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Application of the Jigsaw Learning Model to Improve Understanding of Geography Concepts at Bina Mulya Gadingrejo High School

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ABSTRACT

This study aims to increase understanding of the concept of geography in the subject of population dynamics in Indonesia for class XI IPS SMA Bina Mulya Gadingrejo using the jigsaw learning model. This research is a classroom action research (CAR) which is carried out in 2 cycles covering the stages of planning, action, observation, and reflection. This study also uses a research design in the form of one group pretest – posttest. The subjects in this study were students of class XI IPS SMA Bina Mulya Gadingrejo. Data collection techniques in research using observation, tests, and documentation. The data analysis technique used is the N-gain test (normalized gain). The results showed that there was an increase in understanding of the concept of geography in the subject of population dynamics in Indonesia in class XI IPS SMA Bina Mulya Gadingrejo. This leads to an increase in students' understanding scores, seen from the understanding scores before the action, and from the comprehension tests in cycle I and cycle II. Understanding of the pre-action, namely the criteria of very less as many as 13 students, the criteria were lacking as many as 2 students and the criteria were sufficient, good and very good did not yet exist because there were no students who got the range of values on the 3 criteria. Understanding at the stage of cycle I increased this because students who got very low criterion scores did not exist, 3 students lacked criteria, 1 student had enough criteria, 9 students good criteria and 2 students very good. At the end of cycle II there was also an increase, this was indicated by students who were included in the very less and non-existent criteria, 2 students sufficient criteria, 4 students good criteria and 9 students very good criteria. The magnitude of the increase in N-gain between pre-action and cycle I was 0.6 in the moderate category, between cycle I and cycle II, namely 0.35 in the moderate category.

INTRODUCTION

Education plays an important role in improving the quality of Human Resources (HR). Through education, students can gain knowledge, skills, interests, and abilities. The fundamental problem in the Indonesian education world today is how to improve the quality of education in Indonesia. The quality of education is always related to the academic achievement of students, which is reflected in the test results. The quality of education cannot be separated from the quality of the learning process carried out by teachers. In order to adapt to the demands of the times and improve quality, various educational changes must continue to be made. These changes include the role of teachers, materials, teaching models and management of the education system. The quality of learning can be seen in terms of processes and results. The learning process is successful if students show high learning activities and are physically and mentally active during the teaching and learning process. Meanwhile, in terms of results, there will be positive changes in student behavior and produce outputs with high learning achievements. The problem of Indonesian education that is

currently widely discussed by experts, in addition to the low quality of education, is also related to the teaching strategy that is applied, namely the teaching method that is still dominated by the role of the teacher *(teacher centered*), so that student participation in the learning process is very lacking (Ministry of National Education, 2003 in Zuhri, 2001).

The goal of learning in the future is no longer to prepare passive students, but students who are always able to absorb and adapt new information by thinking, questioning, investigating, creating and developing concrete ways of solving problems related to their lives. Therefore, teachers are required to create interesting learning situations in the classroom so that students' learning abilities and achievements can improve. Carrying out learning in the classroom is one of the duties of teachers. Teachers have a fundamental important role in determining the quality of education that will be delivered, in addition to being facilitators and supervisors for students, teachers must also act professionally. As in learning in school, there are many lessons that all students must learn, including geography.

According to Lestari (2020), Geography is part of the subjects taught in Senior High School (SMA) which can play a role in developing good values that will become students' character. Issues surrounding students are interesting topics that are used as a way to improve the quality of care by learning geography. Geography learning in high school assumes that students can analyze the elements of the geosphere in relation to daily life and as learning that can guide students to be able to advance regional development.

Based on interviews with geography teachers and observations in class XI of Social Studies High School Bina Mulya Gadingrejo, it was found that there was a problem with learning geography, namely in the classroom there was a lack of focus, this was due to sleepiness factors, easy to be distracted by children who passed outside the classroom, and engrossed in chatting with their friends so that their grasp weakened and focus became fragmented. The application of the method has been carried out by geography teachers at Bina Mulya Gadingrejo High School, namely using various techniques and media. The technique used depends on the sub-material, if it is related to population problems, it uses *problem solving* by creating groups, then each group solves a problem, followed by a presentation and ends with reflection activities. However, during the discussion activity, students work alone to understand the content of the material without thinking about their group mates. Some other students simply match or write down the results of their discussions with other group members. The media used is to provide pdfs containing relevant images and use *google classroom* in which a video of learning materials has been provided that can be accessed and downloaded by each student. The material that has been obtained is then studied and analyzed. However, the material they get is still poorly understood. Therefore, it is necessary to take appropriate action so that students are more active and focused in the learning process. Applicable to geography learning, the model that can be applied and developed today is the cooperative learning model.

According to Shoimin (2014), the cooperative learning model is a learning activity in a group way to work together to help each other construct concepts and solve problems. Cooperative learning is the same as human nature as social creatures who are interdependent on others. Using this fact, cooperative group learning trains students to share knowledge, experiences, responsibilities, and a sense of purpose. They learn how to recognize each other's strengths and weaknesses. There are different types of cooperative learning models. This allows teachers to choose the one that best suits the topic, educational goals, classroom environment, and school facilities. Based on the results of these initial observations, improvements are needed to encourage students to participate effectively in geography learning. Efforts to improve the quality of geography learning processes and outcomes are to create various types of learning models, one of which is using a jigsaw-type cooperative learning model .

Based on interviews with geography teachers and observations in class XI of Social Studies High School Bina Mulya Gadingrejo, it was found that there was a problem with learning geography, namely in the classroom there was a lack of focus, this was due to sleepiness factors, easy to be distracted by children who passed outside the classroom, and engrossed in chatting with their friends so that their grasp weakened and focus became fragmented. The application of the method has been carried out by geography teachers at Bina Mulya Gadingrejo High School, namely using various techniques and media. The technique used depends on the sub-material, if it is related to population problems, it uses *problem solving* by creating groups, then each group solves a problem, followed by a presentation and ends with reflection activities. However, during the discussion activity, students work alone to understand the content of the material without thinking about their group mates. Some other students simply match or write down the results of their discussions with other group members. The media used is to provide pdfs containing relevant images and use *google classroom* in which a video of learning materials has been provided that can be accessed and downloaded by each student. The material that has been obtained is then studied and analyzed. However, the

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Thus, the researcher is interested in applying *a jigsaw learning model* to improve the understanding of geography in the material of population dynamics in Indonesia for grade XI social studies students at Bina Mulya Gadingrejo High School. Several studies on the application of jigsaw learning models to improve understanding of geography concepts have found that there is an increased effect when using jigsaw models in the classroom. This is in accordance with the opinion (Rusman, 2013 in Margiati, 2018) that the jigsaw-type *cooperative model* has a positive influence on students such as being able to improve learning outcomes, and improve memory. Hananingsih et al. (2018) also said that the application of the jigsaw learning model can improve the understanding of geography concepts in the hydrosphere dynamics material of students in grade X.3 of SMA Negeri 1 Kademangan. This can be seen from the increase in the value of students' understanding of concepts seen from the value of comprehension before action, and the comprehension test that is carried out at the end of each cycle, both cycle I and cycle II. Based on the description above, the researcher is interested in conducting a research entitled "The Application of *the Jigsaw Learning Model* to Improve Understanding of Geography Concepts at Bina Mulya Gadingrejo High School".

METHOD

This research is a type of classroom action research. This research is a class action research (PTK) that is carried out in repeated cycles, each cycle includes the planning stage, the action stage, the observation stage, and the reflection stage. This research was carried out in two cycles, each cycle consisted of 4 meetings. This stage of research uses the Kurt Lewis model developed by Kemmis and Tanggart. The design in this study is to use one group pretest – postest design where there is a pretest before being treated, the results of the treatment can be known more accurately, because it can be compared with the situation before being treated. The subject of this study is a student in grade XI of Bina Mulya Gadingrejo High School for the 2022/2023 school year. Students who have the status of action subjects are chosen because: (1) they have diverse learning personalities (2) the classroom atmosphere tends to be passive due to students lacking confidence to express opinions or ask questions. Therefore, it is necessary to hold Class Action Research, because it must be the focus that PTK aims to make changes or improvements in the quality of learning processes and outcomes through a series of forms of learning actions; (3) lack of interaction in the learning process so that classroom action research is needed. Classroom Action Research has a distinctive characteristic, namely the existence of certain actions (actions) to improve the teaching and learning process in the classroom.

RESULTS AND DISCUSSION

Pre-Actions

The total score obtained from all students is 486 with an average score of 32.4 with a high score of 55 and a low score of 18. There are no students who complete because no one gets a score of ≥ 75 or falls within the criteria of good and very good so that the percentage of completeness is still 0%. After knowing the value of the *pretest results*, it is possible to know the initial understanding of the concept (the

understanding that is carried out before the action). The data on the initial concept understanding can be seen in Table 18.

Table 1. Distribution of Pre-Action Student Comprehension Scores

Score	Criteria	Student
85 – 100	Very Good	0
75 – 84	Good	0
60 – 74	Moderate	0
45 – 59	Less	2
< 45	Very Less	13
Tot		15

Source : Data processing, 2023.

Cycle 1

Based on the results of the study, it can be seen that the average score obtained is 72.67. Students obtained the highest score of 85 and the lowest score of 55. The number of students who completed was 11 students with a completion percentage of 73.33%. The student is complete because he got a score of ≥ 75 or is included in the good and very good criteria. After knowing the value of *the post test* results in cycle I, it can be known that the students' concept understanding in cycle I can be seen.

Table 2. Distribution of Student Comprehension Scores in Cycle I

Score	Criteria	Student
85 – 100	Very Good	2
75 – 84	Good	9
60 – 74	Moderate	1
45 – 59	Less	3
< 45	Very Less	0
Tot		15

Source : Data processing, 2023.

From Table 2 above, it can be seen that students who obtained the criteria very well as 2 students increased from the pre-action stage. Students who obtained good criteria were 9 students, sufficient criteria were 1 student, 3 students were less criteria, and the criteria were very lacking.

Based on the implementation of the first cycle, it can be seen that the performance of students during the learning increases, this can be seen from the average result in the first cycle of 72.67, which was originally the average in the pre-action of 32.4. The average score in the first cycle has increased because the score obtained by the student has changed from pre-action to cycle I. This can be seen in Table 25 that students with very lacking criteria in pre-action as many as 13 students, in cycle I students with very poor criteria are no longer there. The criteria for lack in the pre-action are still 2 students, but at the stage of cycle I it increases from 1 student to 3 students in the less criterion. However, there has been an increase in the criteria of sufficient, good and excellent. This increase is evidenced from the original in the pre-action stage where there were no students who obtained sufficient, good, and very good criteria changed at the first cycle stage, namely students who obtained sufficient criteria as many as 1 student, 9 good criteria and 2 very good criteria. The results of completeness in learning also increased from 0% to 73.33% in cycle I. However, according to the opinion (Djamarah, 2000 in Muttaqien 2017) the success of the learning process if it is within the range of 73.33%, it is said to be not optimal or categorized at a minimum level. This is not in accordance with the researcher's target in achieving success indicators. The problem faced in cycle I is the difficulty of keeping students focused through every step of the jigsaw process, this is because it is still in the stage of adjusting the model that has just been given for the first time, besides that there are still students who are shy in conveying questions or opinions in discussions and student behavior needs to be paid more attention in moving and exchanging discussions from the expert group to the original group, Sometimes it is still slow and is often followed by noisy noises.

This situation needs to be more disciplined so that noise in the learning process can be reduced when students are trained for discipline. Based on the observations and results of the test analysis that has been carried out in the first cycle, it was found that there were difficulties in understanding population density material, namely physiological population density and agrarian population density. Students are still confused in understanding the terms physiological and agrarian population density. Students are deceived by the word agriculture which is equally used by physiological and agrarian population density. Thus, the role of teachers is indispensable in equalizing perceptions for physiological population density and agrarian population density. The thing that must be considered in distinguishing the material of physiological population density and agrarian population density is the number of population, because what makes the same for both materials is the ratio of agricultural land area. Physiological population density uses all the population numbers, while agrarian population density uses the number of people who only work in the agricultural sector or as farmers. Thus, it is understood that physiological population density is a comparison between the number of population and the area of agricultural land, while the density of agricultural population is the comparison between the number of farmer population and the area of agricultural land.

From the description above, it is in line with the opinion of Arikunto et al, (2018) who say that what is important in Class Action Research (PTK) is the process, while the outcome of the action is a logical consequence of the effectiveness of an action. In the implementation of Classroom Action Research (PTK), it is necessary to repeat actions so that the shortcomings in the first cycle can be overcome so that the learning process continues to run smoothly. Therefore, this is an evaluation stage for improvement in cycle II.

Cycle 2

Based on the results of the study, it can be seen that the total score of all students is 1,245 with an average score of 83. The highest score obtained by students is 90 and the lowest score is 65. The number of students who completed was 13 students with a completion percentage of 86.67%. Students who complete because they get a score of ≥ 75 or are included in the good and excellent criteria. After knowing the value of the results of *the second cycle post-test* , it can be known that the students' understanding of concepts in cycle II can be known. Data on the concept understanding of students in the second cycle can be seen in Table 22.

Table 31. Distribution of Student Comprehension Scores Cycle II

Score	Criteria	Student
85 – 100	Very Good	9
75 – 84	Good	4
60 – 74	Moderate	2
45 – 59	Less	0
< 45	Very Less	0
Tot		

Source : Data processing, 2023.

From Table 22 above, it can be seen that there is an increase in the number of students who obtain the criteria very well, namely 9 students. Students who obtained good criteria were 4 students, 2 students were sufficient, and the criteria were less and very less were none.

At the stage of implementing the second cycle by applying the jigsaw learning model, improvements were made based on reflection in the first cycle. The results of the implementation of cycle II have increased. This can be seen from the average result in cycle II, which was 83, which was originally only 72.67 in the first cycle stage. The average score in cycle II has increased because the grades obtained by students have changed from cycle I to cycle II. It can be seen in table 25 that in cycle I and cycle II students with very poor criteria no longer exist. Students who obtained the criteria were less in the first cycle as many as 3 students and reduced in the second cycle which was 0 students. The criteria are enough in the first cycle as many as 1 student and increase in the second cycle to 2 students. The criteria were good in the first cycle as many as 9 students but reduced in the second cycle to 4 students, but in the very good criteria in the second cycle it increased to 9 students which originally in the first cycle there were only 2 students. Students who complete

according to the interpretation of the concept understanding score are students who get a score of ≥ 75 or are included in the good and excellent criteria as many as 13 students (86.67%) and those who do not pass as many as 2 students (13.33%). Thus, with the acquisition of students who completed the second cycle of 86.67%, they have reached the target of success in the learning process, because the target that the researcher wants to achieve, which is in the range of 76% - 99% of the subject matter can be mastered by students. The researcher already felt fasting because the students' performance during the learning process can be said to be good, students were actively involved in discussions to discuss the material that had been given. Therefore, it is no longer carried out for the next cycle.

N-Gain Test

The *N-gain* test is used to find out whether there is an increase in the ability to understand concepts in population dynamics materials in Indonesia after the *pretest* and *posttest* questions are held, to find out the results of the improvement can be seen in Table 25 below.

Table 2. *N-gain Test*

Treatment	Mean	*N-gain*	**Meaning**
Pretest	32,4		
Posttest siklus I	72,67	0,6020	Moderate
Posttest siklus II	83	0,3507	Moderate

Source : Data Processing, 2023.

Table 25 shows an increase in conceptual understanding of population dynamics in Indonesia as seen from the *n-gain* results obtained. This increase can be seen in the results *of the n gain pretest* and *posttest* of the first cycle, which is 0.6 with a moderate *n-gain interpretation* . In addition, the n gain results in the *first* and second cycle posttests also increased by 0.3 with moderate *n-gain* interpretation . In the learning process, using *a jigsaw model* can improve students' understanding of concepts. This is also in accordance with Hananingsih's (2018) research, namely that there is an increase in students' understanding of concepts by applying *the jigsaw learning model*. Firdausy (2014) also stated that jigsaw cooperative learning is also able to improve students' understanding of concepts. The difference between this study and Firdausy's (2014) research is that in Firdausy's research it shows that students' understanding of concepts with an average score in the first cycle of 74.5 and the average score increases to 81.07 in the second cycle. In Hananingsih's (2018) research, it was shown that students' understanding of concepts with an average score in the first cycle was 74.16, and the average score increased to 78.83 in the second cycle. Meanwhile, this study in the first cycle had an average score of 72.67 and 83 in the second cycle.

From the discussion above, it can be seen that indeed the application of *the jigsaw* learning method can increase the understanding of the concept of geography in the material of population dynamics in Indonesia class XI IPS High School Bina Mulya Gadingrejo. However, not all students can accept the learning process well using *the jigsaw* learning model. Therefore, in order for students to always be active and enthusiastic in every learning activity, a varied learning style is needed. Most students can do well with a cooperative form of learning with *a jigsaw* learning model, although there are still some students who struggle to explain it to their classmates. This shows that not all students can explain the activity well, but it is only for some students. Students also seem eager to participate in each learning and have the confidence to express ideas or ask questions to both peers and researchers.

The results of the task completion are delegated to the expert group and submitted to the members of the original group with the aim that the information complements each other. In this case, the student only does one task, but by exchanging information, he ends up getting information in the form of solutions to all the tasks. Emphasize that when students speak in an expert group, everyone has to work together and when they hand over the work to the home group, they have to be confident. This can also lead to an increase in students' understanding of geography concepts in the material of population dynamics in Indonesia to be better. The findings in this study are very much in line with the opinion of Puger (2004) in Selamat (2017) which essentially states that using cooperative learning methods, especially *jigsaw* types, can create a

learning process to be more rational, communicative, educational, and full of family. Learning that delights students will find it easier to understand concepts in an integrated manner when compared to learning that is gripping to students.

The results of this study show that learning by applying the jigsaw learning model can improve the understanding of geography concepts in population dynamics materials in Indonesia. The increase in student understanding can be seen from the increase in the understanding of cycle I to the understanding of cycle II. Increasing understanding of the concept of geography in the material of population dynamics in Indonesia can be seen from the table below. So, the understanding of geography concepts in population dynamics in Indonesia class XI social studies Bina Mulya Gadingrejo High School can be improved with the application of *the jigsaw* learning model.

CONCLUSION

Based on the results and discussion, it can be concluded that the application of the jigsaw learning model can improve the understanding of geography concepts in population dynamics materials in Indonesia for class XI of Social Studies Bina Mulya Gadingrejo High School. This leads to an increase in students' comprehension scores, as seen from the comprehension score before action, and from comprehension tests in cycle I and cycle II. The results of the concept understanding score at the pre-action stage with very insufficient criteria were 13 students, the criteria were less than 2 students and the criteria were sufficient, good and very good because there were no students who got a range of scores on the 3 criteria. The value of comprehension in the first cycle stage increased, this is because the students who got the criteria score with very little were non-existent, the criteria were lacking as many as 3 students, the criteria were sufficient as many as 1 student, the criteria were good as many as 9 students and very good as many as 2 students. At the end of cycle II, this was also increased, this was shown by students who were included in the criteria of very little and less none, sufficient criteria as many as 2 students, good criteria as many as 4 students and very good criteria as many as 9 students. The acquisition of N gain score also shows an increase in understanding because this increase can be seen in the results of the n gain pretest and posttest of the first cycle, which is 0.6 with a moderate n-gain interpretation. In addition, the results of n gain in the posttest cycle I and posttest cycle II also increased by 0.3 with a moderate n-gain interpretation.

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