

Students' Mathematical Understanding Ability and Self-Confidence Through Collaborative Think Pair Share and Talking Stick Learning Models at SMA Kemala Bhayangkari-2 Rantau Prapat

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Abstract.

Through the combination of the Think-Pair-Share and Talking-Stick models, this project aimed to improve learning outcomes and increase mathematical engagement among students in class XI at SMA Kemala Bhayangkari-2 Rantau Prapat. This study represents classroom action research. The research was done in two cycles, with each cycle including preparation, execution, observation, and reflection. This study involved 30 students from class XI at SMA Kemala Bhayangkari-2 Rantau Prapat. The sources of data are teachers and students. Various methods of data collecting include observation, interviews, testing, and document analysis. Using data triangulation and triangulation procedures to determine the veracity of the data. Comparative and critical descriptive analysis approaches were employed in the data analysis. Planning, implementation, observation and interpretation, and analysis and reflection are the research methods. The results demonstrated that by applying the Think Pair Share collaborative approach with the Talking Stick, learning outcomes may be enhanced and student engagement encouraged. This study concludes that the implementation of the Think Pair Share Model Collaboration with the Talking Stick model can improve learning results and stimulate student participation in administration courses.

Keywords: Think Pair Share, Talking Stink, active learning and learning outcomes.

I. INTRODUCTION

Improvement is a process, a way of action to improve something or an activity effort to advance something in a better direction than before (Khairunnisa et al., 2018) Mathematics ability is a teaching and learning process built by mathematics teachers to develop students' creativity and can improve students' self-confidence, as well as being able to increase new knowledge abilities as an effort to improve good mastery of mathematics material. Because Mathematics is one of the mandatory subjects studied at every level of education in Indonesia, starting from elementary school, middle school, high school/vocational school, even at university. "Mathematics" comes from the Greek word "Mathema" or perhaps also "Mathematikos" which means exact science or the science studied. Mathematics is a tool for developing ways of thinking.

(Utama, 2019) Self-confidence is an attitude or belief in one's own abilities, so that when taking action you are not too anxious, you feel free to do things according to your wishes. Think Pair Share (TPS) is a type of cooperative learning that stimulates students' thinking activities in pairs and shares knowledge with other students. Narimo et al., (2019) said Talking Stick is a learning model that encourages students to dare to express opinions, actively participate in learning and teach students to always be ready to answer when appointed to answer something. Meanwhile (Thobias et al., 2013) said that the aim of the Think Pair Share and Talking Stick learning model is to increase students' self-confidence so they can answer questions during the teaching and learning process at school. So it is in line with the opinion of Saufi, (2013) that many students are afraid to express their opinions, one of the reasons being a lack of self-confidence. So it was concluded by (Wulandari & Theis, 2012) that the aim of this learning model is to increase students' self-confidence, so that students are not embarrassed or afraid to express their opinions.

II. METHODS

This research was carried out during the even semester learning in the 2021/2022 academic year at SMA Kemala Bhayangkari-2 Rantau Prapat from March 7 to April 10 2022. This type of research is Classroom Action Research (PTK) which is carried out in one class based on problems that occur in the

classroom who need a solution according to their needs in the sample class in class XI MIA-2, totaling 30 people. Researchers have conducted a pre-study before using the PTK approach in this class study. Based on the results of the pre-study, researchers found that problems in the classroom must use PTK. Therefore, the population of this research is all class XI students of SMA Kemala Bhayangkari-2 Rantau Prapat and the sample of this research is XI MIA-2, totaling 30 students. The sampling technique used was simple random sampling. Research time is the time the research is targeted to take place within a period of 2 months including research preparation, implementation of actions, data analysis and reporting. The research subjects were students of Class XI MIA-2 for the 2021/2022 academic year in mathematics with a total of 30 students. According to Surayya et al. (2014) that, "data collection methods are an important step in research because it is on the data that testing or analysis will be carried out" while several data collection methods used by researchers include observation, interviews, tests, and document analysis. Validity testing is carried out using triangulation.

Triangulation is the most commonly used method of checking data validity, namely expert validity testing. Ikbal Barlian (2013) said that this method is done by using something other than the data to check or as a comparison to the data used in the research. Danial (2015) states that several types of triangulation are needed that researchers use, namely triangulation of data obtained from existing experts, namely through students, teachers and documents. Meanwhile, triangulation methods are taken from interview, observation and test methods. So, in this research, the validity test of the instrument is carried out by validation by an expert or expert validation, then the validity test results can be used using a validity sheet and tested using the CVI formula. Nugroho et al. (2015) explains that "Data analysis is the activity of observing, describing and linking any information related to initial conditions, the learning process and learning outcomes to obtain conclusions about the success of learning improvement actions" (Prasetyo, 2014) suggests that there are two types of techniques for analyzing data namely: a. Comparative Descriptive Techniques (Comparative Descriptive Statistics) b. Critical Analysis In this research the researcher also used these two analysis techniques. According to Handayani & Rasyid (2015), comparative descriptive techniques are used for quantitative data, namely by comparing results between cycles. The comparative technique in this research was carried out by comparing research results from the pre-cycle, first cycle and second cycle of research. The comparison results are used to determine indicators of success and failure in each cycle. Critical analysis techniques relate to quantitative data, which includes activities to reveal weaknesses and strengths in the performance of students and teachers in the learning process (Sugiyono, 2008). The results of this analysis are used as a basis for preparing action plans for the next stage.

III. RESULT AND DISCUSSION

Mathematical Understanding

All students are still passive in the learning process in class, only a few students are active and confident in learning mathematics. This statement is confirmed by (Yuniantika, 2018) this can happen because of the unidirectional learning model implemented by the teacher so that students experience boredom in learning. Many students are not focused and do unnecessary activities outside of learning, for example talking to friends outside of the topic, or some even focus on other lessons. Apart from that, students also tend not to dare express opinions when teachers give them time to ask questions or have opinions, (Isis, n.d.) stated that something like this would hinder the implementation of the 2013 curriculum principles that have been implemented which make students the center of learning (Student Learning Center). After analyzing the improvement sheet created by the researchers, it was discovered that only 28% of students could be said to be active.

Self-confident

In the Basic Competency Value regarding courage in carrying out work and practicing mathematics learning, it is known that 9 out of 32 students did not pass the cognitive test, namely 38%. And the average class score is still in the moderate range, namely 3.2 for cognitive assessment (knowledge), 3.3 for affective assessment (attitude), and 3.5 for psychomotor assessment (skills). As a result of their lack of self-confidence

in getting their Final Test Grades for Semester 1, it is known that 13 of the 32 students did not pass, which is around 50%. And the average class score is still low, namely 3.2.

Cycle I

Based on the results of observations and learning evaluations that have been carried out in Class However, this increase is not in accordance with the indicators that researchers want to achieve. The explanation of this improvement is as follows: In the assessment of students' mathematical understanding in the first cycle, 56% of students were said to be active, this achievement was better than the results of pre-action cycle observations, namely 38%. However, this has not yet reached the achievement indicator desired by researchers, namely 75%. Then, in the student learning results in the first cycle, 78% of students were said to have passed the cognitive assessment, this achievement was better than the pre-action cycle, namely 59%. However, this has not yet reached the achievement indicator that the researchers wanted, namely 80%.

Cycle II.

Based on the results of observations and learning evaluations that have been carried out in Class In cycle II, the achievement indicators targeted by researchers have been achieved. The explanation of this improvement is as follows: Assessment of student activity in the first cycle found that 78% of students were said to be active, this achievement was better than the results of pre-action cycle observations of 38% and the first cycle, namely 56%. So it can be said that student activity has reached the achievement indicators desired by researchers, namely more than 75%. Then in the student learning results in the second cycle, 87% of students were said to have passed the cognitive assessment, this achievement was better than the pre-action cycle, namely 59% and in the first cycle, namely 78%. So it can be said that student learning outcomes have reached the achievement indicators desired by researchers, namely 80%.

Comparison Between Cycles of Students' Mathematical Understanding

The implementation of the Think Pair Share type cooperative learning model with Talking Stick can increase the number of active students in each cycle. In the pre-cycle, only 38% or 10 students were active, while 52% or 20 students were declared inactive. In cycle I it increased by 18% to 56% or 18 students and 44% or 12 students were declared inactive. In cycle II it increased by 12% to 78% or 25 students and 22% or 7 students were declared inactive.

Table 1. About Improving Students' Mathematical Understanding

Aspects that are measured	Active understanding of students' mathematics					Final upgrade
	Pre cycle Results	Results	Cycle 1 Enhancement	Results	Cycle 2 Enhancement	
Note down the formula	80%	96%	16%	100%	4%	20%
Discuss practice questions	58%	65%	5%	67%	5%	9%
Memorize formulas	40%	51%	7%	61%	10%	17%
Suggestion	55%	72%	16%	80%	14%	30%
group discussion	60%	70%	30%	100%	0%	39%
Conclude	20%	48%	5%	59%	11%	16%
Stated Active	30%	56%	18%	78%	22%	40%

It can also be explained in the following circle diagram image

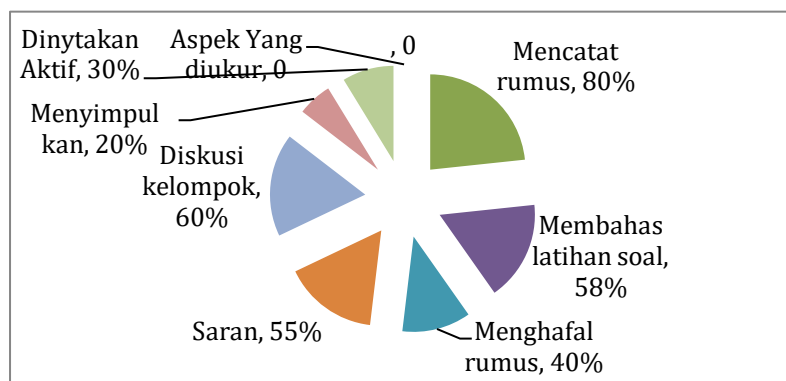


Fig 1. Explanation of Increasing Student Understanding

Table 2. About Activeness Results of Student Confidence

Aspects that are measured	Activeness results in student self-confidence					
	Pre cycle Results	Cycle 1		Cycle 2		Final Upgrade
		Results	Enhancement	Results	Enhancement	
Cognitive	3.23	3.38	0.15	3.41	0.03	0.18
Cognitive Graduation	59%	78%	19%	88%	9%	28%
Affective	3.26	3.41	0.16	3.79	0.38	0.54
Psychomotor	3.46	3.54	0.07	3.56	0.02	0.09

(2006), 2014) The implementation of the Think Pair Share type cooperative learning model with Talking Stick can increase students' self-confidence in each cycle. This can be seen in 3 aspects of the assessment of self-confidence results which have increased, namely:

In the cognitive aspect in the pre-cycle the class average reached 3.2, increasing by 0.15 in cycle I to 3.38 and increasing by 0.03 in cycle II to 3.41

In the affective aspect in the pre-cycle the class average reached 3.26, increasing by 0.16 in cycle I to 3.41 and increasing by 0.38 in cycle II to 3.79

In the psychomotor aspect in the pre-cycle the class average reached 3.46, increasing by 0.07 in cycle I to 3.54 and increasing by 0.02 in cycle II to 3.56. In the cognitive aspect graduation. In the pre-research cycle, only 59% or 19 students passed and 41% or 21 students did not pass. In the first cycle it increased by 19% to 78% or 25 students and 22% were declared not to have passed or 7 students. In the second cycle it increased by 9% to 88% or 28 students were declared to have passed and 12% or 4 students were declared not to have passed.

IV. CONCLUSION

The research, which was carried out in class XI of SMA Kemala Bhayangkari-2 Rantau Prapat, was carried out in two cycles. Each research cycle includes four stages, namely: (1) Planning, (2) Implementation, (3) Observation, and (4) Reflection. The conclusion from the results of this research is that the implementation of the cooperative learning model Think Pair Share type with Talking Stick can increase activity and ultimately student learning outcomes in class XI SMA Kemala Bhayangkari-2 Rantau Prapat. Indicators of research achievements are as follows:

- Student activity in the mathematics learning process increased from the initial condition of only 12 students or 38%, increased by 18% in cycle I to 18 students or 56% and increased by 22% in cycle II to 25 students or 78%. So it can be concluded that after conducting the research there was an increase of 40% in student activity.
- Student confidence in the cognitive domain increased from the initial condition of only 19 students or 59%, increasing by 19% in cycle I to 25 students or 78% and increasing by 9% in cycle II to 28 students or 88%. So it can be concluded that after conducting the research there was an increase of 28% in student graduation in the cognitive aspect.
- In each aspect, students' self-confidence also experiences an increase as follows:
 - a) In the cognitive aspect in the pre-cycle the class average reached 3.2, increasing by 0.15 in cycle 1 to 3.38 and increasing by 0.03 in cycle 2 to 3.4. So it can be concluded that after conducting the research there was an increase of 0.18 in the cognitive aspects of students.
 - b) In the affective aspect in the pre-cycle the class average reached 3.26, increasing by 0.16 in cycle 1 to 3.41 and increasing by 0.38 in cycle 2 to 3.79. So it can be concluded that after conducting the research there was an increase of 0.54 in the affective aspect of students.
 - c) In the psychomotor aspect in the pre-cycle the class average reached 3.46, increasing by 0.07 in cycle 1 to 3.54 and increasing by 0.02 in cycle 2 to 3.56. So it can be concluded that after conducting the research there was an increase of 0.09 in the psychomotor aspects of students.

REFERENCES

- [1] 2006), (Depdiknas. (2014). Pengaruh Kecemasan Matematika (Mathematics Anxiety) Terhadap Kemampuan Koneksi Matematis Siswa Smp. In *Infinity Journal* (Vol. 3, Issue 1). <https://doi.org/10.22460/infinity.v3i1.43>
- [2] Danial, E. (2015). Metode Dokumentasi. *Universitas Pendidikan Indonesia*, 127.
- [3] Handayani, T., & Rasyid, A. A. (2015). Pengaruh Kepemimpinan Kepala Sekolah, Motivasi Guru, Dan Budaya Organisasi Terhadap Kinerja Guru Sma Negeri Wonosobo. *Jurnal Akuntabilitas Manajemen Pendidikan*, 3(2), 264–277. <https://doi.org/10.21831/amp.v3i2.6342>
- [4] Ikbal Barlian.(2013).Begitu Pentingkah Strategi Belajar Mengajar Bagi Guru.*Jurnal Forum Sosial*, 6, 241–246.
- [5] Isis, A. (n.d.). *Kurikulum Matemaikka*.
- [6] Khairunnisa, G. F., Rahman, A., & Susanto, H. (2018). Keberhasilan Siswa dalam Menyelesaikan Soal Cerita Berdasarkan Kemampuan Membuat Berbagai Representasi Matematis. *Jurnal Pendidikan: Teori, Penelitian Dan Pengembangan*, 3(6), 723–730.
- [7] Narimo, S., Hastuti, D. D., & Sutopo, A. (2019). Konsekuensi Tanggung Jawab dalam Pembelajaran Matematika SMA. *Jurnal VARIDIKA*, 30(2), 1–6. <https://doi.org/10.23917/varidika.v30i2.7568>
- [8] Nugroho, T., Santoso, B., Dyah, C. S. I., & Rahmanto, A. N. (2015). *Administrasi Kepegawaian Siswa Melalui Kolaborasi Model Pembelajaran Kooperatif Tipe Think Pair Share Dengan Talking Stick*. September, 48–58.
- [9] Prasetyo,I.(2014).Teknik Analisis Data Dalam Research and Development.*UNY:Fakultas Ilmu Pendidikan*,6, 11.
- [10] Saufi, M. (2013). *P – 12 mengelola kecemasan siswa dalam pembelajaran matematika*. November, 978–979.
- [11] Sugiyono. (2008). *metode penelitian pendidikan (pendekatan kuantitatif, kualitatif, danR&D)*.CV. ALFABETA.
- [12] Surayya, L., Subagia, I. W., & Tika, I. N. (2014). *Pengaruh Model Pembelajaran Think Pair Share Terhadap Hasil Belajar Ipa Ditinjau Dari Keterampilan Berpikir Kritis Siswa*. 4.
- [13] Thobias, E., Tungka, A. K., & Rogahang, J. J. (2013). Pengaruh Modal Sosial Terhadap Perilaku Kewirausahaan (Suatu studi pada pelaku usaha mikro kecil menengah di Kecamatan Kabaruan Kabupaten Kepulauan Talaud). *Acta Diurna*, April, 1–23.
- [14] A. Harahap, et, all, Macrozoobenthos diversity as anbioindicator of the water quality in the Sungai Kualuh Labuhanbatu Utara, AACL Bioflux, 2022, Vol 15, Issue 6.
- [15] Harahap, Arman. 2020. Species Composition & Ecology Index Of The Family Gobiidae At The Mangrove Belawan Of Sicanang Island International Journal of Scientific & Technology Research Volume 9, Issue 04, April 2020.
- [16] Harahap, A., et all (2021), *Monitoring Of Macroinvertebrates Along Streams Of Bilah River International Journal of Conservation Sciencethis link is disabled*, 12(1), pp. 247–258.
- [17] Mamangkey, J., Suryanto, D., et all (2021). Isolation and enzyme bioprospection of bacteria associated to *Bruguiera cylindrica*, a mangrove plant of North Sumatra, Indonesia, *Biotechnology Reports*, 2021, 30, e00617.
- [18] Utama, F. (2019). Strategi Coping Pada Remaja Putri Di Sma Negeri 1 Wanadadi. *Jurnal Fokus Konseling*, 5(2), 130–134.
- [19] Wulandari, E., & Theis, R. (2012). Pengaruh Problem Stres Matematika Sekolah Terhadap Hasil Belajar Matematika Siswa Kelas Xi Ipa Sma Negeri 4 Kota Jambi T. a 2009/2010. *Edumatica*, 02(1), 26–35.
- [20] Yuniatika, D. (2018). Penerapan Metode Pembelajaran Index Card Match Untuk. *Trihayu: Jurnal Pendidikan Ke-SD-An*, 4, 347–352.