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Mathematic Communication Ability Achievement and Mathematical Habits of Mind Through Numbered Heads Together With Written Corrective Feedback

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Abstract

This research describes mathematics communication through *Numbered Heads Together* (NHT) with *written corrective feedback* based on the students' levels of *mathematical habits of mind* and the correlation between written and spoken mathematics communication ability. This research is a *mixed method* with sequential explanatory design. It is a combined design between quantitative and qualitative. The population consisted of seventh graders of Rembang 4 Junior High School. The findings showed that NHT with *written corrective feedback* was effective for mathematics communication ability and mathematical habits of mind. The description results of mathematics communication ability are based on different levels of *mathematical habits of mind* (MHoM). From three students with high, moderate, and low mathematics communication ability, they had scores of 1, 2, and 0. On the fifteen moderate MHoM students, those with high, moderate, and low mathematics communication ability had scores of 1, 14, and 0. On four low MHoM students, those with high, moderate, and low mathematics communication ability obtained scores of 1, 3, and 0.

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INTRODUCTION

Mathematics is a discipline that underlies science and information technology development and has important roles in developing students' power of thought. According to Hafid, Kartono, & Suhito (2016), the difficulties of learning mathematics for students are indicated by their low interest in the lesson. The purpose of learning mathematics at school is to allow the students having ability. One of them is to communicate the notion by using symbols, table diagram, or other media. They function to explain certain conditions or problems. It is based on the Ministerial Regulation of National Education, Number 22, the Year 2006 about mathematics content standard.

This research conducted observation and interview at Rembang 4 Public JHS to find out the mathematics learning problems. The problems were such as teacher-centred learning; passive students and lack of eager to ask even when the students had not understood the concept. Thus, many students had low mathematics exam score below the minimum standard mastery. Third, the learning activities were rarely promoted in groups. Thus, the students' mathematics idea communications did not exist both in written or spoken manner among the students and to the teacher. Fourth, the students still had misconception in constructing mathematics thinking behaviour. While learning mathematics, students should have learning behaviours and attitudes so that they could apply their thinking ability for the sake of integrating their knowledge to construct new knowledge.

NTCM (1995) and Hendriana et al (2018) stated that mathematics communication ability is an essential and basic competence for mathematics and mathematics education. Without proper communication, mathematics development will be hindered. A symbol is an epitome that contains certain intention or purpose. The scientific communication symbols are tables, charts, graphs, mathematics quotient figures, and so on. Asikin & Junaedi (2013) argue that communication facilitates individuals to interpret since it has a function to convey ideas. This idea could be a faithful decree. When the students are given challenges to think and to argue about mathematics and to communicate their thinking results to other people in spoken or written manners, at that time, they learn to explain and persuade.

Besides that, *mathematical habits of mind* must be instilled because it determines an individual to decide for a very important matter in mathematic thing during the learning process. The indicators of *mathematical habits of mind*, according to Millman and Jacobe (Hendriana et al*,* 2017) are: (1) exploring mathematics idea, (2) reflecting the truth of the answer of mathematics problems; (3) identifying problem-solving strategy, and (4) asking and responding effectively.

Therefore, the teacher's role in encouraging such optimal learning process is needed. It is done through various applied models, methods, or approaches. One of the learning models is NHT typed Cooperative Learning (*Numbered Heads Together*). According to Kusumawati & Mawardi (2016), NHT learning is a model of cooperative learning that requires the students to think in a group. Tamur (2011) argue that NHT-typed cooperative learning implementation could improve students' mathematics communication ability (Lagur, Makur, and Ramda, 2018).

The classroom learning process is very important to have *feedback* for students. Anita, Darmawan, and Kartika (2017) found that *feedback* is a correction for the incorrect students' answers individually. It is very useful because students will realize their incorrectness and how to revise it. It is in line with Brookhart (2008) that providing feedback was the teacher's solution while solving mathematics communication ability problems for both homework or classroom tasks. According to Kinanto (2016), a type of *feedbacks* is *Written Corrective Feedback* (WCF), it could facilitate students to obtain and perform their masteries by using the targeted language form and structure.

The advancement of information and technology in current era requires teachers to take important roles to use it in their learning. Students should be directed to positive and beneficial matters while using the Internet. One of them is to support their education. One of Internet assisted media is *Google Classroom.* It facilitates teachers to create and share learning materials, collecting tasks, assessing, and providing feedback from the students. The use of online class could make more effective learning for both teachers and students because it is not limited by time and space. Students can learn, discuss, do the

tasks, and do the assignment remotely (Aris et al, 2019). However, *Google Classroom* is only a mean. It is an application to assist the research during the learning process.

Based on the explanation, an analysis of students' mathematics communication ability achievement and *mathematical habits of mind* through *Numbered Head Together* with written corrective feedback is needed.

The research problems are how the description of the students' mathematics communication in various levels of mathematical habits of mind through *numbered heads together* with written corrective feedback is; and how the descriptions of written mathematics communication ability and spoken mathematics communication ability are.

This research aims to describe the students' mathematics communication ability in various levels of *mathematical habits of mind* through *Numbered Head Together* with *Written Corrective Feedback.* Secondly, this research aims to describe the correlation between written and spoken mathematics communication ability.

METHOD

This research is *mixed-method* with *the randomized control group pretest-posttest* design. This research was conducted at Public JHS 4 Rembang. The population consisted of seven VII grades. Two classes were selected randomly as the samples. The research subjects consisted of VII-A students and VII-B students in the academic year of 2019/2020. Only one class functioned as the instrument-experimental group taken by *simple random sampling.* According to Cresswell (2016), *simple random sampling* is a technique of selecting the sample member in a population that has an equal probability of being selected. A class was as an experimental group while the other class was as the control group. The technique to select the subjects for having interview was *purposive sampling.* The technique of selecting the sample was *simple random sampling*. Thus, the experimental group was taken to be intervened with NHT and WCF. The other class was intervened by *discovery learning.* The research subjects consisted of 6 students with two high category, two moderate categories, and two low category students.

During this research, the data collection methods were documentation, questionnaire, interview, observation, and test. Besides that, the research instrument consisted of several instruments such as the questionnaire of *Mathematical Habit of Mind* (MHoM), guideline of mathematics communication ability interview, and mathematics communication ability test. MHoM was used to determine the students' MHoM categories. The criteria of MHoM classification based on Arikunto's parameters (2010) are shown in Table 1.

Table 1. MHoM Criteria

Interval	Categories	Score Results
$x_i > \bar{x} + s$	High	68 - 72
$\bar{x} - s \leq x_i \leq \bar{x} + s$	Moderate	41 – 67
$x_i < \bar{x} - s$	Low	18 - 40

Notes:
$\boldsymbol{x_i}$: Scores of the student questionnaire
$\bar{\mathbf{x}}$: The average of the student questionnaire scores
$\boldsymbol{s}$: deviation standard

The test instrument was published. It was in the form of Mathematics Communication Ability Test questions. The questions were pilot-tested in other class which had obtained the data presentation material. The instrument trial run was promoted to find out the validity, reliability, and distinguishing power, and index of difficulty. The data of both pretest and post-test were then processed to find out the effectiveness of mathematics communication ability taught by *Numbered Head Together* with *Written Corrective Feedback.* The applied analysis of this research was done quantitatively and qualitatively. The quantitative analysis consisted of *one sample t-test,* z test, and *independent t-test.* The analysis of mathematics ability test was done by using mathematics communication ability indicators. They were such as (1) ability to connect real objects, figures, diagrams, and graphics into mathematics ideas; (2) ability to use terms, mathematics notations, and structures to present ideas in solving the problem; (3) ability to explain ideas, situations, and mathematics relations in spoken or written manners with real objects, figures, graphics, and algebra; (4) ability to state and evaluate daily events in mathematics symbols or language, and (5) ability to communicate students' answers in the form of conclusion. Here are the spoken and written mathematics communication ability rubric. On the

other hand, the qualitative data analysis was done by reducing, presenting, and concluding the data.

RESULT AND DISCUSSION

This research consisted of three stages in 6 meetings at the class. The first meeting was done to carry out the first stage. The second until fifth meetings were used for the second stage. Then, the sixth meeting was used for the third stage. The first stage was to measure the initial mathematics communication ability of the students. The second stage was NHT learning with WCF implementation on the experimental group and *Discovery Learning* model for the control group. The test of mathematics communication ability and MHoM questionnaire was given for the students. They had the purpose of selecting the subjects.

After conducting the learning, the researcher provided the questionnaire to the experimental group. The MHoM questionnaire was given for the experimental group as the base in classifying the students based on MHoM level. The obtained students' criteria based on MHoM would be used as consideration in selecting subjects for interview purposes. It was done to comprehensively find out the students' mathematics communication ability. The result data summary of MHoM questionnaire for students of VII-A of Public JHS 4 Rembang could be seen in Table 3.

Table 2. The result data summary of MHoM questionnaire

The Students' MHoM Criteria	Students' Numbers	MCAT		
		High	Moderate	Low
High	3	1	2	0
Moderate	15	1	14	0
Low	4	1	3	0

MCAT: Mathematics Communication Ability Test

The table shows three students with high category, 15 students with moderate category, and four students with the low category.

After conducting the learning, a *post-test* was given int he last meeting for both groups. It had a purpose to find out the learning effectiveness qualitatively and quantitatively. In this research, the applied instrument to measure the students' mathematics communication ability were an essay form test. The effectiveness of the learning, based on MCST result analysis, was done by using indicators of mathematics communication ability.

Six hypothesis tests examined the effectiveness of mathematics communication ability and mathematical habits of mind through numbered head together and written corrective feedback. They consisted of three tests of mathematics communication ability, such as individual completeness, classical test completeness, and average difference. On the other hand, the other three tests were done for *mathematical habits of mind,* such as individual completeness, classical test completeness, and average difference. Before conducting the tests, the requirement test was conducted on the result of the post-students' mathematics communication ability test. It consisted the normality and homogeneity tests. The effectiveness hypothesis analysis results of the students' mathematics communication ability of the experimental group taught by NHT and WCF had reached the Actual Completeness Threshold. Thus, it could be concluded that during this mathematics learning, the students taught by *Numbered Heads Together* with *Written Corrective Feedback* reached the classical completeness with a percentage of 75%. The average difference test showed that the students' mathematics communication ability average taught by *Numbered Head Together* with *Written Corrective Feedback* was higher than those taught by *Discovery Learning.*

The effectiveness hypothesis analysis results of *mathematical habits of mind* questionnaire, the ordinal data were transformed into interval data with the assistance of *Microsoft Excel.* Here are the effectiveness test results: the average completeness test by using *one-sample t-test* assisted by *software* SPSS 23 obtained $t_{hitung} = 20{,}769$ and $t_{tabel} = 1{,}721$. Because it is $t_{hitung} > t_{tabel}$ then H_0 was denied. Thus, the averages of *mathematical habits of mind* the experimental group taught by NHT and WCF had reached the Actual Completeness Threshold. Dealing with the classical completeness test, based on z-test, the obtained scores were $z_{hitung} = 7{,}386$ and $z_{tabel} = 1{,}64$ because it was $z_{hitung} > z_{tabel}$, then H_0 was denied. Thus, it could be concluded that during this mathematics learning, the students taught by *Numbered Heads Together* with *Written Corrective Feedback* reached the classical completeness with a percentage of 75%. The average

of the difference test by using independent. *Sample t-test* assisted by *software* SPSS 23 obtained $t_{hitung} = 2{,}051$ and $t_{tabel} = 1{,}721$. Because it is $t_{hitung} > t_{tabel}$ then H_0 was denied. Thus, the average of *mathematical habits of mind* of the students through *Numbered Head Together* with *Written Corrective Feedback* is higher than those taught by *Discovery Learning* model.

Based on the result and the analysis, it could be concluded that (1) the average of the students' mathematics communication ability and the minimum mastery standard of *mathematical habits of mind* of the experimental group students obtained 75 and 41. These scores surpassed the minimum actual completeness criteria obtained from initial MCST calculation, 60. Thus, they were only used as consideration. (2) the learning of an experimental group, taught by *Numbered Head Together* with *Written Corrective Feedback,* could facilitate the students to surpass the actual minimum standard classically with a percentage of 75%. It is in line with the previous studies that found the *Numbered Head Together* (NHT) model in learning and feedback could improve mathematics learning outcome and allowed students to reach learning completeness (Wijawati, 2013; Marfuah, Mardiyana, & Kusmayadi, 2014; Solekhah, dan Murdiana, 2015; Sulfiani, 2016; Mulyana, Hanifah, Jayadinata, 2016; Muliyati, Muchtar, Hala, Jumadi, 2017; Marasiwi, 2017; Pratiwi, 2018). A study by Mulyono and Asih (2013) also found that NHT cooperative learning could motivate and improve the students' achievements. (3) the averages of mathematics communication ability and *mathematical habits of mind* for the experimental group were better than the control group students. It was in line with the previous studies showing an experimental group taught by *Numbered Head Together* was better than the control group taught by direct learning (Lagur, Makur, & Ramda, 2018). The mathematics learning outcomes of the students taught by *Numbered Head Together* were better than those taught conventionally (SY, Corebima, Susilo, 2016).

A qualitative study was done to find out the description of mathematics communication ability in various Mathematical Habits of Mind levels. The subjects consisted of 22 students from VII A class of 4 Public JHS Semarang. They were categorized into three categories: high, moderate, and low categories. The MHoM questionnaire results showed three students with high category, 15 students with moderate category, and four students with a low category.

The descriptions of mathematics communication ability analysis based on various MHoM levels of the research subject selections are:

Table 4. the Research Subjects

Code	Scores of the student questionnaire	The Students' MHoM Criteria	Skor TKKM
A7	69	High	Moderate (82)
A18	68	High	High (95)
A06	51	Moderate	Moderate (80)
A11	60	Moderate	High (95)
A14	31	Low	Moderate (83)
A17	34	Low	High (95)

From the table, the A7 and A18 subjects had high criteria MHoM. A06 and A11 subjects had moderate criteria for MHoM. The A14 and A17 subjects had low MHoM criteria.

The discussion of mathematics communication ability analysis in various levels of *mathematical habits of mind* is used to answer the second problem - how the descriptions of written mathematics communication ability and spoken mathematics communication ability are. The students were given the final mathematics communication ability test. It was then analyzed by considering the mathematics communication ability indicators.

The subjects had improvements based on the initial and final MCST results. It showed that through *Numbered Head Together* (NHT) with *Written Corrective Feedback* (WCF), the subjects had significant mathematics communication ability improvement. Learning by NHT with WCF significantly played important roles in the students' learning process. By having this learning, the students were more active to share their mathematics ideas on commentary column of *Google Classroom.* By having *written corrective feedback* of the teacher on the initial MCST

and having a question, students were assisted in figuring out their mistakes during their works. The subjects knew the mistakes so they could immediately respond and reflected the feedback. It is in line with Syukria et al*,* 2013. They found that high written mathematics communication ability met the aspects of *habits of mind.* They were such as feedback sensitivity and action effectiveness evaluation. It showed that communication ability was strongly correlated to *mathematical habits of mind* that were suggested to have feedback.

In this research, the students' mathematics communication ability were analyzed in various levels of *mathematical habits of mind*. They were grouped into high, moderate, and low by interviewing the research subjects. The summary dealing with the results of the students' mathematics communication ability on the third level of *mathematical habits of mind* is shown in this description.

High Mathematical Habits of Mind

High Mathematics Communication Ability

A18 subject had high written communication ability with high *mathematical habits of mind.* The final mathematics communication test result of A18 showed that he could answer questions number 1, 2, 3, and 4 correctly from five questions. The question numbered five had not been completely answered. Based on the answer analysis, the subject used appropriate formula and procedure, but he was lack of rounding numbers. Thus, the subject did not accurately measure to draw pie-char field. The subject could understand the questions and problems accurately. However, the subject was the lack of rounding numbers dealing with percentage calculation and influence calculation of pie chart field drawing. Even when it was something trivial, but drawing a pie-chart field could be less accurate. The analysis results showed that A18 subjects had met the indicators of 1, 2, 3, and 4. Based on Table 2.2, the subject had reached a level 4 written mathematics communication ability.

Moderate Mathematics Communication Ability

These high criteria MHoM had mathematics communication ability of the students as described by final MCST and questionnaire. A7 subjects had moderate mathematics communication ability with a score of MHoM, 68, categorized high. It is in line with Syukria et al (2013). They found that high creativity students might also be included to have moderate ability. It showed that the students' creativities could be owned by other individuals with moderate or average ability. Based on the analysis of the subject's answer, the subject had used the correct answer and procedure. However, the subject was lack of rounding numbers of the circle. The subject did not write the degree calculation stage, so the subject was less accurately drawing the table. The analysis results showed that A7 subjects had met the indicators of 1, 3, and 4. Based on Table 2.2, the subject had reached a level 3 mathematics communication ability.

From the explanation, it indicated that high MHoM was found with high and moderate mathematics communication ability subjects. The subjects with high written mathematics communication ability reached level 4. On the other hand, the moderate written mathematics communication ability subjects only reached level 3. It could be seen that there were no low written mathematics communication ability subjects.

Moderate Mathematical Habits of Mind

High Mathematics Communication Abiliyu

These moderate criteria MHoM had mathematics communication ability of the students as described by final MCST and questionnaire. The final mathematics communication test result of A11 showed that he could answer questions number 1, 2, 3, and 5 correctly from five questions. The question numbered four had not been completely answered. From the analysis results, the subject had not been able to use mathematics notation in writing what had been known and asked. The subjects could apply the formula and procedure correctly. The subject could understand the questions and problems accurately. The analysis results showed that A11 subjects had met the indicators of 1, 3, and 4. Based on Table 2.2, the subject had reached a level 4 mathematics communication ability.

Moderate Mathematics Communication Ability

These moderate criteria MHoM had mathematics communication ability of the students as described by final MCST and questionnaire. The final mathematics communication test result of A6 showed that he could answer questions number 1, 3, and 4 correctly from five questions. The question numbered two had not been completely answered. Based on the

answer analysis, the subject could identify the information and problems of the questions. The subject could draw the table with seven columns and two rows. However, he was a lack in the percentage table. He could understand the question and given problems accurately but could not write the conclusion. The analysis results showed that A6 subjects had met the indicators of 1 and 4. Based on Table 2.2, the subject had reached a level 3 mathematics communication ability.

From the explanation, it indicated that high MHoM was found with high and moderate mathematics communication ability subjects. The subjects with high written mathematics communication ability reached level 4. On the other hand, the subjects with moderate written mathematics communication ability reached level 3. It could be seen there were not low written mathematics communication ability subjects.

Low *Mathematical Habits of Mind*

High Mathematics Communication Ability

These low criteria MHoM had mathematics communication ability of the students as described by final MCST and questionnaire. Syukria et al (2013) found that not all high ability subjects would meet all indicators of mathematics communication ability. In their study, they found that the subjects were categorized as a moderate category. The subjects had excellent activity scores, but they did not perform actively.

The final mathematics communication test result of A17 showed that he could answer questions number 1, 3, 4, and 5 correctly from five questions. The question numbered three had not been completely answered. The subject could understand the questions and problems accurately. The figure of vertical char had been correctly drawn. The subjects could apply the formula and procedure correctly. The analysis results showed that A17 subjects had met the indicators of 1, 3, and 4. Based on Table 2.2, the subject had reached a level 4 mathematics communication ability.

Moderate Mathematics Communication Ability

These low criteria MHoM had mathematics communication ability of the students as described by final MCST and questionnaire.

The final mathematics communication test result of A14 showed that he could answer questions number 1, 2, and 4 from five questions, although still incomplete. The question numbered three had not been completely answered. The subject could understand the questions and problems accurately. The subject could use mathematics symbol and write the information from the question accurately. The subject could apply the formula and procedure correctly. The student could explain the highest benefits and the same benefits for two months consecutively. However, the subject missed the diagram figure that was the required stage. The analysis results showed that A14 subjects had met the indicators of 1, 2, and 4. Based on Table 2.2, the subject had reached a level 3 mathematics communication ability.

From the explanation, it indicated that low MHoM was found with high and moderate mathematics communication ability subjects. The subjects with high written mathematics communication ability reached level 4. On the other hand, the subjects with moderate written mathematics communication ability reached level 3. It could be seen there were not low written mathematics communication ability subjects.

The descriptions of the correlation between written and spoken mathematics communication ability students.

Students High Written Mathematics Communication Ability.

Students High Spoken Mathematics Communication Ability.

The mathematics communication ability of the students are described based on final MCST. A18 subject had an initially written mathematics ability with a score of 81. The result of the final written mathematics ability test of A18 was 95.

. The analysis results showed that A18 subjects had met the indicators of 1, 3, and 4. Based on Table 2.2, the subject had reached a level 4 written mathematics communication ability. The subject could meet the spoken mathematics communication ability and the spoken mathematics communication ability indicators of 1, 2, 3, and 5. However, the second indicator, during the interview, the subject could not write the question numbered 5 in a written manner. Dealing with the fifth indicator, the student could not explain it in a written manner. It was seen that the student did not explain the conclusion to question number 5. The subject had a mathematics communication ability reaching level 4. The student had the intention to improve his mistake and ask the

question directly during the interview. It was seen on indicators 2 and 5. The subject could explain orally, but he could not do it in a written manner.

Students with Moderate Spoken Mathematics Communication Ability.

A11 subject had an initially written mathematics ability with a score of 72. The result of the final written mathematics ability test of A181was 95, categorized high. The analysis results showed that A11 subjects had met the indicators of 1, 3, and 4. Based on Table 2.2, the subject had reached a level 4 mathematics communication ability.

The subject could meet the spoken mathematics communication ability on indicators 1, 3, and 4. However, dealing with indicator 4, the subject could not apply accurate formula and procedure in mathematics symbolic language. Dealing with the second indicator, the student could explain what was known by using mathematics notation. Then, dealing with the fifth indicator, the subject could communicate the answer and the problem. The subject had a spoken mathematics communication ability reaching level 3. The student had the intention to improve his mistake and ask the question directly during the interview. Based on indicators 2, 4, and 5, the student had not been able to explain orally in mathematics notation language. Thus, the indicators of 4 and 5 were not perfect. The subject could explain the examples mathematically, knew how to solve mathematics problem, and asked. The subject could also understand the mathematics problems and answer the questions, although they doubted. Several things could be found through clear mathematics questions. Thus, from the notation and formula or the stages to work on the questions, they could have better understanding although it was not completely so. Thus, it could be concluded that the subject could provide question and answer as he could. The subject could also ask by using the given opportunities.

Students with Low Spoken Mathematics Communication Ability

A17 subject had an initially written mathematics ability with a score of 83. The result of the final written mathematics ability test of A17 was 95, categorized high. The analysis results showed that A17 subjects had met the indicators of 1, 3, and 4. Based on Table 2.2, the subject had reached a level 4 mathematics communication ability.

The subject could meet the spoken mathematics communication ability indicators on number 1 and 3. Based on the first indicator, the subject could explain what had been known and what was asked, although the subject still had weaknesses. Based on the third indicator, the subject could draw the bar chart, but he still had mistakes on the remarks. Dealing with the fourth indicator, the student could state and solve the question in a written manner. However, he could not state it orally. It was found on question number 3 where the student was asked to explain the resource of the benefit, 2 million, on the second month. The subject had a spoken mathematics communication ability reaching level 2. During the interview, the student was shy and less active to answer the questions.

Moreover, he also was not focused on during the interview. Dealing with the fourth indicator, the student could explain in a written manner, although he could not do it orally. The student was still shy to ask or to answer, but he knew the stages to solve the problems well. However, he could do it in a written manner instead of orally. Thus, the subject was eager to solve difficult mathematics question, but he was not active and was shy to express it orally.

From the explanation, high written MCST was with high spoken MCST, moderate spoken MCST, and low spoken MCST. The subject had high spoken MCST at level 4, moderate spoken MCST at level 3, and low spoken MCST at level 2. It could be seen there were not low written mathematics communication ability subjects.

Students with Moderate Written Mathematics Communication Ability

Students High Spoken Mathematics Communication Ability

A7 subject had an initially written mathematics ability with a score of 66. The result of the final written mathematics ability test of A7 was 82, categorized moderate. The analysis results showed that the A7 subject had met the indicators of 1.3, 4, and 5. Based on Table 2.2, the subject had reached a level 3 mathematics communication ability.

The subject could meet the spoken mathematics communication ability and the spoken mathematics communication ability indicators of 1, 2, 3, and 5. However, the second indicator, during the interview, the subject could explain orally. However, the subject doubted. Unfortunately, the

subject could not write the question number 1 and indicator 5. The student could explain orally, but he could not write it. It was seen that the student did not explain the conclusion of question number 1. The subject had a spoken mathematics communication ability reaching level 4. The subject had the intention to improve and could answer the questions, although there were some of them incorrect. The student also could directly improve the mistakes during the interview. Based on the indicators of 2 and 5, the subject could orally express, but he could not do it in a written manner. The subject could answer the questions bravely and mentioned the information. He was confident to mention the mathematics examples. Thus, many things could be elicited from clear mathematics statements.

Students with Moderate Spoken Mathematics Communication Ability

A6 subject had an initially written mathematics ability with a score of 58. The result of the final written mathematics ability test of A6 was 80, categorized moderate. The analysis results showed that A6 subject had met the indicators of 3, 4, and 5. Based on Table 2.2, the subject had reached a level 3 mathematics communication ability.

The subject could meet the spoken mathematics communication ability indicators: 1, 3, and 4. The fourth indicator dealt with stating and evaluating daily events. Unfortunately, the subject could not explain them in the language of mathematical symbols. Indicator 5 could be seen when the students could state orally, but he could not do it in a written manner. The student could explain the conclusion of question numbered 2. The subject had a spoken mathematics communication ability reaching level 3. Dealing with the fourth indicator, the student could explain orally. Unfortunately, he could not express it into mathematics notation language. Thus, the indicators of 4 and 5 were not perfect. The subject could also find out the problem-solving stages of mathematics and understand the mathematics questions and answers, although they doubted. Several things could be found through clear mathematics questions. Thus, from the notation and formula or the stages to work on the questions, they could have better understanding although it was not completely so especially dealing with mathematics language or symbols. Thus, it could be concluded that the subject was an individual that answered the question as he could.

Students with Low Spoken Mathematics Communication Ability

A14 subject had an initially written mathematics ability with a score of 60. The result of the final written mathematics ability test of A14 was 83, categorized moderate. The analysis results showed that A14 subjects had met the indicators of 1, 2, and 4. Based on Table 2.2, the subject had reached a level 3 mathematics communication ability.

A14 subject could meet the spoken mathematics communication ability indicators, 1 and 4. Dealing with the fourth indicator, the student could state and solve the questions. He also could evaluate, but he could not express it orally. It was found on question number 3 where the student was asked to explain how could in the fifth month, the benefit was 3.5 million. The subject had a spoken mathematics communication ability reaching level 1. The student was afraid of making an incorrect answer. It could be seen in the fourth indicator that he could explain in a written manner, but he could not express it in mathematics notion language. Thus, it made the fourth and fifth indicators not perfect. He also could not state orally without having eager to improve. Thus, it could be concluded that the subject was less active and did not focus on answering the questions orally.

From the explanation, high written MCST was with high spoken MCST, moderate spoken MCST, and low spoken MCST. The subject had high spoken MCST at level 4, moderate spoken MCST at level 3, and low spoken MCST at level 1. It could be seen there were not low written mathematics communication ability subjects.

From this research, it could be known that high MHoM students would not always have high mathematics communication ability. Secondly, high written communication ability would not result in high spoken communication ability.

CONCLUSION

From the analysis, it is known that the students' mathematics communication ability descriptions based on the levels of *Mathematical Habits of Mind* were varied. It indicated that *Mathematical Habits of Mind* did not determine mathematics

communications ability in an absolute and patternless manner. Secondly, the descriptions of written and spoken mathematics communication ability had various results. It meant written mathematics communication ability did not correlate to spoken mathematics communication ability. Thus, *Numbered Head Together* with *Written Corrective Feedback* is needed to reach better mathematics communication ability of students.

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