is the cause in question. Doubt about the cause is the lack of faith in the existing cause. The reason for hesitation, which has a sub-indicator, that is, the motive for doubt, is conveyed in a conversation with classmates. The percentage of results obtained by the experimental class was 65% in the high category and 48% in the high category in the control class. The fourth indicator is reason. Reason is the appropriate action in relation to the expected result, measured by the achievement of the goal, and the beliefs of the individual whose beliefs are supported by the best available evidence. Reason has sub-indicators that have systematic and logical reasons for stating

something. The results of the experimental class percentage of 71% for the top category and 46.50% for the middle class in the comparison class. This is in line with [Bashofi & Ferdian \(2019\)](#) "reason is the rational action of individuals or actors to perform an action based on a goal, and that goal is determined by value or choice (preference)".

The fifth indicator is the objectivity indicator. Goals are real situations that are not influenced by personal opinions or opinions. This goal has a sub indicator that is not aiming at anything. The percentage of results achieved in the test class was 72.50 in the upper class and 46.50 in the middle class in the comparison class. This is in line with [Susanti, 2015](#) which refers to the actual situation without being influenced by opinion or personal opinion.

The sixth indicator is an indication of the suspension of faith. A statement of belief is a feeling and attitude attached to something without a clear source of information. Suspension of belief has a sub-indicator of belief in something that is not yet clear. The percentage of experimental class results was 70% in the high category and 43.50% in the comparison class at the average level. [Ismail \(2018\)](#) states that postponing belief in something causes a person to feel a sense of hope. The seventh indicator is curiosity. Curiosity is a strong desire to learn or know something. Curiosity has a subscript, that is, the student is more curious about the discussion. The percentage of experimental class results was 68.50 in the upper class and 42 in the middle class in the comparison class. [Riyadi, 2019](#), namely "attitudes and actions that always try to feel deeper and wider than what is learned, seen and heard". It has to do with responsibility towards oneself and nature".

The effect of the discussion learning method of class 9 students of SMP Negeri 1 Ngabang on population and environmental matters can be seen in the results of learning Scientific Habits Of Mind which were analyzed by effect size (ES). The results of the calculation of the effect size (ES) are classified as large with a percentage value of 81.1% with an effect size value of 2.0 so that it gets the "Large" or large category. Therefore, it can be concluded that the argumentative learning method has a major effect on student learning outcomes in the demographic environment and Class IX of SMP Negeri 1 Ngabang.

4. CONCLUSION

Data on learning outcomes and Scientific Habits Of Mind obtained from research results, namely the debate learning method has an effect on learning outcomes and Scientific Habits Of Mind. The results of this study showed that student learning outcomes using the debate learning method on population and environmental materials in Class IX at SMP Negeri 1 Ngabang can improve student learning outcomes and the effect of the debate method on learning outcomes by 51.6% with an Effect Size value of 0.9 while the debate method on Scientific habits of mind by 81.1% size 2.0 so as to obtain a large category. The conclusion of this study is that debate learning has a great influence on learning outcomes and scientific habits of mind of students who are taught using the debate method.

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6. REFERENCES

- Arif, M. (2016). Increased Ability To Ask Questions Through The Method Of Active Debate Grade Viii D Smp N 2 Banguntapan Bantul. *E-Journal Thesis Of Educational Technology Study Program*, 5(5), Article 5.
- Bashofi & Ferdian, W. M. S. (2019). *Rational choice of students with disabilities in choosing teaching majors at IKIP Budi Utomo Malang*.
- Dimiyati, M. (2020). *Learning and learning*. Jakarta: Rineka Cipta.
- Fatmawati & Imron, E., Setiawan. (2017). The effect of active debate learning methods on student learning outcomes SMAN 1 Belitang Hilir. *Cakrawala Jurnal Pendidikan*, 11(2).
- Ismail, S. M. (2018). *Paikem-based Islamic religious learning strategy*. Semarang: Rasail Media Group.
- Istrani. (2016). *Innovative Learning Model*. Medan: Media Persada.
- Mulvia, R. Ramlis., T. R. Efendi. (2021). Analisis Instrumen Scientific Habits Of Mind Energy Issues Inventory(Shomeii). *Modelrasch Endusains*, 13, 2, 95–105.
- Ninghardjanti, P. (2020). Increased Activity And Critical Thinking Of Students Through The Application Of Debate Methods In Leadership Courses At Fkip Uns Academic Year 2019/2020. *Japap (Journal Of Information And Communication Office Administration)*.
<https://Jurnal.Uns.Ac.Id/Jikap/Article/View/35458/26638>
- Rivai, I. N. A., & Wulandari, T. (2018). Differences in the method of debate and lectures on the mastery of social studies concepts in terms of critical thinking students. *Social harmony: Journal of Social Studies Education*, 5(1), Article 1.
<https://doi.org/10.21831/hsjpi.v5i1.11181>
- Riyadi, A. (2019). Identify The Factors That Cause Students Lack Of Confidence In Sd Negeri 2 Wates. *Journal of Elementary School Teacher Education*, 2, 67-88.
- Sanjaya, W. (2019). *Class Action Research*. Jakarta: Kencana.
- Sholahuddin, A., & Awaliyah, S. (2021). Development of learning Model Innovation Active debate to improve the skills to convey the opinions of learners. *Scientific journal of Pancasila education and Citizenship*, 6(1), Article 1.
<https://doi.org/10.17977/um019v6i1p249-259>
- Sudjana, N. (2020). *Research Results Of The Teaching And Learning Process*. Bandung: PT Remaja Rosdakarya.
- Sugiyono. (2014). *Quantitative, Qualitative and R&D research methods*. Bandung: Alfabeta.
- Susanti, W., D. ., Sujianti. (2015). *Print Anak Juara, Learn From The Experience Of 50 Anak Juara*. Yogyakarta: KATAHATI.
- Wafi, R. A. (2022). Application Of Active Debate Method In Learning Al-Quran Hadith In Madrasah. *Jurnal Generasi Tarbiyah: Journal Of Islamic Education*, 1(2), Article 2.
- Wagu, E. Y., & Rich, R. (2020). The Ability To Use The Method Of Active Debate As Speaking Skills In Grade Viii Students Of Smp Negeri 30 Surabaya. *Indonesian Language And Literature Education Journal/Metalingua*, 5(2), Article 2.
<https://doi.org/10.21107/metalingua.v5i2.7828>