

The Influence of the AMONG System-based Mathematics Learning Model Towards the Students' Ability in Learning Independence at Elementary School Students

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ABSTRACT. The study aimed whether there was significant effect on the students independent learning ability by using the Amora mathematics learning model based on KI Hadjar Dewantara Among system and by usingconventional learning models. A quantitative approach applied in this study with true experimental research with posttest-Only Control research design. The data test technique is done by presenting the test after treatment and a questionnaire used to know the student responses to the learning outcomes that have been carried out. The research population was class IV which consisted of 3 classes according to 95 people. The sample of class IV /A students who stated that 30 people acted as the experimental class and class IV/B students acted as 30 people who acted as the control class. Based on the results of hypothesis testing using the independent sample t-test, the sig value is obtained. (2 Tailed) namely 0.000. This shows that the sig. (2 Tailed) < 0.05 or less at the 5% real level, then H0 is rejected, which means that student learning outcomes by applying the Among system with a learning Amora model are better than learning outcomes in conventional learning. The results of the questionnaire data analysis, it was obtained that the response of students who had a high level of learning independence, because it was seen from the proportion of 88,5%, which was in very good criteria. Thus, there is an effect of student learning outcomes by applying the Among system with the amora learning model. Primary school student learning outcomes by applying the Among system learning method are better than student learning model. Primary school student learning outcomes by applying the Among system learning method are better than student learning outcomes by applying the Among system learning method are better than student learning methods.

Keywords: Independent learning, Among, Amora.

1. INTRODUCTION

Education has a very important role for students in order to produce superior and competent generations. In realizing this goal, various ways and steps are needed to update learning methods, learning media, and adjust to the needs of students and carry out several series of evaluations continuously, especially in this industrial revolution 4.0. Learning that is currently carried out in schools that have international standards has met good graduate standards, shown from the various learning models that have been implemented by teachers, the expertise of professional teachers, adequate facilities and learning media so that student learning outcomes will increase. however, there are still a number of schools where there are still obstacles in achieving the ultimate goal of learning, especially in terms of learning independence for primary school students. For the most part, the learning that is carried out is still lack of guidance to students and independence through observing so that the lack of opportunities for students to try and find out for themselves coupled

with the lack of adequate facilities, a lack of special attention from both the family, community and school management.

Student Independent of learning is low and become a problem faced by student, especially in SD N 6 Bireuen. The dependence of student learning on a teacher in the learning process affected to unskilled students and disbelieve in their own abilities. In fact, the role of a teacher in independent learning should only be a facilitator. Student who has an independence to learn will also have the ability to think critically and mathematically so they tend to do all math exercises and assignments confidently, optimistically and will work optimally to solve a problem.

The development of children's learners also the problem in the learning process apart from independent learning. The teacher must also pay attention to the development of students according to the age of the student. If a learning process does not focussed on the students development, the students will be bored and frustrated, so it will also have an impact on the teacher as well as contracting boredom and frustration when teaching. Therefore, the development of students is very necessary in every leraning in order to understand the interests of students, child psychology, and problems that occur in the scope of learning [1].

Based on the description above, learning that is relevant to the characteristics which students ready in achieving the lesson is by using the Among system with the Amora learning model. Where the amora learning model is the result of the development of the Ki Hajar Dewantara among system through student garden education.

According [2] the Among Ki Hajar Dewantara system is an appropriate method for education because it is a teaching and education method based on care, sharpening and upbringing (care and dedication based on love) and the Among Education system based on two things, namely: the nature of nature as conditions to revive and achieve progress as quickly as possible and independence as a condition to revive and mobilize the inner and outer strength of the child so that he can live independently. The Among system is often associated with a principle which reads: Tut Wuri Handayani, Ing madya mangun karsa, Ing ngarso sung tuladha.

According to Iriawan [3] explains that the amora mathematics learning model is a mathematics learning model that is derived from the learning principles of the Among Ki Hadjar Dewantara system approach which consists of natural principles and the principle of independence. Thus, based on the principle of independence, it is prioritized that the learning process must be trained independently without dependence on the teacher. Teachers not only master the techniques and learning models but must understand or explore all the potential that exists in students and direct from an early age these potentials to positive things so that students can find their own identity with good self- confidence.

According [4] Amora's learning steps consist of 4 stages, namely: (1) Observe, this stage is the initial stage of learning to strengthen the learning material that has been previously studied as prerequisite material through the learning process which is carried out by conditioning students classically to engaging and / or re-experiencing the didactic situation that is real and close to the life of students related to previously learned learning material as prerequisite material; (2) *Momong* and *Ngemong*, at this stage learning is carried out with each student independently re-performing or repeating the work steps of a scientist through guided inquiry activities in rediscovering knowledge in the form of proven mathematical propositions consisting of facts, concepts, principles, and mathematical procedures. certain; (3) Ngrasake, at this stage is an advanced stage of learning to appreciate the process and results of student learning mathematics in repersonalizing mathematics, learning is carried out with the teacher giving appreciation to students individually in the form of motivational words, positive and constructive praise, appreciation and other forms of individual appreciation; (4) Among, this stage is the final stage of learning to strengthen students' mathematical understanding which is carried out with various of mathematical processes and results repersonalization with other students, then the teacher strengthens the results and processes of student mathematical repersonalization through lecture, demonstration, simulation or other methods.

Amora learning is closely related to the assessment of the ability to learn independence. According to [3] the indicators of independent learning are: 1) learning initiatives; 2) Diagnosing learning needs; 3) set learning targets and objectives; 4) monitor, regulate and control the progress of learning; 5) see adversity as a challenge, 6) utilize and seek relevant sources; 7) selecting and implementing learning strategies; 8) evaluating the learning process and outcomes and 9) having selfconcept (self-concept). The ability to learn independence is needed by paying attention to indicators - indicators that must be achieved in the implementation of learning. Based on the explanation above, the purpose of this study is to compare learning using the Amora learning model to independent learning abilities with conventional learning on Building Space material.

2. METHODS

This research used a quantitative approach. This type of research is true experimental. According [6] True experimental design (real experimental method) is to investigate the possibility of a causal relationship with a design where there is a real treatment group and a control group and compare the results of the treatment with strict control. And according to [4] "This type of true experimental research has two different treatments between the experimental class and the control class. In real research, the effect of treatment is analyzed by different tests, using statistical t-test, for example if there is a significant difference between the experimental group and the control group, then the treatment given has a significant effect [5]. The research design applied in this research is Posttest-Only Control Design. According to Setyanto [4] the research design of the Posttest-Only Control Design is as follows:

TABLE. 1 Research Design

Samples	Treatment	Posttest
Experiment class	Х	01
Control class	-	O2

The population in this study was all students in grade IV SD N 6 Bireuen which consisted of 3 classes. Characteristics of different students and student learning motivation with different levels of both low, medium and high become a guideline so that it becomes an assumption that this school should be used as a research target and given a treatment. The sample taken in this study was purposive sampling (certain considerations). The sample chosen was class IV /A as the experimental class and IV/B as the control class. The data collection technique used is in the form of tests, which are carried out after treatment (treatment) of students to see student success in learning and giving a questionnaire conducted at the end of the lesson aims to obtain a response from students through the distribution of questions on form sheets. According to the data source, data collection is divided into primary sources and secondary sources. Primary sources are data sources that directly provide data to data collectors, and secondary sources are sources that do not directly provide data to data collectors [6]. Instruments in the form of test (exercises) related to the Building space material are given after the implementation of learning in accordance with the steps of the amora learning model and adjustments to the indicators of learning independence. In the experimental class in grade IV students, amounting to 30 people, as well as the instrument given to the conventional class (control class), which amounted to 30 people.

According to [7] the processing of student response questionnaire data in detail through several stages as follows: (a) Checking the completeness of the number of questionnaires and the suitability between the questionnaires that were distributed and the data that was successfully collected again; (b) Selection of a questionnaire that meets the requirements is a questionnaire in which all questions are answered by the respondent in accordance with the predetermined instructions; (c) Scoring.

According to Arikunto [8], the research data obtained from the results of the questionnaire examination are then processed based on predetermined processing techniques. Data processing in this study was carried out in the following steps:

- a. Determine the processed questionnaire, namely the questionnaire that meets the criteria set out in the questionnaire examination;
- b. Determine alternative qualifications for the answer to each item of the questionnaire, namely answers with qualifications strongly agree, given a weight of 4, qualifications agree to be given a weight of 3, qualifications disagree given a weight of 2 and qualifications strongly disagree are given a weight of 1
- c. Carry out questionnaire processing;
- d. Set benchmarks for categories of percentage calculations as a guideline for interpreting data that has been obtained from calculating percentages.

For each positive statement item with the categories strongly agree (SS), Agree (S), disagree (TS), and strongly disagree (STS) each was given a score of 4,3,2,1 respectively; (d) Determination of response criteria based on a range of 80-100% (very good); 60-80% (good); 40-60% (good enough); 20-40% (not very good), 0-20% (very bad) with the following formula:

Information:

$$Px = \frac{Student who respond}{The total number of student who responded} \times 100\%$$

 $P_x = 5$ students who responded

X = very positive, positive, negative, or very negative response.

The response to independent learning by using the system among the learning model Amora based on the responses can use the following formula:



 $\% aktual score = \frac{aktual score}{ideal score} x 100\%$

Information:

1. The actual score is the answer of all respondents to the recommended questionnaire

2. The ideal score is the highest value or all respondents are assumed to choose the answer with the highest score. The table of criteria for the percentage of the response score to the ideal score is presented in the following table:

 TABLE 2. Criteria For The Percentage Of Score Responses

 To The Ideal Score

No	% total score	Criteria
1	20.00 - 36.00	Not very good
2	36.01 - 52.00	Not good
3	52.01 - 68.00	Enough
4	68.01 - 84.00	Good
5	84.02 - 100	Very good

3. RESULTS AND DISCUSSION

A. Results of Data Analysis

Based on the results of the observations that have been made, it can be seen that the experimental class obtains an average value that is higher than the control class. This means that there is an increase in the average result of students' independent learning abilities by implementing the Among system in the Amora learning model in the learning process of Building Space subjects. In addition, the value of variance and standard deviation produced in the control class is higher than in the experimental class, which means that the data obtained in the control class shows the varied values of student learning outcomes. The statistics of the results of the independent learning ability by implementing the Among system and conventional learning results can be seen in Table 3 below:

TABLE 3. Test Result Value Statis
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Statistic	Experiment Class	Control Class
n	30	30
\overline{x}	85,7667	62,0333
S^2	31,9092	26,51609
S	5,64882	5,14938

Furthermore, testing for normality and homogeneity of experimental data and control data is

carried out first before conducting further analysis. This is because the conditions that must be met before conducting further hypothesis testing are that the data used must be normally distributed and homogeneous. Normality testing is used to determine whether the data used is normally distributed or not. The results of normality testing can be seen in Table 4.

TABLE 4. Normality Test Results

Data	Kolmogorof Smirnov						
	Statistic	Sig.					
Experiment Class	0,146	0,102					
Control Class	0,151	0,079					
Conclusion	Normal						

In Table 4, the Sig value is obtained. in the experimental class of 0.102 and the control class of 0.079 where both classes obtained a greater value at the 5% real level, so it can be concluded that the experimental data and control data were normally distributed. Furthermore, homogeneity testing is carried out which aims to test the similarity of the two variables. The results of the homogeneity test can be seen in Table 5.

TABLE 5 Homogeneity Test Results

Statistic	Score
Levene Statistic	0,053
Sig.	0,819
Conclusion	Homogen

In Table 5, the Sig value is obtained. 0.819 is greater than 5%, which means that between the experimental variables and the control variables have the same variance so that the two data are homogeneous at the 5% real level. Furthermore, t-test testing is carried out to determine whether there are differences in the ability of the independence of student learning outcomes by applying the Among system learning method with conventional learning methods. The hypothesis testing is as follows:

H0: Student learning outcomes by applying the Among system with the Amora learning model are the same as learning outcomes in

conventional learning

H1: Student learning outcomes by applying the Among system with the Amora learning model are

better than learning outcomes in conventional learning

This study uses the Independent sample test for hypothesis testing at the 5% real level. The test criteria are if the value of Pvalue> 0.05 then H0 is accepted and if the Pvalue <0.05 then H0 is rejected and H1 is accepted. The results of hypothesis testing using SPSS 18 can be seen in Table 6 below:

TABLE	6. I	Hypoth	iesis '	Testing	Resul	ts
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Т	df	Sig. (2 tailed)
-17,07	58	0,000

Based on the results of hypothesis testing using the independent sample t test in Table 6, the sig value is obtained. (2 Tailed) namely 0.000. This shows that the sig. (2 Tailed) <0.05 or less at the 5% real level, then H0 is rejected, which means that student learning outcomes by applying the Among system learning method are better than learning outcomes in conventional learning.

Based on the research that has been done, the results show that there is an influence on student learning outcomes by implementing the Among system with the Amora learning model. Student learning outcomes by applying the Among system learning method are better than student learning outcomes by applying conventional learning methods.

B. Questionnaire Analysis

From the questionnaire that had been prepared in accordance with several indicators of independent learning, a questionnaire totaling 15 questions was distributed to 30 students. From each of these indicators, the alternative response options selected are one of the response criteria, namely: strongly agree, agree, disagree and strongly disagree. The results of data analysis from the questionnaire can be seen in the table below:

No	Tooming independence indicator	% Response Criteria					
110	Learning independence indicator	SS	S	TS	STS		
1	Teacher and student communication with the learning system among without being limited by distance, space and time	83%	17%	0%	0%		
2	Amongst the learning system with Amora's learning model allows me to state situations / problems at the beginning of learning mathematics	77%	17%	7%	0%		
3	I study according to a predetermined schedule	67%	17%	17%	0%		
4	Learning with the Among system with the Amora learning model made me independent and confident in solving the problems given	73%	27%	0%	0%		
5	Learning with the Among system with the Amora learning model made me creative in completing assignments.	50%	40%	10%	0%		
6	Learning using the Among system with Amora's learning model is motivated in learning	47%	50%	0%	3%		
_	Among the learning system with Amora's learning model makes me not delay doing assignments even though I have to work hard to						
7	complete them	93%	7%	0%	0%		
8	The Among learning system with Amora's learning model makes me find contextual benefits and learning materials that have been studied	50%	50%	0%	0%		
9	Learning with the Among system with the Amora learning model made me not dependent on other people	50%	50%	0%	0%		
10	I learn with the guidance of the teacher as a facilitator	53%	33%	7%	7%		
11	I repeated the exercises to do at home	40%	40%	17%	3%		
12	I learned to dare to express opinions in learning	80%	10%	7%	3%		
13	I believe in my own abilities	33%	50%	17%	0%		

TABLE 7. Indicators Of Student Learning Independence

No	Learning independence indicator	% Response Criteria					
110	Learning independence indicator	SS	S	TS	STS		
14	I find contextual benefit from the lessons that have been learned.	50%	50%	0%	0%		
15	Learning the Among system with the Amora learning model makes my learning atmosphere calmer and more comfortable	80%	17%	3%	0%		
	Average	62%	32%	6%	1%		

Based on table 7 above, it can be seen that the percentage of 30 respondents who applied the Among learning system with the Amora learning model, many chose very agreeable criteria than the other three criteria. Judging from the results obtained, the percentage for respondents who strongly agree is 62%, the percentage of respondents who agree is 32%, the percentage for Disagree is 6% and the percentage of respondents who strongly disagree is

1%.

Furthermore, the percentage score that will be calculated is the percentage of the actual score, where the percentage of the actual score is obtained from the comparison of the actual score with the ideal score multiplied by 100%. The results of the analysis of respondents' responses based on ideal scores and actual scores can be seen in the table below:

TABLE 8. Responses To Independent Learning

Total		Instrumen												Total		
Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Actual score	115	111	105	112	102	102	118	105	105	100	95	110	95	105	113	1593
Ideal Score	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	1800

Based on the table above, it was found that the percentage of students 'responses to students' learning independence towards learning using the Among system with the Amora learning model was 88.5%. From the percentage of 88.5%, it is in the value range 84.02 - 100, with very good criteria.

4. CONCLUSION

Based on the results of research and discussion, it can be concluded:

- 1. There is an influence on student learning outcomes by applying the Among system with the Amora learning model. Student learning outcomes by applying the Among system learning method are better than student learning outcomes by applying conventional learning methods.
- 2. From the results of the questionnaire data analysis, it was found that students' responses to the Among learning system using the Amora learning model had a high level of learning independence, because it was seen from the percentage of 88.5%, which was in very good criteria.

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