



## **Impact of *Student-Student Interaction* Learning Model Faced with Case of Studying IPA on V-Class in the MIS Hayatul Islam Cinangka**

**Cecep Maman Hermawan<sup>1</sup>, Okta Rosfiani<sup>2</sup>, Narulita Kinandhani Haidir<sup>3</sup>,  
Suci Syakila Aulia<sup>4</sup>, Putra<sup>5\*</sup>, M. Ravito Atmajaya Aprilliano<sup>6</sup>**

University of Muhammadiyah Jakarta, Indonesia | c.mamanhermawan@umj.ac.id<sup>1</sup>

University of Muhammadiyah Jakarta, Indonesia | okta.rosfiani@umj.ac.id<sup>2</sup>

University of Muhammadiyah Jakarta, Indonesia | narulitakinandh@gmail.com<sup>3</sup>

University of Muhammadiyah Jakarta, Indonesia | sucisyakila123@gmail.com<sup>4</sup>

University of Muhammadiyah Jakarta, Indonesia | dotaputra@gmail.com<sup>5</sup>

University of Muhammadiyah Jakarta, Indonesia | mravitoaa@mail.com<sup>6</sup>

Correspondence Author\*

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### **Abstract**

One of the constraints affecting the learning outcomes of the IPA in students is the lack of variation of the learning model used, then students end up feeling bored and unenthusiastic so that their learning results are interrupted. The study aims to investigate the influence of the Student-Student Interaction (SSI) learning model on the learning outcomes of V-grade students on the IPA students' eyes, using the comparison of the STAD cooperative learning model. (Student Team Achievement Divisions). This research uses a quantitative approach to experimental design with a quasi-experimental design. The study was conducted with a sample of 61 students divided into two, namely 31 experimental classes using the Student-Student Interaction learning model and 30 control class using the STAD learning model (Student Team Achievement Divisions) in the academic year 2019/2020 at MIS Hayatul Islamiyah. Based on the results of the study using the hypothesis test and nonparametric test Mann Whitney with a 95% confidence rate showed a Sig. (2-tailed) value of 0.044 which means  $0.044 < 0.05$  so it can be concluded that there is a significant difference to the learning outcome of IPA class V between classes using the learning model SSI (Student-student Interaction) and class using the cooperative learning model STAD type (Student Teams Achievement Divisions).

**Keywords:** Student-student Interaction, Cooperative Learning type STAD, IPA learning results

## **Introduction**

Education is a conscious element that is deliberately designed and planned to a set goal. Education aims to improve the quality of human resources. (Piet. A. Sahartian, 2000) In order for this educational goal to really be achieved, there must be an effort to realize it. Education is a change in the attitude and behavior of a person or group of people in humiliating human beings through an effort of teaching and training in order to an integrity that must be fulfilled in the process of life.

One place to get education is school. In general, Madrasah Ibtidaiyah is the choice of parents to educate their children because in this place children are not only taught the exact science, but also the science of religion. With that, it cannot be denied that in the educational institutions Madrasah Ibtidaiyah has privileges, as well as in the learning process, and is expected to develop through the selection of learning models to be used, then the authorities are interested in choosing MI Hayatul Islamiyah Cinangka to know the influence of the new learning model that will be developed further, namely the learning model SSI (Student- Student Interaction).

George Martin Jacobs, et al (2016) in his book Simple, Powerful strategies for student centered learning to make students learning active, creative and critical thinking, is a model of learning Student-Student Interaction. With this, the researchers are very interested in the application of the learning model Student-Student Interaction to know its influence on student learning outcomes.

According to the researchers' observations, the learning process of IPA (Natural Science) conducted in class V of MIS Hayatul Islamiyah, teachers have not used a student-centric learning process so that when in group learning, it has a strong influence on student learning outcomes. So that less variation in the use of learning models on IPA subjects has an impact on the learning outcome. When doing learning, there is an imbalance between active and inactive students, so that it has an effect on their learning outputs, then it produces a low average value.

For that, this research is expected to help teachers or prospective teachers to be more creative and emphasize on the competences and aspects that have been designed, so that students' learning outcomes can be satisfactory, especially in the learning process. Through the SSI learning model (Student- Student Interaction) it is expected to influence student learning outcomes in teaching and thus provide new concepts. Students work with fellow students in a mutual cooperation atmosphere and have plenty of opportunities to process information and improve their communication skills.

## **Literature Review**

### **Students Interaction Learning Model**

The Student-Student Interaction Model is a student-centric learning model developed by George Martin Jacobs in 2016. In his book Simple, Powerful strategies for student centered

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learning, this model includes cooperative, collaborative, and peer interaction learning. (Martin et al, 2016) A learning characteristic of SSI (Student- Student Interaction) is a class divided into pairs that discuss information in two heads, then combined with other pairs to exchange information.

Based on the above explanation that the interesting thing about this SSI learning model is that it can enhance social relationships, cultivate an attitude of acceptance of self-deficiency and others, help each other and respect each other's opinions.

### **Cooperative Learning Model type STAD**

Cooperative learning prioritizes collaboration in solving problems to apply knowledge and skills in order to learning goals. (Suprijono, 2009) In the learning process students are encouraged to collaborate on a joint task and must coordinate their efforts to complete the task assigned to the teacher. (Abidin, 2014) Cooperative learning can help improve the understanding of students with low academic ability as well as students with high academic abilities. (Sudarsana, 2018) From the above description it can be concluded that the SSI (Student- Student Interaction) learning model relates to the cooperative learning model. Through SSI learning, students are involved to learn actively, so that they are always connected with the learning context.

Some of the above studies have similarities with the researchers' research on the cooperative and collaborative learning model, which discusses Student-Student Interaction but this time researchers will use the SSI learning model quantitatively to test how much influence it has on students' learning outcomes in IPA subjects in class V of MIS Islamic Life.

### **Research Method**

The purpose of this study is to compare the learning model of SSI with the study model of STAD (Student Teams Achievement Divions) in relation to the learning results of IPA, there is no influence of learning model SSI (student-student interaction) on the learning result of IPA class V by means of given post test with a particular treatment in the experimental class and provides control class. Learning in the class experimental obtained treatment using the Learning model of Student-Students Interaction (SSI) while learning in the control class did not obtain treatment by using the model of learning SSI, but using the cooperative learning model type STAD. At the end of learning students were given the learning post test, i.e. giving with the ability to solve questions in the form of Essay performed in both classes sample with the same test to find out the results of learning IPA in the students of class V.

The sampling techniques in this research are purposive samplings, data collection using test research instruments, data analysis is quantitative or statistical with the purpose of testing the hypothesis that has been established.

The experimental design is a method that is part of a quantitative method that has its own characteristics, i.e. the presence of a control group. (Sugiyono, 2015) The research method used by the author is experimental research with quasi-experimental methods, design The

experiment used is Only Posttest Control Group Design which is a form of experimental research method. (quasi eksperimen).

The design used in this study is Only Posttest Control Group Design because the study involves two classes, namely the experimental class and the control class. The experimental and control classes get the same learning treatment in terms of purpose, content, learning materials and learning time. The difference lies in using or not using the SSI learning model (Student- Student Interaction).

A population is a group of individuals with the same special characteristics. (Creswell, 2012) Population is the whole object of research consisting of humans, objects, animals, plants, symptoms, test values or events as a source of data that has certain characteristics in a study. (Margono, 2010) The population in this survey is Students Classes V.1 and V.2 at MIS Islamic Life Cinangka School, Teaching Year 2019/2020, 2 Classes, totaling 61 students.

The sample is a subgroup of the planned target population studied by the researchers to generalize the target population.<sup>4</sup> The determination of the sample was done by choosing two classes that have similar characteristics, both in cognitive, affective, and psychomotor aspects.<sup>5</sup> The class chosen as the experimental class in this study was the V.2 class with 31 students, while the chosen class as the control class is the V.1 class with a total of 30 students.

Data collection techniques are the methods used to obtain data or information necessary to high objectivity. (Rukhiyat, 2003) The data must be honest, that is, the truth must be trusted. (Sudjana (. P., 2006) To collect data the techniques used in this research are used are Test instruments using Learning Implementation Plan and documentation. Here is the data collection used in the research: 1) Tests, 2) Observations, 3) Documentation.

Conceptual Definition: Variable (X) SSI (Student-Student Interaction) Learning Model, SSI (Student-Student Interaction) Model is a student-centered learning model developed by George Martin Jacobs, et al in 2016 in his book Simple, Powerful strategies for student centered learning.

Variable (Y) IPA Learning Outcome, learning outcome is a change in student behavior after attending a learning or training series. (Hamalik, 2013) Then the result of learning IPA is the acquisition of students in the form of evaluation after studying IPA.

Optional Definition: Variable (X) The Student-Student Interaction Model (SSI) is a student-centric learning model that directs students to learn actively in group and peer-to-peer learning. This learning model can build student-group collaboration to solve an authentic project or problem.

Variable (Y) IPA Learning Outcome, The learning outcome in this study is a student's learning output in the form of numbers or values obtained from the results of the post test. The indicator for this achievement is a change in the value after the learning process with the SSI learning model. (Student- student Interaction).

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Research that aims to measure a symptom, must use a research instrument. Measuring instruments in research are called research instruments, so the instrument Research is a tool used to measure observed natural and social phenomena. (Sugiyono, 2015)

### **Results**

The study uses two variables: the independent variable X, the student-student interaction model, and the dependent variable Y, the learning outcome of the IPA in 5th grade students. The process of conducting this research is carried out in two classes that have been specified. Each class uses a different learning model, namely an experimental class using the SSI (Student-student Interaction) learning model and a control class using a STAD-type cooperative learning model. (Student Teams Achievement Divisions). Here is the implementation process that has been carried out by the researchers:

Student-student Interaction Learning Model Implementation. Phase- 1 Set the room to facilitate interaction. The researchers prepared the condition of the student, began learning by reading prayer, and then the researchers set the student's sitting position. Next, the teacher gives stimulation to the students in the form of pictures and gives the students the opportunity to ask questions. In this stage, students are introduced to discussions in pairs, and the researchers give them worksheets to discuss with my cousins. Phase-3, combine the pair into the Foursome. The researchers asked each pair of students to find another pair to join and share information on topics/languages about marine ecosystems in the food chain. Phase 4 Group Members Have Numbers. During the discussion, at this stage the researchers asked all groups to have numbers per head, the researcher explained the rule, the pupil who became number one was the leader of the group. Phase- 5 Teaching Collaborative Skills. During the discussion, the researchers observed and guided the entire group, and explained the meaning of cooperation and a few phrases. (cara berterima kasih dan menghargai hasil pendapat temannya). Phase-6 Encourages students to remember successful groups. The researchers inspire every group. Then the researchers discuss that a group will succeed when there is compactness and cooperation of each of its members. Phase-7 Ask an Early Finisher to help others. Students who have completed their discussions at the earliest were asked to divide and move to other groups to provide assistance. Each group was asked to present the results of their discussions in front of the class. Phase 8 - Make an Individual Assessment. In the final phase, the researchers asked the students to reflect on what they learned by asking the students if there was anything they still did not understand about the food chain. The researchers gave each student the opportunity to ask questions. The students explained their reflections. The scientists gave conclusions about the learning discussed today. Teacher gives an evaluation test in the form of a Post Test.

Implementation of the STAD type cooperative learning model (Student Teams Achievement Division). Phase 1 Clarifies objectives and establishing sets. The researchers prepared the condition of the students, began learning by reading prayer. Then, prepare the tools and materials for learning. Phase-2 Presentation of information. The researchers started presenting information about food chain events, then asked the students about the origin of the energy generated from Food chain events, researchers present images and videos of food chain

developments in ecosystems. Students were given the opportunity to identify as many questions as possible related to the images presented. Phase-3 Organizing students into learning teams Researchers explain to students how to form learning teams and help groups to make efficient transitions. Then the researchers started distributing worksheets to be discussed on marine ecosystems in the food chain. Phase-4 Helps teamwork and learning. Researchers help teams learn as they do their job. Teachers guide and observe students during group activities. The researchers asked the students together with their group to process the data and conclude the results of the discussion. The researchers evaluated the students' learning outcomes and then asked them to present their discussions. Students and researchers jointly concluded the discussions of each group. Phase-6 Gives confession. After making the conclusion, the researchers gave praise in the form of applause to each group and to the group that had good performance and cooperation. The researchers gave the Post Test after learning according to the learning model in each class. The researchers gave the posttest to find out the student's learning outcomes. This study uses a test instrument in the form of an essay to answer the hypothesis. The research data was obtained from the IPA learning test to the respondents.

Below is a table of the results of the experimental and control classes after they are grouped into a set range of values:

Table 4.2 Scope of Value Results Post Test kela=s Experiments and Control Classes

No	Value range	Learning outcomes	
		Experimental Class (SSI) V.2	Control Class (STAD) V.1
1	< 40	0	1
2	40 - 55	3	4
3	55 - 70	8	11
4	70 - 85	13	11
5	85 -100	7	3
Number of students		31	30

The results of table 4.2 show that the results of the posttest of the experimental class in the range of values < 40 are nonexistent, the values range 40-55 of 3 people, in the 55-70 range of 8 people, the range 70-85 of 13 people, a range of 85-100 of 7 people. In the control class show that in the value range < 40 of 1 person, the 40-55-values range of 4 people, at the range 55-70, 11 people, 70-85- range of 11 persons, the 85-100 range of 3 persons.

The normality test is a test of whether the data to be analyzed is normal or not. The normality test was carried out using the IBM SPSS v.20 program. The normality test obtained a probability number or Asymp Sig (2–tailed). This value is compared with 0.05 and uses testing criteria for decision making, namely:

If Asymp sig (2 –tailed) > 0.05 then the data distribution is normal.

If the Asymp sig (2 –tailed) < 0.05 then the data distribution is abnormal.

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The normality test data is calculated using the help of the program SPSS v. 20. Then, the result is as follows:

Table 4.4 Summary of Normality Test Results

No	Description	Asymp.Sig. (2-tailed)	Alpha	Decision
1	Experimet class	0,011	0,05	Abnormal
2	Control Class	0,037	0,05	Abnormal

In table 4.3, Saphiro Wilk's normality test column indicates that the experimental class has Asymp Sig. (2- tailed) 0.011, which means that the data is distributed abnormally because of the asymp sig. (2.- Tailed)  $< 0.05$ . In the control class Asymp Sig. (2- tailed) 0.037 which means the distributed data is ABNORMAL.

The variance homogeneity test aims to determine whether the population variance of the study is homogeneous or not. The technique used to test homogeneity in this study is with one way ANOVA or one-way variance analysis. The test criteria are as follows:

If  $F_{\text{count}} \leq F_{\text{table}}$  then  $H_0$  is rejected, which means Non-homogeneous populations.

If  $F_{\text{count}} \geq F_{\text{table}}$  then  $H_0$  is accepted, which means a homogeneous population.

The data homogeneity test is calculated using the help of the IBM SPSS 20 program. Then, the homogeneity test results are as follows:

Table 4.6 Summary of homogeneity test results

No	Description	Asymp.Sig. (2-tailed)	Alpha	Decision
1	- Experimet class (V.2) - Control Class (V.1)	0,968	0,05	Homogen

From tables 4.5 and 4.6 it is shown that the experimental class and the control class have Asymp.Sig. (2-tailed) of 0.968 which means  $0,968 > 0.05$ . Based on the criterion of decision that if the Asympt. Sig. (2.-tailing)  $> 0.05$ , then the data is said to be Homogeneous. Thus it can be concluded that the test results of the homogeneity of the data experimental and control class are distributed Homogenous. That means that both classes have the same ability.

Hypothesis testing is a decision-making method based on data analysis, both on controlled experiments and observations. (not controlled). Statistical methods for determining

the test of the hypothesis to be used must be aligned with statistical assumptions such as the assumption of distribution and heterogeneity of variance.

In the testing of the hypothesis, two types of hypotheses are found, namely the Zero Hypothesis ( $H_0$ ) and the Alternative Hypothesis. ( $H_a$ ). (Mahdiyah, 2014) The hypothesis to be tested is as follows: (Sudjana, 2006)

If the Asymp.Sig value is  $> 0.05$ , then the hypothesis ( $H_0$ ) is rejected.

If the Asymp.Sig value  $< 0.05$  then the hypothesis ( $H_a$ ) is accepted.

Based on the prerequisite testing statistical analysis obtained that the data posttest distributed abnormal and homogeneous, so the hypothesis testing using Nonparametric Samples Tests on the IBM program SPSS v. 20 Output Tests.

Once the results of the normality and homogeneity tests are known, the data needs to be interpreted. In this study, the researchers used statistical descriptive analysis, which is used to find the mean value, maximum value, minimum value, difference, variance as well as standard deviation. Based on the results of statistical descriptive analysis, the data interpreted using the IBM SPSS v. 20 statistical program. A summary of the results of the descriptive analysis can be seen as follows:

Table 4.8 Summary of Descriptive Analysis Results

No	Frequency Distribution	Post Test	
		Experimet class	Control Class
1	Highest value	100	87
2	Lowest value	50	37
3	Mean	75,23	68,03
4	Median	75	70
5	Standard Deviation	12,920	12,718
6	Differentiate	50	50
7	Variants	166,914	161,754

Table 4.8 shows that the interpretation of the data based on statistical descriptive analysis results, the frequency of the highest value of the experimental class was 100, the lowest value was 50, the average value was 75.23, the median value of 75.00 and the standard deviation was 12,920. In the control class, the highest score is 87, the lowest is 37, the average is 68,03, the median is 70 and the standard deviation is 12,718.

After conducting research on the experimental class using the Student-Student Interaction (SSI) learning model and the control class using Student Teams Achievement Divisions learning model (STAD). It requires a significance test to determine whether or not there are differences using the Student-Student Interaction (SSI) learning model against student learning outcomes. In this study, based on the results of the test requirement analysis that data



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Posttest class Experiments and control classes are distributed abnormally. So in this study, the researchers used the Mann Whitney (non-parametric) test because in the Mann whitney test there was no requirement that the data should be distributed normally, and the Mann-Whitney parametric test was hard-held as a substitute for the hypothetical test. (Kadir, 2005) As for the criteria in this test as follows:

If the Asymp.Sig value is  $> 0.05$  then the hypothesis ( $H_0$ ) is rejected

If the Asymp.Sig value is  $< 0.05$  then the hypothesis ( $H_a$ ) is accepted.

The results of the Mann Whitney test calculation process can be seen in the following table:

Table 4.7 Mann Whitney Test Results

Ranks

	Kelas	N	Mean Rank	Sum of Ranks
IPA Learning results	Experimet class	31	35,42	1098,00
	Control Class	30	26,43	793,00
	Total	61		

Table 4.8 Mann Whitney Statistics Test

Test Statistics<sup>a</sup>

	IPA Learning Results
Mann-Whitney U	328,000
Wilcoxon W	793,000
Z	-2,010
Asymp. Sig. (2-tailed)	,044

a. Grouping Variable: Class

From table 4.8 above indicates Asymp sig. (2-tailed) of 0.044, based on the criterion of the decision of the hypothesis when the value of asymp.Sig. 2-tailed  $< 0.05$  then the hypothesis ( $H_a$ ) is accepted. Mann Whitney's statistical test with the help of SPSS

v.20 obtained a score of  $0.044 < 0.05$  so that it can be concluded that there is a difference in the learning outcomes of IPA class V using the learning model Student-student Interaction (SSI).

The Student-Student Interaction (SSI) model is one of the student-centred learning models. This model includes cooperative, collaborative, and peer interaction learning. The classes that use this model are experimental classes and obtained results in the range of values  $< 40$  no, the range values 40-55 as 3 people, at the range 55-70 as 8 people, range 70-85 as 13 people, ranges 85-100 as 7 people.

Student Teams Achievement Divisions (STAD) is a type of group work that includes activities that are guided and directed by teachers. The class that uses this model is the control class, showing the result that in the range of values  $< 40$  of 1 person, the 40-55 range of 4 people, in the 55-70 range of 11 people, the 70-85 span of 11 persons, the 85-100 range of 3 people.

## **Discussion**

The study concluded that there was a significant influence on the use of the Student-Student Interaction (SSI) learning model for learning outcomes, which was supported by Safitri (2019) which showed that the student-student interaction model has a positive effect on teachers and students in interaction in the classroom. Similarly, the study concluded that there was also a significant influence on the use of the Student-Student Interaction (SSI) learning model on ski learning outcomes, which was also supported by Romhah (2021) which showed that the student-student interaction model has a positive effect on teachers and students interacting in the classroom.

## **Conclusion**

Based on the analysis of the results obtained, it can be concluded that there is a significant influence on the learning outcomes of IPA in students of the fifth grade using the learning model Student-student Interaction (SSI). This can be seen from the test of the hypothesis that Mann Whitney used to obtain a result of 0.044 which means  $0.044 < 0.05$  so it can be concluded that there is a significant difference in terms of the learning results of IPA class V between classes that use the learning model SSI (Student-student Interaction) and class that uses the cooperative learning model STAD type. (Student Teams Achievement Divisions). It can also be seen that the average score obtained from the posttest results of the experimental class is higher, which is 75.23 compared to the average posttest result of the control class, that is 68.03.

Thus, it can be concluded that there is an influence of the learning model of SSI (Student-student Interaction) on the learning outcomes of IPA in students of grade V at MI Hayatul Islamiyah Cinangka.

## **Declaration of conflicting interest**

By this the author states that the data published in the manuscript has no conflict of interest against any party.

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