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Implementation Probing Prompting Learning Model on Students' Mathematical Concepts Understanding Ability and Self Confidence

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Abstract

The model of Probing prompts is learning with the way the teacher presents nature questions, lead, and dig so that student requires the ability to understand and develop draft mathematics in finished question. The purpose of this study is to find out how the application of the probing prompting learning model to the ability to understand mathematical concepts in terms of students' self-confidence in the material Algebraic Forms class VII SMP Negeri 1 Sungai Raya. The method used in this study is an experimental method, with the experimental form used being the Quasy Experimental Design experiment, and the research design is a 2 x 3 factorial design. The population of this study was all grade VII students at SMP Negeri 1 Sungai Raya consisting of 5 classes, with samples of class VIIG and VIIH taken using the Cluster Random Sampling technique. Based on the analysis of the variance of two paths with unequal cells, it was concluded that there is a significant difference in the ability to understand mathematical concepts between probing prompting and conventional learning models regarding self-confidence in the material of algebraic forms.

INTRODUCTION

Learning mathematics is a giving process experience. Study the student through a series activity planned so that students obtain competence in material obtained in mathematics [1]–[3]. Mathematics Alone is a natural science fundamental which cannot be separated from the development of knowledge and technology, as well as a role necessary in advancing think humans [4]. One required component in system education is the curriculum used as guidelines for planning to learn.

Thought oriented such then enforced the 2013 curriculum, which focuses on the Scientific Education approach, namely approach that emphasizes observation, asking, exploring, reasoning (association) as well as communicating (presentation) in obtaining knowledge [5]–[7], besides That curriculum 2013 also requires that something learning not only learn about concepts, theories, and facts but rather application in life every day. For that, a teacher should be wise in determining a learning model conducive to the learning process by a common goal.

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One of the learning models that the teacher can apply to create an atmosphere conducive to learning is a learning model of Probing prompts [8]–[12]. Ngalimun [13] argues that the learning model of Probing prompts is learning with the way the teacher presents characteristic questions, leads, and digs so that linking thought processes occur knowledge think that connects knowledge every student and experience with the new knowledge medium learned. Indra [14] also believes probing is interpreted as investigation or inspection. The purpose of the investigation or the inspection in question is to obtain information on students to be used to understand knowledge or draft news. They are prompting questions that are interpreted as question guides. A question guide asks questions to give students direction in their thought processes.

In line with opinion previously, Suherman [15] argued that in the learning model of Probing prompting, the teacher guides the student to increase their desire to know, grow their trust self as well as practice student in communicating their ideas through: 1) Prompting Questions, namely nature question dig For get more answers to carry on from mean student develop quality answer so that answer next more precise, accurate as well as more reasoned, 2) Prompting Question namely meaningful question to guide the student so he can find more answers right.

Based on several opinions, it can be concluded that the learning model of Probing prompts is learning with the way the teacher presents nature questions, lead, and dig so that student requires the ability to understand and develop draft mathematics in finished question. Learning models probing prompting is very suitable applied by the teacher in class with condition heterogeneous students in aspect cognitive and able increase the ability understanding draft mathematical student. However, the application of learning models Probing prompts in learning mathematics is seldom carried out by teachers, especially at SMP Negeri 1 Sungai Raya.

The ability to understand draft mathematics is a process that consists of explaining and interpreting something and giving descriptions, examples, and more explanations. Spacious and adequate and capable of giving more descriptions and explanations creatively. Meanwhile draft is something pictured in the mind, one thought, idea, or something understanding. So the student said his ability to understand the draft mathematical is to formulate a settlement strategy, implement simple calculations, use symbols for the present concept, and change something from other forms such as fractions in form mathematics [16]. According to [17], described an indicator of student understanding of a draft can: a) Declare repeat A concept, b) classify an object according to properties specified by the concept, c) Give examples and no example from something concept, d) Presenting draft in various form representation mathematical, e) Develop condition necessary and conditional Enough from something concept, f) Using and exploiting as well as choose procedure or operation-specific, and g) Apply draft or algorithm on solving the problem.

Based on the results interview with a mathematics teacher at SMP Negeri 1, Sungai Raya has obtained the fact that Still Lots difficult for students to understand the draft math on the matter from algebra. Students feel unbelief and shame for asking during the learning process. This is supported by the results of tests written by some students in 8th grade who had already

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accepted material from algebra in 7th grade. Based on the results test given, students have difficulty explaining elements of form algebra and experience difficulty operating form algebra.

Based on the explanation, it is known that influencing things understanding draft mathematical student originate from in self student that is self-confidence or trusts self. Trust self is somebody to call something an aspect of strengths and beliefs that make it feel capable of reaching various objectives, living, and adapting self with the environment. Individuals who are at a level of trust and high self, capable of applying thought themselves, can manage all need his life, incl the need to learn it. Students who trust self tall will learn well without depending on others [18]. With growing and cultivating self-confidence, students expected they would more bravely solve related issues to understand draft math.

Ikeda [19] revealed that believing in a student's self is a student who has the ability, among others: a) self-actualization, including the ability to create and express self, own belief in the ability and potential accurately; b) esteem needs including nudes ability try as well possible for reach good performance, c) intelligence emotions (social skills), including good demeanor and honed, capable adapt self with the environment, capable face criticism and own reception self, d) Motivation, includes ability think positive and optimism, capable face problem and behavior calm, and e) Character Extrovert, includes capable look closely meaning failure, capable change on and out from the problem, and talk with lancers.

Based on the problem, the researcher is interested In applying learning models and Probing prompts to understand daft mathematical reviews from Self-confidence students on the material Form Algebra class VII SMP Negeri 1 Sungai Raya.

METHOD

This study uses a quantitative approach, which is a method experiment. The form experiment used is experiment pseudo (quasi-experimental design), which involves two group experiments and group control. Group experiment in study This is students who receive the learning model probing prompting, and group control are students who receive the learning model conventional. Draft research used in this study is factorial design 2 x 3. The population study is all students of class VII at SMP Negeri 1 Sungai Raya consisting of 5 classes. The sample in this study is class VIIG, and VII H was taken with the use of the technique of cluster random sampling. Data collection techniques used are technique communication, not direct and technical measurement. Communication technique not direct used To measure self-confidence, students with a questionnaire given self-confidence even treatment of learning models. Measurement technique used to know level ability understanding draft mathematical student with use test ability understanding. The data analysis technique used in research is the normality and homogeneity tests, a prerequisite test balance. The study carried out the hypothesis test using test analysis variance of two road cells not same.

RESULTS AND DISCUSSION

Results

The questionnaire was given self-confidence before treatment of learning models grouped into three categories based on the combined average ($\bar{x}_{gab}$). From the calculation, results

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obtained $\bar{x}_{gab}$= 67.4 and $\bar{s}_{gab}$= 7.47. As for determining the category, Self-confidence can be seen in Table 1 as follows.

Table 1. Self-Confidence Category Determination

Category	Range	Amount Students in Class Experiment	Amount Students in Class Control
Tall	Value > 71.1	10	8
Currently	63,7 ≤ Value ≤ 71.1	10	13
Low	Value < 63,7	12	11
Total		32	32

Based on Table 1 obtained results level of self-confidence in the experimental class, ten students belonged to the high category, ten to the low category moderate, and 12 to the low category. While leveling self-confidence in the control class, eight students in the high categories in the low category moderate agents in the category lace h.

Results understanding mathematical concepts based on the learning model category can be seen in Table 2.

Table 2. Comprehension Ability, Test Results Draft Mathematical, Based on the Learning Model Category

Learning Models	N	$\bar{x}$	s
Probing prompts	32	63,91	23.78
conventional	32	55,16	24.93

Table 2 shows that the average value obtained by students with the Probing learning model prompting is 63.91, while the average value obtained by students with the conventional learning model was 55.16. The results of tests on the ability to understand mathematical concepts based on the learning model category and self-confidence can be seen in Table 3 as follows.

Table 3. Concept Understanding Ability, Test Results Mathematical, Based on Learning Model Category

Learning model	Self-confidence					
	Tall		Currently		Low	
Probing prompting	N	10	n	10	n	12
	∑ x	840.0	∑ x	720.0	∑ x	485.0
	xmin _	65.0	xmin _	50.0	xmin _	10.0
	x max	100.0	x max	95.0	x max	55.0
	$\bar{x}$	84.0	$\bar{x}$	72.0	$\bar{x}$	40,4
	S	11.50	s	14.57	s	16.85
Conventional	N	8	n	13	n	11
	∑ x	605.0	∑ x	790.0	∑ x	370.0
	Xmin	55.0	xmin	25.0	Xmin	10.0
	x_{max}	95.0	x_{max}	90.0	x_{max}	55.0
	$\bar{x}$	75,6	$\bar{x}$	60,8	$\bar{x}$	33,6
	S	14.00	s	23.35	s	15.83

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Table 3 shows that in the Probing learning model prompting, the average value of students with self-category confidence high is 84.0, while the average value of students with self-category confidence is medium and low, namely 72.0 and 40.4. In the conventional learning model, the average value of students with high self-category confidence is 75.6, while the average value of students in the self category confidence is medium and low, namely 60.8 and 33.6.

Testing the hypothesis was tested by analyzing the variance of two different cell paths to test the significant effects of the two research variables, namely the learning model and level of self-confidence on the ability to understand mathematical concepts, as well as to test the significance of the interaction of the two factors on the ability to understand mathematical concepts. Based on prerequisite test results for the balance test, conclude that all sample in the class experiment and class control originates from a normally distributed population, and the population being compared have homogeneous variance. On the balance test, the conclusion was that the sample originates from a population with equal ability and worth. As for the summary, the results of calculations using the two-way analysis of variance test with different cells can be seen in Table 4 as follows.

Table 4. Summary Two-Way Anava Results with Different Cells

Source	JK	DK	RK	F_{obs}	F_{tabel}	P
Learning Model (A)	1208,376	1	1208,376	4,211	4,007	< 0.05
Self-confidence (B)	19944,593	2	9972,297	34,756	3.156	< 0.05
Interaction (AB)	52,945	2	26,473	0.092	3.156	>0.05
Error	16641,645	58	286,925			
Total	37847,560	63				

Based on Table 4, the two-way analysis of variance with unequal cells shows a main effect of row (A), and H0A $_{is}$ rejected. This means that there are differences in the ability to understand mathematical concepts between students who use probing learning models prompting and Conventional material on algebraic forms. In other words, each learning model can understand mathematical concepts differently. In the main effect line (B), H0B $_{is}$ rejected. This means there are differences in the ability to understand mathematical concepts between students with high, medium, and low self-confidence in material algebraic forms. In other words, each self-category confidence has different ability levels to understand mathematical concepts. In the main effect line (AB), H0AB $_{is}$ received. This means there is no interaction between learning models (probing prompting and conventional) and self-confidence (high, medium, and low) in the ability to understand mathematical concepts.

Based on the results and analysis, variance, two road cells are not the Same. Test further post-Anava using the Scheffe test. The requirements for this test are as follows. This served average summary cells and marginal mean in Table 5.

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Table 5. Summary Cell Mean and Marginal Mean.

Learning model	Self-confidence				Marginal Average
	High	Medium	Low	Total	
Probing prompting	84.0	72.0	40,4	196.4	65.5
Conventional	75,6	60,8	33,6	170.0	56,7
Total	159.6	132.8	74,1	366.4	
Marginal Average	79.8	66,4	37.0		

Based on the summary results in the Anava test calculation, two road cell not the same in Table 5 is obtained H0A $_{is}$ rejected, so no need comparative test was carried out between lines because only there are two learning models so that difference can be seen from the marginal average in each learning model. In Table 5, the average marginal ability to understand draft mathematical with learning models probing prompting obtained a mark of 65.5, magnitude marginal mean ability to understand draft mathematical with learning models conventional of 56.7. of value second marginal mean class, there is an average mark difference. Then got concluded that learning model Probing prompts give the ability to understand draft mathematical better from the learning model conventional on matter form algebra.

In Table 4, H $_{0B}$ is rejected, p This means a difference in understanding draft mathematical on each self-confidence in material form algebra. Because the variables self-confidence have three categories (high, medium, and low), the comparison test average between columns must be done to know the difference average of each pair of columns. Following is a summary results comparison between columns presented in Table 6.

Table 6. Summary of Inter-Column Mean Comparison Test

H_0	Fobs	$2F_{0.05;2.58}$	P	Test Decision
$\mu_{.1} = \mu_{.2}$	6,319	6,311	< 0.05	Rejected
$\mu_{.1} = \mu_{.3}$	64,467	6,311	< 0.05	Rejected
$\mu_{.2} = \mu_{.3}$	34,644	6,311	< 0.05	Rejected

Based on the results of comparative test calculations between a column in Table 6, we obtained different ability understand draft mathematical between students with high and low self-confidence levels. Differences can be seen between students who have self-confidence and obtain a marginal mean of 79.8 and students who currently obtain a marginal average of 66.4. It can be concluded that students with self-confidence can understand and draft more math Well than students with self-confidence medium. Students with high and low self-confidence have different abilities in understanding draft math. Differences can be seen between students with self-confidence and a marginal mean of 79.8, and those with low self-confidence obtain a marginal average of 37.0. It can be concluded that students with self-confidence can understand and draft more math Well than students with low self-confidence. Students with a level of self-confidence medium and own low difference ability understand draft math. The difference can be seen between students who have self-confidence once, who currently obtain a marginal mean of 66.4,

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and who have low self-confidence, who obtain a marginal average of rage 37.0. It can be concluded that students with self-confidence can draft more math Well than those with low self-confidence.

Discussion

From the study results, students with self-confidence have a tall ability to understand and draft more math. Suitable for students with self-confidence currently nor low on material from algebra. Students with self-confidence currently own the ability to understand and draft more math. Good from students with self-confidence low on material form algebra.

There are several factors to the level of self-confidence own ability to understand and draft different mathematics. Among others, students with self-confidence can state repeat A concept, classify and identify something object and apply something draft in solving the problem. Students with self-confidence can state repeat A concept, classify and identify something object, but apply something draft in solving the problem. Students with low self-confidence can state repeat something concept, however challenging to classify and identify something object, so No can apply something draft to solving the problem.

This is to the research results [20] that there is a significant influence on the self-confidence and understanding of draft students. Also, based on research results [21] ability understand draft mathematics reviewed by self-confidence students is influential and relevant in finishing problem math. This can be seen that students who have self-confidence tall more capable of finishing problem-understanding draft mathematical compared to students who have self-confidence medium and low. Meanwhile, students with self-confidence are currently capable of finishing problem-understanding draft mathematical compared to those with low self low self-confidence.

From the results calculation analysis variance of two roads with cells not the same in Table 4 obtained $Fa_{ab} = 0.092 < F_{0.05;\ 2.58} = 3.156$ then H_{0AB} accepted. This means there is no interaction between learning models with self-confidence to understand draft math on the matter from algebra. Because there is no interaction between learning models and self-confidence caught ability to understand draft math, a comparison between learning models prompting and conventional probing for each self-confidence category follows the comparison average the marginal. With No exists interaction resulted in :

In the learning model probing prompts, students with self-confidence can understand draft more math Good than students with medium and low self-confidence. Students with self-confidence can do more math Well than those with low self-confidence. In the learning model, conventional students with self-confidence tall give the ability to understand draft more math Good than a student with a self-confidence medium and low. Students with self-confidence can understand and draft more math Well than students with low self-confidence. For students with self-confidence, learning with learning models and probing prompting gives them the ability to understand draft mathematics better than conventional learning models. For students with a self-confidence medium, learning with learning models probing prompting gives the ability to understand draft mathematical better than conventional learning model. For students with low

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self-confidence, learning with learning models and probing prompting allows them to understand draft mathematics better than learning conventional models.

CONCLUSION

Based on analysis of research data conducted, can is known that the application of learning models probing prompting against the ability to understand draft mathematical reviewed from self-confidence students on the material form algebra walk with ok. Kindly general can conclude that: Learning models probing prompting allows understanding draft more math Good from conventional learning model. Students with self-confidence can understand and draft more math well than those with medium and low self-confidence. Meanwhile, students with self-confidence can understand better math and draft than students with low self-confidence. In the learning model, probing prompting and learning models are conventional; students with self-confidence can understand the draft math better than students with medium and low self-confidence. Students with self-confidence can understand and draft more math Well than students with low self-confidence, on category self-confidence high, medium, and low ability to understand draft mathematical with learning models more prompting probing Good from conventional learning model.

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