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Efforts to Improve The Ability of Self Efficacy Students with The AIR Learning Model

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abstract

EFFORTS TO IMPROVE THE ABILITY OF SELF EFFICACY STUDENTS WITH THE AIR LEARNING MODEL. The process of observation and interview with one of the teachers of SMP Islamiyah Weru is the background of this research by producing information that found difficulties and self-efficacy of students in solving some of the problems given by the teacher. This study aims to improve the ability of self efficacy in students. Quantitative method, the type of research uses quasi experiment and the design used is nonequivalent control group. Application of the Auditory learning model, Intellectually, Repetition (AIR) contributes to improving the ability of self efficacy with the results obtained namely the difference in the increase in self efficacy in students whose learning uses the AIR learning model with Expository learning models with the average N-Gain self-efficacy of classroom students Experiment is higher than the control class so it can be concluded that the increase in students' self-efficacy in the experimental class is better than in the control class.

Keywords:

AIR, self efficacy, ability, learning model



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INTRODUCTION

National Council of Teacher Mathematics (Meika & Sujana, 2017) provide a standard that in order to prepare the 21st century, today's students must equip themselves with problem solving abilities, ability to communicate, and with the ability to think mathematically and mathematical inclinations. It is also stated that students should be given challenging problems that can stimulate the students to develop diverse ways and think creatively to resolve those problems.

Mathematics is one of the subjects taught in all levels of education, both primary School level, secondary and higher education. According to (Sumliyah, 2019) Mathematics is the science of constructing a mindset that is logical, creative and innovative, as well as familiarize in problem solving, so in the process of the formation of its ability requires maximum effort. Learning math is very important in addition to useful to analyze and simplify a variety of problems can also form the character of students to think critical, creative, systematic and logical.

TIMSS (Trend In International Mathematics and science study) is an international study which aims to measure the ability of students in mathematics and science. Held once every 4 years. The results of the TIMSS 2015 coordinated by the IEA (The International Association for the Evaluation of Education Achievement) states that the ability in mathematics Indonesia ranked in position 45 of the 50 countries with 397 points. In general, students in Indonesia is still weak in all aspects of content and cognitive, both for mathematics and Science (Inayah.S., 2018) It represents that the ability of creative thinking of

students and self efficacy of students in Indonesia is still low).

The process of learning mathematics at school sometimes students often face difficulties in every completed math problem that is complicated or problems that are not routine. Because of it's ability self efficacy very necessary self efficacy will be able to solve mathematical problems that are difficult in various ways. Based on some research results, it is also in line with that dictated by the (Somawati, 2018) in his research suggested that the higher efficacy self-learners, it is increasingly easy to complete the math problems and problems in everyday life. This is in line with the mentioned by (Widmer, Duerden, & Taniguchi, 2014) "Self-efficacy involves individuals beliefs about their own ability to succesfullyengag in a task in order to obtain a desire outcome. Self-efficacy is important because individuals with high self-efficacy for a task tend to try harder at the task and experience more positive emotion relations to the task".

This is reinforced by (Tjiong, 2014) stated that the more confident students will be its ability, the better the decision making ability that they have. According to (Kim, 2006) describes the efficacy academic self is very important for the student to control the motivation to achieve the expectations of the academic. This is reinforced by (Lestari, K.E. & Yudhanegara, 2017) that Self-efficacy is as an attitude to assess or consider your own ability in completing a specific task.

Based on the results of observation and interviews with one of mathematics teacher in SMP Islamiyah Weru used conventional learning models. At the time the learning process takes place not a few

students who are less enthusiastic about the material presented by the teacher. As a result, many students who find difficulties in completion of some of the problems given by the teacher. Ability self efficacy is also still low, seen from the students who can only solve the problems of mathematics with the one way only is given by the teacher. So when given another problem students could not solve these problems because of lack of self-confidence in students and the ability of the students creativity to find a solution other answers.

One way to overcome the above problems is that changes are needed in mathematics learning taught by mathematics teachers. The characteristics of abstract mathematics requires a teacher when a teacher was delivering the material in class able to be a bridge to students by applying methods or models of learning mathematics that is appropriate so that it can develop and improve the ability of self efficacy in students.

Students in schools are required to be able to complete all math lessons well as a reflection and evaluation of students' mastery of the material that has been taught and be able to master all the material taught in order to achieve maximum value. According to Sunaryo (2017) self-efficacy is a belief that must be possessed by students in order to succeed in the learning process and solve problems.

Each individual's mind towards self efficacy determines how much effort will be expended and how long the individual will persist in the face of obstacles or unpleasant experiences. Students with low efficacy in doing certain tasks will tend to avoid those assignments that are

considered difficult and unable to be completed. Conversely students who have high self-efficacy will continue to strive to complete the task. When the researchers made observations at Weru Plered Islamic Islamiyah Middle School, the researchers obtained results of UN scores that were still low in mathematics. Based on these results it is concluded that the average value of UN mathematics subjects in this school is 36.80%, in this case it does not rule out the possibility that students in this school's ability to think creatively and self-efficacy is still low. Then the researchers also interviewed VIII grade junior high school students, there were still many students who did not like mathematics, most of them still had difficulty in solving mathematical problems, most of them complained when given problems that differed from the mathematics teacher's example. . Most students here are still unsure of their ability to solve math problems so most of them are reluctant to solve problems that they think are difficult they prefer to avoid and wait for classmates who they think are smart to solve the problem.

Currently, many models of new learning used by educators. Model-the model is expected to change the learning environment of students, a variation where students learn, work and interact in small groups so that students can cooperate with each other, help each other, discuss in understanding the lesson and tasks of the group. One of the models that will be used by the researchers is a model of learning Auditory, Intellectually, Repetition (of AIR). AIR models this will hopefully make students become more active because in the model the AIR is divided into three stages, namely the stage of Auditory, Intellectually, Repetition. The first stage is the stage of auditory i.e. using the sense of hearing to

learn with emphasis on the senses of hearing students because it is not possible that the information conveyed orally by the teacher can be well accepted by students if it does not involve the sense of his ears to hear. The second is the stage of intellectually that phase of learning to think to solve the problem by giving birth to new ideas. The third stage is the repetition that is the stage of repetition with the goal to deepen and broaden the understanding of students who need to be trained through the test and giving the quiz.

Explain that the Selection of methods of learning especially in the learning of mathematics should relate to the benefits of the importance of mathematics in everyday life (Anike, Anike & Handoko, 2018). This Model of learning centered on the students so that the students here are really involved actively in the learning process. The involvement of students actively in the learning process is expected to encourage students to develop all its potential in accordance with the capabilities possessed by each student so that classroom activity can spur on creative thinking ability and self efficacy students. As corroborated by (Alan & Afriansyah, 2017)states that AIR is a model of effective learning. The advantages of learning AIR according to (Alan & Afriansyah, 2017)that train auditory and courage students to express opinions (Auditory); (2) train students to solve problems creatively (Intellectually); and (3) train the students recall of the material that has been studied (Repetition).

LITERATURE REVIEW

a. Self Efficay

Efficacy holds a very important role in everyday life, someone will be able to use self potential optimally if the efficacy of self-support. One of the aspects of life that are affected by the efficacy of the self is an achievement. This is similar to that described by (Widmer et al., 2014)“Self-efficacy involves individuals beliefs about their own ability to succesfullyengag in a task in order to obtain a desire outcome. Self-efficacy is important because individuals with high self-efficacy for a task tend to try harder at the task and experience more positive emotion relations to the task”.

Based on the above description, it can be concluded that self-efficacy is a belief that students need to have in order to succeed in solving various problems in any learning process. If the self efficacy of the students is low then the student will not want to resolve the problem and leads to avoid it, on the contrary students who have self efficacy high the student will be able to resolve these problems although it is a difficult problem. This is in line with the opinion Efendi (2013) that determine the level of self efficacy in one's self can be characterized by how large one can solve the problem-a problem that is being faced.

Based on Alwisol's social cognitive theory (Fauziah, S.f, 2019) which states that self efficacy is self-study, whether it can do good or bad actions, right or wrong, can or cannot do something as required.

Bandura (Suseno, 2012) explains that self-efficacy consists of several dimensions. Each has important implications for performance, which can be explained more clearly as follows:

1. Magnitude : That is related to the level of difficulty of a task.

2. Strength of Confidence (Strength) Is the degree of individual ability to his beliefs or expectations.
3. Broad Field of Behavior (Generality) Generality is the extent to which individuals are confident in their abilities in a variety of task situations, ranging from carrying out certain activities or situations to a variety of tasks or situations.

Some of the indicators (dimensions) of self efficacy according to (Sunaryo, 2017) is as follows:

1. Magnitude relates to the level of (level of) difficulty of the task faced by a person. The belief of a person to a task is different.
2. Spread is the feeling of the demonstrated capability of the individual in the context of different tasks.
3. Strength is strength of one's belief with regard to capabilities.

The explanation of each aspect or dimension, according to (Sunaryo, 2017) are as follows:

1. The level of difficulty of the task (magnitude). This aspect has implications on the selection of behavior that will be tried as an individual based on his understanding of the level of difficulty of the task. If the tasks are imposed on the individual are arranged according to level of difficulty, then the difference in self-efficacy individually may be limited to tasks that are simple, medium, or high. The individual will attempt to perform a task that is considered can be implemented and avoid situations

and behaviors that are outside the limits of his abilities,

2. The generality of the (spread). This aspect is related to the scope of behavior where the individual feels sure of his ability. Individuals' beliefs in their ability depends on understanding of her abilities in an activity/situation specific/limited or set of activity/situation that is wide and varied.
3. 3. The power of belief (strength). This aspect is related to the force on the person's confidence in their ability. The hope of a strong and steady individual will be encouraged to be persistent in working to achieve the goal, even though it may not yet have the experience to support. On the contrary the hope of the weak and in doubt of the ability of self will be easily shaken by experiences that do not support.

b. Learning Model Auditory, Intellectually, Repetition (AIR)

Learning Model is a pattern of student interaction with the teacher in the classroom that concerns the strategies, approaches, methods, and learning techniques that are applied in the conduct of teaching and learning activities in class. Model learning there is in general very much, one learning model Auditory Intellectually Repetition (AIR). According to (Huda, 2013) learning model AIR is similar to the Learning Model SAVI (Somatic, Auditory, Visualization, Intellectually), and Learning Visualization, Auditory, Kinesthetic (VAK). While the only difference lies in the Repetition (Reps) which means the Deepening, expansion, and consolidation by way of quizzes and tasks.

Learning Model Auditory, Intellectually, Repetition (AIR) is a learning model that emphasizes three aspects, namely Auditory (learning and hear), Intellectually (learning by thinking), and Repetition (repetition). This is in line with the said by (Astuti, 2018) stated that the learning Model of WATER is a learning model that if applied to the process of learning it will be effective if you pay attention to three things, namely the Auditory (hearing), Intellectually (thinking) and Repetition (repetition). The third aspect is expected to be able to create a lesson that will be able to improve the creative thinking ability and self efficacy students.

1. Auditory

According to (Elinawati, et al, 2018) Auditory means senses the ear is used in learning by means of listening, speaking, presentation, argument, express opinions, and respond to. The researchers concluded that heard is one of the learning activities, because it is not possible the information or material presented orally by the educators can be well accepted by students if it does not involve the sense of his ears to hear.

According to Dave Meier of the mind to auditory more powerful than we realize. Our ears are constantly lifting and storing auditory information even without us knowing learning to auditory is how to learn the standard for the community (Huda, 2013) Furthermore, Wenger confirmed that : “the key to learning lies in the articulation of detail, describe something new for us will sharpen perception and our memory. When we read something new, we have to close our eyes and then describe and say what has been read before” ((Huda, 2013)

Learning styles auditory is learning styles to access all kinds of sounds and words, either created or remembered. Because learners auditory is easy to learn with how to discuss with other people, then educators should do the following things such as : class Discussion or debate with a classmate, ask the learners to the presentation in front of the class, ask the learners to read the text aloud, ask the learners to discuss their ideas verbally, carry out group work

According to Meier there are some ideas to improve the use of auditory in learning, including (Huda, 2013): a) Ask students to pair up, discuss in detail what they learned and how to apply it. b) Ask the students to practice something skills or demonstrate a concept while reciting in detail what they are doing. c) Ask students to make a group and talk time of compiling problem solving. The third idea that started from students will be collected in a few groups and practice together to solve the problem, of course, these three aspects can foster the communication of students in the classroom so that students play an active role in class. Auditory what is meant here. i.e. when we create your own sounds by talking some of the important areas in our brain become active.

2. Intellectually

Intellectually, namely learn to think to solve problems, thinking skills need to be trained through exercises to reason, create, solve problems, construct and apply. According to Meier intellectually not “approach without emotion, rationalistic, academic, and fragmented. The word ‘intellectual’ shows what the learning in their minds internally when they use the relationship of the meaning of intelligence to reflect on an experience

and create relationships, meaning, plan, and the value of the experience. So, intellect is a means to create a meaning, the means used by humans to think, unify ideas, and create a neural network (Huda, 2013). This process is certainly not run by itself, he was assisted by other factors such as mental, physical, emotional, and intuitive. Here are some means to use the mind to transform an experience into knowledge, knowledge into an understanding, and understanding into wisdom.

Meier said that an educator should encourage the students involved in the activity-Intellectual activity, such as the (Huda, 2013): 1) Solve a problem, 2) Analyze the experience, 3) Working on strategic planning, 4) give Birth to creative ideas, 5) Search and filter information, 6) Formulate the question, 7) Creating a mental model, 8) Implementing new ideas in a work, 9) Creating personal meaning and Foresee the implications of an idea.

3. Repetition

Reps means repetitions, in this learning refers to the deepening, expansion, and stabilization of the learners by way of giving him a task or quiz. If the educator describes a unit lesson, he should repeat it on several occasions. The memory of the learners is not always stable. They don't rarely easy to forget, for that educators need to help them by repeating the lesson that is being or has been described.

According to Slamet, the lessons that are repeated will give a response that is clear and not easily forgotten, so that learners can easily solve the problem (Huda, 2013)Replay of this kind can be given regularly, at certain times or for every unit of given or are incidental if considered necessary.

Following the understanding of the Auditory Intellectually Repetition in the above, the steps learning model Auditory Intellectually Repetition according to (Manurung, 2016)are as follows :

1. Students are grouped into several groups which are heterogeneous.
2. Teachers share WORKSHEETS
3. The teacher directs and the member instructions on how to completion of a concept that exists in LKS by means of the exploration of the media of learning (auditory).
4. In pairs students perform in front share ideas demonstrating the media to solve the problem (intellectually).
5. Students work on sheets of problems for the individual by asking questions (intellectually).
6. Group discussion (sharing) talk, collect information, make model, put forward ideas to solve the issues raised (intellectually).
7. The representative of the group appear in front of the class to present the results of the work of the group, the other groups respond to, complement, and approve the agreement (intellllectually).
8. A student representative of the group of friends summed up (intellectually).
9. Activity closure students are given a quiz (repetition).

METHODS

This study uses the method of kuantitaitif, the type of research using quasi experiment and the design used was a nonequivalent control group. The population in this research is all students

class VIII SMP Islamiyah Weru Cirebon District school Year 2019/ 2020, samples taken as many as two classes namely class VIII A as class who are learning using a model AIR and a class VIII B is as class learning in the conventional manner. In this study there is one independent variable namely learning model of AIR and there are two bound variables, namely the ability of self efficacy. Data collection in this study is the use of the test in the form of a description and a questionnaire which is then processed by using SPSS software using Independent-Sample T-Test.

The research was divided into three stages, namely:

a. Preparation Stage

At this stage the researcher prepares the research in the form of a literature review on the application of the Auditory, Intellectually, Repetition (AIR) learning model in order to improve students' creative thinking abilities.

b. Implementation Stage At this stage

It will be done by giving pre-test questions to the experimental class and the control class, followed by carrying out mathematics learning using the Auditory, Intellectually, Repetition (AIR) learning model for the control class and expository learning for the control class. Then given the post-test in the experimental class and control class at the final stage of implementation.

c. Preparation Stage At this stage

The research begins by tabulating research data obtained from the results of the pre-test, post-test, initial questionnaire, final questionnaire, observation, and N-gain.

According to Sugiyono (2018: 148) The research instrument is a tool used to measure the observed natural and social phenomena. Research instruments are tools for collecting and processing data about the variables studied.

Questionnaire (questionnaire) is a data collection technique that is done by giving a set of questions or written statements to respondents to answer (Sugiyono, 2018). The questionnaire made aims to see how students respond, which is related to students' self-efficacy abilities. The questionnaire was distributed before and after the learning process with the AIR model.

Data collection techniques in this study were conducted through a non-test in the form of a questionnaire. The questionnaire was given at the beginning before the learning process activities and at the end after the learning process with the AIR model. Data obtained from the initial questionnaire and the final questionnaire were then processed and interpreted with the aim of knowing the condition of students' self-efficacy with the AIR model and expository.

This study obtained seven types of data, namely pre-test data, initial questionnaire, post-test, final questionnaire, N-Gain test, N-Gain questionnaire, and observation. Pre-test, post-test, and N-Gain test data before the hypothesis test is performed, the data analysis requirements test is done first, namely the normality test and homogeneity test and the two groups difference test based on the mean value. Furthermore, the analysis of the initial questionnaire data, the final questionnaire, the N-Gain questionnaire was carried out by testing the data analysis requirements and testing the

hypothesis after converting ordinal data into intervals with the successive interval method.

Questionnaire made is related to students' confidence in solving mathematical problems. The questionnaire was distributed before and after learning with the AIR model.

After the initial questionnaire average similarity test, the next step is to test the difference in the average final questionnaire. Test the difference in the average final questionnaire can be done using the t-test. T-test is carried out if the analyzed data has normal and homogeneous distribution. If the data analyzed is normally distributed but not homogeneous, then the t-test is used (not assumed), but if the data analyzed is not normally distributed and non-homogeneous, the nonparametric statistical test is used, namely Mann-Whitney-U. The t-test is carried out if both tests of the data analysis requirements are met, then the first step of the test is the difference in the average value of the final questionnaire.

Testing the difference in the average final questionnaire using the Independent samples T test with a significance level, then the decision making criteria is if the significance value is accepted, whereas if the significance value is rejected.

RESULT AND DISCUSSION

Increase Self Efficacy

Self efficacy data obtained through the initial questionnaire, final questionnaire and N-Gain. Data processing was performed using SPSS Version 21 for Windows software. The following is a descriptive statistic of initial

questionnaire, final questionnaire and N-Gain statistics for students' self-efficacy in the following table.

The increase in self efficacy of students can be known from the results of N-gain questionnaire of the experimental class and the control class with calculations using SPSS. Statistical data the results of the test difference in the mean post-test creative thinking skills is presented in Table 1 below:

Tabel 1
Descriptive Statistics Initial questionnaire
and final Questionnaire Self Efficacy

Data	Kelas	N	Mean	Std. Dev
Initial Questionnaire	Eksperimen	33	63,64	3,305
	Kontrol	33	58,76	2,739
InitFinal Questionnaire	Eksperimen	33	80,55	4,388
	Kontrol	33	65,09	3,385

Based on table 1 above, it can be seen that the average questionnaire of the initial self-efficacy of the students of the two classes is not much different before being given treatment or the difference between the experimental class 4.88 is higher than the control class. Furthermore, the lowest initial questionnaire score of the experimental class was 2.00 higher than the control class. Then, the highest initial questionnaire score of the experimental class was 4.00 higher than the control class. However, after the treatment was given, there was a significant change in which the mean score of the final questionnaire of the students' self-efficacy experimental class was 15.45 higher than the control class. Furthermore, the lowest final questionnaire score of the experimental class is 12.00 higher than the control class. Then, the highest final questionnaire score of the experimental class was 16.00 higher than the control class. Based on the results of the final questionnaire, at a glance it can be concluded that the students' self-efficacy

in the experimental class is better than in the control class but it still needs a statistical test.

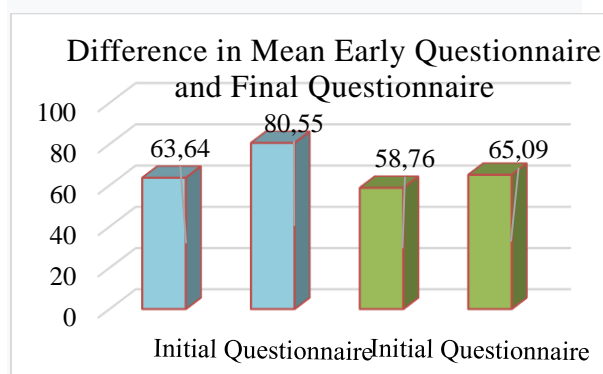


Figure 1 Difference in Mean Early and Final Questionnaire

Based on Figure 1 above, it appears that the initial questionnaire value of the experimental class and the control class are not much different, this shows that the self-efficacy of the initial students of the two classes is relatively the same before the treatment is conducted. However, the final questionnaire value of the experimental class which studied using the AIR model showed better results compared to the control class whose learning was expository. The data above shows that there is an increase in students' self-efficacy scores after learning is implemented.

Improved self-efficacy of experimental class and control class students can be known from the analysis of N-Gain scores. N-Gain score analysis was conducted to determine the increase in self-efficacy of students whose learning uses the AIR model with students whose learning is expository. While the average summary of N-Gain self-efficacy of students in the

experimental class and the control class are presented in the following table.

Table 2

Descriptive Statistics of N-Gain Self Efficacy
In table 4.4 above, it can be seen that the average N-Gain self-efficacy of the experimental class students is 0.317 higher than the control class. Furthermore, the lowest N-Gain of the experimental class was 0.20 higher than the control class. Then, the highest N-gain of the experimental class is 0.37 higher than the control class. At a glance it can be concluded that increasing student self-efficacy in the experimental class is better than in the control class but statistical testing is still needed

CONCLUSION AND IMPLICATION

a. Conclusion

Based on the results of research that has been done, it can be concluded that There are differences in increase in self efficacy of students who are learning using model AIR higher than the self efficacy of students learning by expository.

b. Implication

This research is expected to contribute in the form of a recommendation to teachers to develop creative strategies and innovative that can improve creative thinking ability and self efficacy students. Researchers also hope there are other researchers can continue this study in order to be more perfect education and school performance.

Data	Kelas	N	Mean	Std. Deviation
N-gain	Experiment	33	0,4598	0,13408
	control	33	0,1428	0,11534

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