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Mathematics Communication Skill Viewed from *Self-Confidence* in *Auditory Intellectually Repetition* (AIR) Learning Model with RME Approach

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Article Info	Abstrak
	This research aims to describe mathematics communication skill viewed from *self-confidence* of the students in AIR learning model with RME approach. This *mixed method* research used *sequential explanatory*. The population was taken from VII graders of 1 Pamotan, consisting of seven classes. The subjects were grouped based on *self-confidence* consisting of high, moderate, and low categories by using *purposive sampling*. Each subject was interviewed about mathematics communication skill. The findings showed that mathematics communication skill description viewed from *self-confidence* of the students was varied. It was shown from 11 students with high *self-confidence* obtained mathematics communication skill into 8 high and 3 moderate category students. From 14 students with moderate *self-confidence,* there were 4 students with high category, 8 students with moderate category, and 2 students with low category. From seven students with low *self-confidence,* there were 2 students with moderate and 5 students with low categories.

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INTRODUCTION

Education is human resource which should get sustainable attention in the effort to develop educational quality. It is due to education could create qualified and potential human to keep their lives. In formal education, one of school subjects which could create reasoning ways of students is mathematics lesson. The basic skill in mathematics to own by students is classified into five types (Sumarno, 2013). They are: (1) recognizing, understanding and implementing the concept, procedure, principles, and mathematics, (2) solving mathematic problems, (3) reasoning mathematically, (4) connecting mathematically, and (5) communicating mathematically.

One of important part of mathematics skill to have by students is mathematic communication skill. Permata *et al*. (2015) stated that without mathematic communication skill, students would not be able to deliver their mathematic notions to other people. Communication could be done both orally and in written. According to NCTM (in Purba *et al,* 2018), mathematics communication is ways to share ideas and classify the understanding. Through communication, students could deliver their ideas, revise, discuss, and reform. It is consistent with Vygotsky theory in which learning by group discussing could foster students' abilities in communicating and expressing ideas or notions to their peers ot teachers. Mathematics communication skill in Indonesia, especially in junior high school students, is still low. It is in line with Putra (2015) that the lowest mathematics skills of Indonesian learners were mostly found in mathematics communication skill. Rohaerti and Purniati (in Sundayana *et al,* 2017) pointed out that mathematics communication skill of junior high school was still low. Most of the students had difficulties in translating daily life question to mathematics model. It caused them less active in learning process.

Besides cognitive aspect to support students' learning success, there is a need of affective aspect. It is *self-confidence.* Low *self-confidence* causes students to have low ability. It is due to lack of *self-confidence* owned by students could lead to doubt and less maximum solution promoted on a question. It is in line with Anggraini et al. (2015) that students' doubts in determining mathematics plan indicated that the students were not confident toward their skills. Even when a discussion was conducted, students seemed less frequent to express their ideas. *Self-confidence* could be developed through social interaction. Thus, students were asked to participate actively in exploring and determining new concepts for their own through group discussion. *Self-confidence* could be developed by commencing rational and realistic learning in the class. It is in line with PMR (Fitriani, 2015).

Low mathematics communication skill deals with *self-confidence.* Thus, there is a need to have learning strategy alternative to develop mathematics communication skill and improve learning outcomes. Utami *et al*. (2015) stated that effort to improve mathematics communication skill could be done by involving learning to be active in learning. The mathematics material taught for seventh graders is rectangular. The learning process in the material requires students to solve problems and communicate their ideas or notions. Dealing with it, teacher could use cooperative learning model. One of them is *Auditory Intellectually Repetition* (AIR). AIR is assumed to be suitable in improving mathematics. communication skill of the students. It is strengthened by Mustika and Kinanti (2018) stating that AIR learning model influences mathematics communication skill of students. AIR learning model in this research was collaborated by RME approach. RME aims to facilitate students in learning because it focuses on actual life problem solving. Laurens et al (2018) states that students taught by RME would be more more achiever so it is important for teacher to empower students' intellectual abilities through RME to make meaningful and contextual learning.

The problem formulations of this research are: (1) How AIR learning model quality with RME approach toward mathematics communication of the students are; (2) how mathematics communication skill of the students viewed from *self-confidence* of the students in AIR learning model with RME approach are.

METHOD

This *mixed method* research with *sequential explanatory* implements first stage to collect and analyze data qualitatively and quantitatively (Cresswell, 2014). This quantitative methodology research played as primary methodology. Meanwhile, the qualitative methodology played as secondary method. The quantitative methodology was used to obtained discrete and associative data. Qualitative methodology was used to prove, comprehend, broaden, and weaken the quantitative data obtained in the first process (Sugiyono, 2017).

The population of this research was taken from VII graders of SMP N 1 Pamotan in academic year 2018/2019. There were 32 subjects as experimental group taught by AIR learning model with RME approach and 32 students as control group taught by scientific learning.

The data source of this research was obtained from mathematics communication skill test result (MCST), *self-confidence* questionnaire results, mathematics communication skill interview result, teacher activity observation sheet during learning process and students' responses collected by the researcher. The quantitative data was obtained from mathematics communication skill test result (MCST) of the students. The qualitative data was obtained from MCST answer sheet, *self-confidence* questionnaire, mathematics communication skill interview result sheet. The quantitative data was done by normality, homogeneity, variance similarity, validity of average accomplishment, classical accomplishment, variance comparison, and proportional comparison tests. The qualitative data analysis was done by using the collection of validity, reduction, presentation, and conclusion of the data.

FINDINGS AND DISCUSSION

Quantitative research aspect was done to analyze effectiveness of the learning by using AIR with RME approach. The plan of the research was done through validity of learning instruments. Based on the judgment of the learning instruments by experts, it was obtained excellent category average score. Here is the recapitulation of the validation results of the learning and research instruments in Table 1.

Table 1. Learning and Research Instrument Validation Results.

Research and Learning Instruments Research	Ave	Criteria
Syllabus	4.3	Very Excellent
Lesson Plan	4.1	Excellent
Worksheet	4,3	Very Excellent
MCST Questions	4.3	Very Excellent
Observation of the Implementation Learning	4.1	Excellent
Self-Confidence Questionnaire	4.6	Very Excellent
Interview Guideline	4.3	Very Excellent
Students' Responses	4.2	Excellent

The test of mathematics communication of the seventh graders was done before the research. It was used to find out minimum passing grade criteria of the students and to take the samples based on *cluster random sampling*. The initial test was done by sharing 6 mathematics communication skill questions and the used materials For initial skill test as requirement were lines and angles. Based on the initial test of mathematics communication skill of the students, it was obtained: (1) average of the students' mathematics communication skill ($\bar{x}$) was 60 with standard of deviation (*s*) 10,2. Therefore the criteria of minimum passing grade of this research were $\bar{x} + 14 = 66$; (2) the Sig scores of normally and homogeneity are 0,619 > 0,05 and 0,092 > 0.05. Thus, it could be concluded that the initial data were normally and homogeneously distributed. Then, the sample of class was taken randomly. It was obtained VII A as control group and VII B as control group. After being conducted variance similarity test of initial skill for both groups, it was obtained Sig 0,79 > 0,05. It showed that the initial

skill average of both groups' mathematics communication skills were not significantly different.

After conducting the research and analyzing all research results, it was obtained that (1) based on the calculation with average accomplishment test, it was obtained $t_{count}=7,66 >t_{table}= 1,69$ thus H_0 was denied. It meant the average skill of experimental group was 76, higher than the minimum passing grade criterion, 66; (2) based on the calculation by classical accomplishment, it was obtained $z_{count}=2,09 > z_{table}= 1,64$ thus H_0 was denied. It meant that experimental group's mathematics communication accomplished the minimum classical accomplishment, higher than 75%; (3) based on comparison variance test, it was obtained that $t_{count}= 1,81 > t_{table}= 1,67$ thus H_0 was denied. It meant the experimental group's mathematics communication skill was better than contol group. (4) based on the calculation by proportional comparison, it was obtained $z_{count}= 2,65 > z_{table}= 1,64$, thus H_0 was denied. It meant the experimental mathematics communication skill was better than the proportion of control group's skill. It could be concluded that AIR learning model with RME was effective.

Then, qualitative analysis was done concerning with the students' mathematics communication skills viewed from *self-confidence.* 32 subjects from VII graders of SMP N 1 Pamotan were categorized into high, moderate, and low *self-confidence.* The results obtained descriptions of the skill viewed from *self-confidence* were varied. It was shown from 11 students with high *self-confidence* obtained mathematics communication skill into 8 high and 3 moderate category students. From 14 students with moderate *self-confidence,* there were 4 students with high category, 8 students with moderate category, and 2 students with low category. From seven students with low *self-confidence,* there were 2 students with moderate and 5 students with low categories.

The mathematics communication skill viewed from *self-confidence* showed that high *self-confidence* students could reach high and moderate mathematics communication skills. Students with moderate *self-confidence* could reach high, moderate, and low mathematics communication skills.

Students with low *self-confidence* could reach moderate and low communication skills. Based on the explanation, it showed AIR model and RME given to the students could stimulate them to be active in learning. Other things dealing with low *self-confidence* of the subjects were they remained doubt and were not maximum in solving question problem of mathematics communication. Thus, it caused the subjects could not reach high mathematics communication skill. It could be seen from the indicators of the questionnaire. The subjects did not have confidence on their own skills. The subjects needed guidance and motivation to make them confident which could lead to their problems in completing mathematics problems.

Wainia *et al*. (In Nufus *et al,* 2018) stated that mathematics learning required students to have high confidence to make them motivated and enthusiastic in learning. Thus, the final accomplishment of learning mathematics could be optimal. Another study by Tresnawati *et al.* (2017) stated that students with confidence would be braver in solving questions and having ideas in solving them. Pohkonen *et al.* (In Purwasih, 2015) stated that excellent *self-confidence* of the students could make them succeed in learning mathematics. It is consistent to Yates (in Nurkholifah *et al,* 2018), arguing that *self-confidence* is important for students to succeed in learning mathematics.

Other concerning factor to low *self-confidence* was stated by Swallow (in Rahyuningdyah, 2016). He stated that low *self-confidence* was caused by less communication or talk to other people, less participation in every thing, avoidance to speak, and being angry to other people. Meanwhile, Ambarwati *et al.* (2015) stated that mathematics communication skill influenced 41.5% while the remaining 58% was influenced by other factors, such as students' attitudes in learning, ways of the students' learning, quotient or intelligence owned by students, motivation of learning, learning concentration, learning skill in processing learning materials, and etc.

CONCLUSION

Based on the analysis result and discussion, it was obtained description of the students'

mathematics communication skills viewed from *self-confidence* to have various results in solving mathematics communication problems. It meant air learning model with rme approach was qualified and influential to the students' mathematics communication skills. Therefore, qualified learning should focus on learning activity.

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