

Problems Solving and Thinking Critical Ability Student Through Realistic Approach Based on Problem Non-routine by *Blended Learning* in the Department Mathematics, Faculty Mathematics and Natural Science, Medan State University

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Abstract. This study aims to analyze students' problem-solving and critical thinking ability through realistic approach based on non-routine problem by blended learning in the Mathematics Department, Faculty of Mathematics and Natural Sciences, State University of Medan. This type of research is a quasi-experimental. The research population is all undergraduate students of the Mathematics Education Study Program (MESP) in 2021. The research sample is taken from 2 classes of the population, namely: 1) MESP A 2021 as an experimental class that is given learning with a realistic approach based on non-routine problems using blended learning, and 2) MESP B 2021 as a control class that is given regular online learning. The research instrument on problem solving and critical thinking skills is a test. Data on problem solving abilities and critical thinking were analyzed using ANOVA. The results showed that the problem-solving and critical thinking skills of students who were given geometry learning through a realistic approach based on non-routine problems using blended learning were better than students who were given regular online learning. Furthermore, from the results of the study it was found that there was no interaction between learning and students' initial abilities, both on problem skills and on students' critical thinking skills. This shows that students' problem-solving and critical thinking skills are always better using learning with a realistic approach based on non-routine problems using blended learning compared to students who are given regular online learning. Thus, what is suggested from the results of this study is that in improving students' problem-solving and critical thinking skills through a realistic approach based on non-routine problems using blended learning, it is not necessary to classify students into low, medium or high initial abilities.

Keywords: realistic approach; ability; solving problem; critical thinking; blended learning; non-routine.

Introduction

Realistic Mathematics Education originally came from the Netherlands and has been developed since the 1970s. As for what inspired it was Freudenthal's view which said that *mathematics is a human activity*. So that mathematics should not be given to students in the form of '*finished results*', but must construct / find their own mathematical concepts, principles or procedures through solving non-routine problems. There are three key principles in the realistic approach [1], namely: 1) *Guided reinvention/progressive mathematizing*, 2) *Didactical phenomenology*, and 3) *Self-developed model*. From these three principles, the mathematics learning process with a realistic approach is divided into five characteristics, namely: *constructing* and *concretizing*, *level* and *models*, *reflection* and *special assignment*, *social context* and *interaction*, *structuring* and *intertwining* [1], [2], [3]. Mathematics learning with a realistic approach has wide-ranging consequences for children's learning and thinking processes [4]. Meanwhile, the mathematization process is seen as an activity that is constructive, reflective and interactive. Learning through a realistic approach is an activity that is meaningful for them, so that it can improve their attitudes and higher levels thinking skills.

One offactor that affect thinking ability level tall is a stimulus through challenge in problem non-routine [5]. Challenge in the form of problem non-routine could stimulate

somebody to fully understand the problem based on observations and investigations, explore and prepare tools, conduct experiments or investigations. Therefore, by starting from non-routine problem conflicts, students will not feel unfamiliar with the topics they are going to learn and will grow curiosity for themselves, and it is hoped that in the end it will eliminate the impression that learning mathematics is no longer something that is fun, difficult and scary.

Associated with the learning process that does not determined of consequence covid 19 situation, then most potential approach for held in learning is based blended learning with an online or offline system through a realistic approach that emphasizes student - centered processes as well as load element constructive, interactive and reflective. Given the importance of choosing proper learning _ in dominate field mathematics then necessary analyze ability solving problem and think critical mathematical student through based realistic approach problem non-routine by combined offline with online.

Ability solving problem is something very important in learning mathematics, because 1) makes somebody Becomes skilled select and analyze something later information _ study the result, 2) makes something satisfaction intellectual arising _ from in self someone, 3) increase potency intellectual someone, and 4) someone will could finder through the discovery process that alone. Solution problem is very important thing in learning math, because with increase ability solving problem non-routine expected student will more analytical and capable in resolve problem and at the same time could prepare self in face changing situations in life _ later [6].

In everyday life, we cannot be separated from something called a problem, so problem solving is the main thing in learning mathematics. Most mathematics education experts state that the problem is a question that must be answered or responded to by students. By Specifically, math problems consist of routine problems and non-routine problems. A routine problem is a problem that is merely an exercise that can be solved using some commands or algorithms [7], [8] . Meanwhile, non-routine problems are more challenging and require creative abilities from problem solvers. Non - routine problems arise when problem solvers have problem characteristics that do not immediately known how to solve them [9]. The problems included _ in thing this is problems that contain challenges that are not immediately can be solved by known routine procedures. "*For a question to be a problem, it must present a challenge that cannot be resolved by some routine procedure known to the student [10].*" So, ability solving problem is ability think mathematical somebody in evaluate, connect and develop something theory. Problem solving ability is an essential competency in learning mathematics, so it is recommended to be trained and raised since children at the elementary school level up to college [11]. This means that mathematical problem solving skills need to be trained at every level of education.

Problem solving skills require reflective thinking, including critical thinking and creative thinking skills. In other words, learning mathematics in the classroom needs to train critical and creative thinking skills that are carried out intentionally and planned. IDEAL is something term problem solving model or heuristic found by Brandsford and Stein [12] . This model consists of five stages of problem solving, namely *Identifying potential problems, Defining and representing the problem, and Exploring possible strategies. Acting on those strategies, Looking back and evaluating the effects of those activities.* Polya (1973) developed a problem solving model, procedure, or heuristic consisting of stages of problem solving, namely (1) understanding the problem; (2) make a problem-solving plan; (3) implementing a problem-solving plan; and (4) review [13] . Thus , in study In this case , the activities included in problem solving activities include: identifying elements that are known, asked about, and the adequacy of the elements needed, formulating problems from everyday situation with mathematics; implement

strategy for solve various problems inside or outside mathematics; explain and interpret the results according to the problem; develop mathematical models and solve them according to real problems and use mathematics in a meaningful way [14]. Strategies for solving problems mathematics depends on the problem to be solved. Problem solving strategies in general have four steps, namely ; 1) m understand the problem, inthis activity conducted stages or steps: what (data) is known, what is not known (asked), whether the information is sufficient, what conditions (conditions) must be met, restating the problem in detail operational , b) planning a solution, namely To do the activity of trying , looking for or remembering problems that have been solved that have similarities to the problems to be solved, looking for patterns or rules, making conjectures and compiling settlement procedures , c) solving problems according to plan, namely To do activities with doing according to the procedure that was made in the previous step to get a solution , d) re-examine the procedure and the results of the settlement, namely To do the activity of analyzing and evaluating whether the procedures applied and the results obtained are correct and appropriate , whether there are other procedures that are more effective, whether the procedures made can be used to solve similar problems, or whether the procedures can be generalized .

Critical thinking is one of the higher-order thinking processes that can be used in the formation of students' conceptual systems. Critical thinking is a sensible or reason-based reflective way of thinking that is focused on determining what to believe and do [15]. There are two main signs of critical thinking [16]. *The first* is that critical thinking is proper thinking that leads to deductive thinking and decision making rational. *The second* is that critical thinking is reflective thinking that shows complete awareness of the steps of thinking logical. Critical thinking must meet the characteristics of thinking activities which include: analysis, synthesis, problem recognition and solutions, conclusions and assessments [17]. Although mathematics is related to logical theory, critical thinking skills will not develop if in mathematics learning students are only trained to memorize (*mechanistic*) formulas, find formulas without knowing the relationship between draft with others (*structuralistic*), or solve problems routinely (*empirical*), without involving thinking skills.

Critical thinking in mathematics includes the process of *testing, questioning, connecting, evaluating* all aspects that exist in a situation or a problem [19]. Actually critical thinking is a thinking process that occurs in a person and aims to make reasonable decisions about something that can be believed to be true and which will be done later. There are six basic elements that need to be considered in critical thinking, abbreviated as FRISCO, namely: *focus, reason, infrent, situation, clear* .and *overview* [18] .

From the description above , the indicators of critical thinking skills in this study are; a) connect as well as apply draft by math ,b) explore , that is ability construct meaning or meaning and investigate ideas mathematics , c) generalize , i.e. interesting conclusion or determine mathematical ideas __ inductive or deductive , d) clarify , that is ability evaluate and explain , determine the context of the idea mathematics , and e) solve problem , that is analyze problem so that find correct answer _ by logical .

Research Method

Type study this is quasi experiment. Where, researcher use design two class experiment and control. Class experiment given treatment Realistic learning based problem non-routine by blended learning, while class control given learning normal online. Class experiment and control are taken from study program student education mathematics year enter 2021 which takes eye studying geometry, that is MESP A 2021 class and MESP B 2021 class. As many as 35 people are used for MESP A 2021 class as class experiment,

while MESP B class 2021 as many as 35 people are made as class the control. This research _ implemented in the Department of Mathematics Faculty Math and natural Science, State University of Medan. Study this use learning design based on the realistic approach.

Study this use two class experiment-control design with pretest - posttest research instrument to ability solving problem and think critical is with use test essay form. The statistical analysis used in study this is with anova two path.

Research Results

Before conducted learning on both class experiment and control is done test start, use see is student on both class have same ability _ or different, at the same time for grouping ability beginning student. As for the results of p retest second found class _ in study this could seen in the table following.

Table 1. Results of statistical calculations on ability beginning Solution Problem student.

Score * Class	Between Groups	(Combined)	Sum of Squares	df	Mean Square	F	Sig.
			29,557	1	29,557	.201	.655
	Within Groups		12655.523	86	147,157		
	Total		12685,080	87			

From table 1 above seen that score significance count is 0.201 and more big from level 0.05 confidence, then set that H_0 : accepted. So that could concluded that ability beginning solution problem student class experiment with control class is same.

Table 2. The results of the calculation of the ability statistics beginning Think Critical.

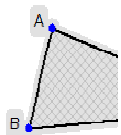
Score * Class	Between Groups	(Combined)	Sum of Squares	df	Mean Square	F	Sig.
			127,682	1	127,682	.879	.351
	Within Groups		12497.182	86	145,316		
	Total		12624,864	87			

From table 2 above seen that score significance count is 0.351 and more big from level confidence 0.05 then set that H_0 : accepted. So that could concluded that ability beginning think critical student class experiment with control class is same.

In accordance with destination study this that is for analyze ability solving problem and think critical student who was given learning geometry with approach realistic based problem non-routine by blended learning, then following describe the process and results.

The learning process carried out in accordance characteristics realistic approach that is in learning started with give problem non-routine to student, then give opportunity to student for finish it by independent or group as well as discuss result by classic, so expected student find draft or the knowledge contained in problem.

Meeting first: Done online, with given problem _ is " observe " picture below, choose which one is _ side four, then mention what do you mean with side four".



Kam, 10 Feb 2022

Soal Tantangan 1

Nama Mahasiswa : Jhen Very Alshandro Dizegar
 NIM : 4213111027
 Jurusan / Prodi : Pendidikan Matematika PPGM 21 A

Bila ada persegi panjang dengan keliling 24m, maka tentukan ukuran persegi panjang yg memiliki luas daerah terbesar!
 Jawabare

⇒ Keliling persegi panjang 24m, maka
 $K_{\text{persegi panjang}} = 2p + 2l$
 $24m = 2(p + l)$
 $\frac{24m}{2} = p + l$
 $12m = p + l$

⇒ Lakukan pengujian, dimana p akan lebih panjang dari l, maka

- $p = 11m \rightarrow L = p \times l = 11m \times 1m = 11m^2$ (terkecil)
 $l = 1m$
- $p = 10m \rightarrow L = p \times l = 10m \times 2m = 20m^2$
 $l = 2m$
- $p = 9m \rightarrow L = p \times l = 9m \times 3m = 27m^2$
 $l = 3m$
- $p = 8m \rightarrow L = p \times l = 8m \times 4m = 32m^2$
 $l = 4m$
- $p = 7m \rightarrow L = p \times l = 7m \times 5m = 35m^2$ (terbesar)
- $p = 6m \rightarrow L = p \times l = 6m \times 6m = 36m^2$
 $l = 6m$ (dikarenakan panjang $p = l = 6m$, Luas persegi panjang)

Sehingga Luas persegi panjang terbesar adalah $35m^2$.

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 above;
 S1:

According to opinion I from the picture above which includes side four is build ABCD, EFGH and MNOP. While those who don't including side four is KILJ. So, quadrilateral is polygon with four side and four angle.

S2:

ANSWER

In my opinion, the image which is a rectangle is only the ABCD rectangle, the EFGH rectangle, and the MNOP rectangle. A quadrilateral is a closed shape that has four sides and four lines. If we draw a straight long line from each side of the image, only the ABCD rectangle, the EFGH rectangle, and the MNOP rectangle have four sides and four lines. Meanwhile, the IJKL image cannot be called a rectangle because if a straight long line is drawn on each side, no rectangle is formed. And the IJKL image only has four sides.

S3:

From the answers of the three respondents above, it can be concluded that students still have doubts about the definition of a quadrilateral. Thus, the non-routine problems above will require discussion in order to find answers rationally. Learning with problem non-routine will could increase ability solution critical problem [20]. In discussion class, lecturer provide scaffolding in the form of draw get up triangle on 3 lines, _ four over 4 lines, and so on. So, students could find knowledge or draft that get up side four is field flat closed by 4 lines. _ And, this mathematical process is referred to as a process of improving students' problem solving and critical thinking skills.

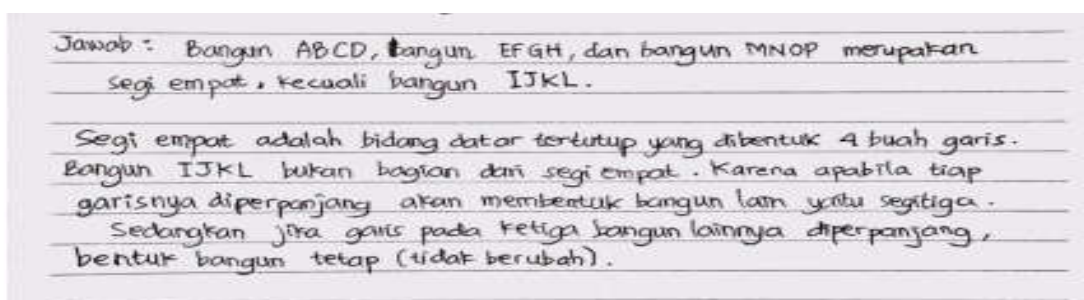
At the meeting second online, problem given _ is " *Known* " there is plot paper shaped rectangle long and have circumference 24 cm. Questions; a) how much many rectangle that has circumference 24 cm? b) how much size rectangle length that has large area biggest?

Response student on problem mentioned above, among others;

S1: Answer: Rectangular ABCD, EFGH and MNOP are side four, except rectangular IJKL.

So, in terms of four is field flat closed line formed by 4 lines.

Rectangular IJKL instead is side four, because if every line be extended no will shape side four but side three. Whereas if the line on the third get up other extended , shape get up fixed and not change .



Jawab : Bangun ABCD, Bangun EFGH, dan bangun MNOP merupakan segi empat, kecuali bangun IJKL.

Segi empat adalah bidang datar tertutup yang dibentuk 4 buah garis. Bangun IJKL bukan bagian dari segi empat. Karena apabila tiap garisnya diperpanjang akan membentuk bangun lain yaitu segitiga. Sedangkan jika garis pada ketiga bangun lainnya diperpanjang, bentuk bangun tetap (tidak berubah).

S2:

Kamis
10/02/2022

Nama : Dwi Maharani NIM : 4213111025
 Kelas : P5PM 21A Dosen Pengampu : Prof. Dr. Hasratuddin, M.Pd.

Tantangan 1

Bila ada persegi panjang dengan keliling 24 m, maka tentukan ukuran persegi panjang yang memiliki luas daerah terbesar!

Penyelesaian

→ Rumus keliling persegi panjang = $2(p+l)$
 Sehingga: $K = 2p + 2l$
 $24 = 2p + 2l \rightarrow 12 = p + l$
 → $l = 12 - p$, substitusikan ke rumus luas persegi panjang
 $L = p \cdot l$
 $= p \cdot (12 - p)$ $a = -1$ $c = 0$
 $= 12p - p^2$ $b = 12$

→ $\frac{b^2 - 4ac}{-4a} = \frac{(12)^2 - 4(-1)(0)}{-4(-1)} = \frac{144}{4} = 36 \text{ m}^2$

Maka, luas daerah terbesar dari persegi panjang adalah 36 m^2

S3:

No. Tantangan 1
Date Rencan: 10/2-2022

Nama : Winda Iwani
 NIM : 421311098
 Kelas : P5PM 21 A
 Mata Kuliah : Geometri Bidang dan Ruang

1. Bila ada persegi panjang dengan keliling 24 meter, maka tentukan ukuran persegi panjang yang memiliki luas daerah terbesar.

→ Dik : $K = 24 \text{ m}$
 Dit : Ukuran persegi panjang dengan luas daerah terbesar?

Jb : $K = 2p + 2l$
 $24 = 2p + 2l$
 $12 = p + l$
 $p = 12 - l$

$l = p - 1$

Maka, $L = p \cdot l$
 $L = (12 - l) \cdot l$
 $L = 12l - l^2$

Agar L maksimum, maka $L' = 0$, maka :

$12 - 2l = 0$ $L_{maks} = p \cdot l$
 $12 = 2l$ $= 6 \cdot 6$
 $12/2 = l$ $= 36 \text{ m}^2$
 $6 \text{ m} = l$

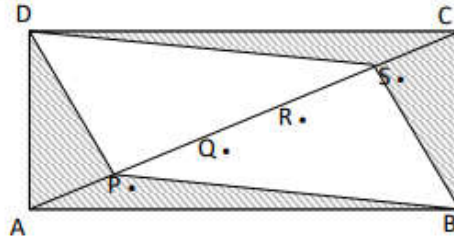
Maka, persegi panjang tersebut panjangnya 6 m dan lebarnya juga 6 m dengan luas maksimum 36 m^2

Of several response student to problem non-routine the student not yet could complete problem by criticalthinking. That's it, lecturer provide scaffolding in the form of definition side four, parallelogram, trapezoid. Then, lower get up parallelogram Becomes rectangle long and rhombic. Then from rectangle, together student found get up rectangle that is rectangle length that has size the same side. So, students find knowledge that rectangle is a rectangle length that has the same side.

Meeting third conducted offline. Problem non - routine given is

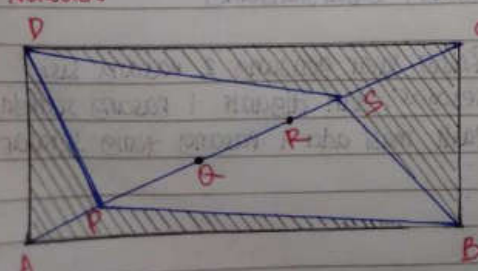
Masalah.

1. Pada gambar berikut, ABCD adalah persegi panjang dengan panjang 24 cm dan lebar 7 cm. Diagonal AC dibagi dalam 5 bagian yang sama oleh titik-titik P, Q, R, dan S. Tentukan luas daerah yang diarsir.



Response student to above problem: _

S1:

<p>1. Pada gambar berikut ABCD adalah persegi panjang dengan panjang 24 cm dan lebar 7 cm. Diagonal AC dibagi dalam 5 bagian yang sama oleh titik P, Q, R dan S. Tentukanlah luas daerah yang diarsir.</p> <p>Jawab</p> 	$L_{\Delta BPS} = L_{\Delta DPS}$ $L_{\Delta BPS} = \frac{a \times t}{2} \quad \text{maka}$ $L_{\Delta BPS} = 2 \cdot \frac{a \times t}{2}$ $= a \times t$ $= 15 \times \sqrt{74}$ $= 15 \times 8,6$ $= 129 \text{ cm}^2$ <p>Maka luas daerah yang diarsir</p> $= L_{\text{persegi panjang}} - L_{2 \Delta BPS}$ $= 168 \text{ cm}^2 - 129 \text{ cm}^2$ $= 39 \text{ cm}^2$
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S2:

Nama : Angel Monica Panjaitan
 Kelas : D3PM 21 A
 NIM : A213311069
 Dosen Pengampu : Prof. Dr. Hasratuddin, M.Ed.

1). Dd gbr berikut, ABCD adalah persegi panjang dgn panjang 24 cm dan lebar 7 cm. Diagonal AC dibagi dlm 5 bagian yg sama oleh titik-titik P, Q, R, dan S. Tentukan luas daerah yg diarsir.

Jawab:

\rightarrow Panjang AC
 $AC = \sqrt{AB^2 + BC^2}$
 $= \sqrt{24^2 + 7^2}$
 $= \sqrt{576 + 49}$
 $= \sqrt{625}$
 $AC = 25 \text{ cm}$

\rightarrow AC dibagi 5 bagian sama besar, sehingga:
 $\frac{AC}{5} = \frac{25}{5} = 5 \text{ cm}$
 maka panjang AP = PQ = QR = RS = SC = 5 cm.

\rightarrow $L_{\Delta ACD} = L_{\Delta ABC}$, dimana $L_{\text{persegi panjang}} = L_{\Delta ACD} + L_{\Delta ABC}$
 $L_{\Delta ACD} = \frac{1}{2} \cdot a \cdot t = \frac{1}{2} \cdot 24 \cdot 7 = \dots \text{ cm}$

\rightarrow Karena diagonal dibagi 5 dgn sama besar, maka:
 $L_{\text{persegi panjang}} = 2 \cdot L_{\Delta ACD}$
 $L_{\Delta ACD} = \frac{84}{2}$
 $L_{\Delta ACD} = 42$
 $L_{\Delta ACD}$ dibagi 5 bagian dgn segitiga yg sama besar.
 $\frac{L_{\Delta ACD}}{5} = \frac{42}{5} = 16,8 \text{ cm}$. $\rightarrow \Delta APD = \Delta APB = \Delta CSD = \Delta CSC$
 $= 16,8 \text{ cm}$

$L_{\text{sis yg diarsir}} = 4 \times 16,8 = 67,2 \text{ cm}$

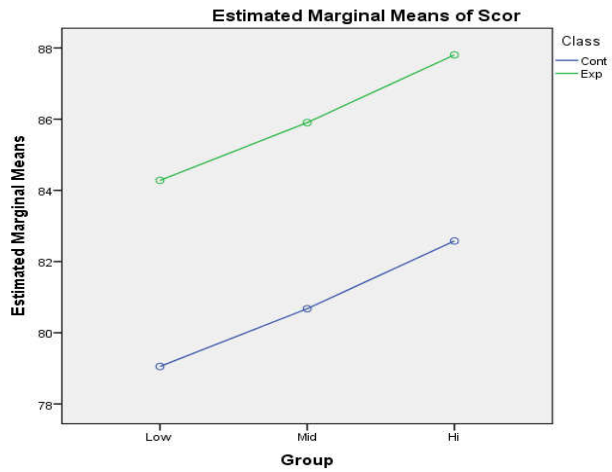
After learning online and offline, each meeting is held 2 times in class experiments, and 4 times online on learning normal, then given test formative, with results as following .

Table 3. The results of the calculation of ability statistics solution problem student in class experiment and control.

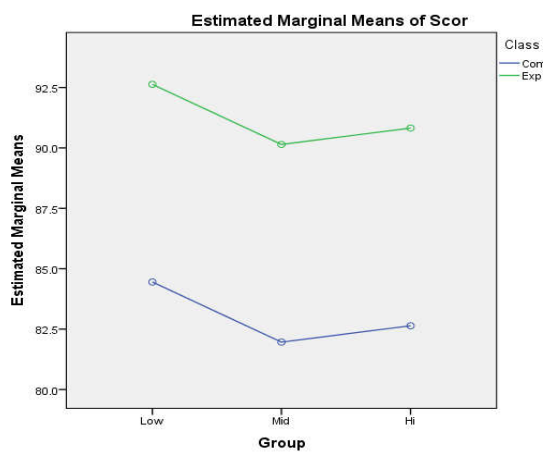
Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	721,742 ^a	3	240,581	4,863	.004
Intercept	577307.756	1	577307.756	11669,714	.000
Class	601.136	1	601.136	12,151	.001
Group	120,606	2	60.303	1,219	.301
Error	4155.530	84	49,471		
Total	617100,000	88			
Corrected Total	4877,273	87			

a. R Squared = .148 (Adjusted R Squared = .118)

From table 3 above seen that score significance between class experimental and control is 0.001, and less than level confidence 0.05. This show that H_0 rejected. So that could concluded that there is difference ability solving problem student control class with class experiment. By graphics, can seen in the picture following.



From the graph on the side, it can be seen that that class line experiment more tall from control class, then could concluded that ability solving problem mathematics student who was given Realistic learning based problem non-



routine by blended learning more good from student who was given learning normal online.

Next seen that score significance between group ability beginning math in class experimental and control is 0.301, and more big from level confidence 0.05. This show that H_0 accepted. So that could concluded that no there is interaction Among

learning with ability beginning to ability solution problem mathematical student. And, by chart could seen that ability solving problem student who was given learning with based realistic approach problem non-routine more than every group on learning normal online. This thing in accordance with results study Nasution showing _ that ability solution mathematical students who are given more realistic approach good from learning conventional, good in groups ability beginning mathematics low, medium nor high in SMP 18 Medan [21].

For ability think critical geometry student could explain as following.

Table 4. The results of the calculation of ability statistics think critical student .

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1565,350 ^a	3	521,783	13,460	.000
Intercept	641565,465	1	641565,465	16550,217	.000
Class	1472,727	1	1472,727	37,991	.000
Group	92,622	2	46,311	1,195	.308
Error	3256,241	84	38,765		
Total	669850,000	88			
Corrected Total	4821,591	87			

a. R Squared = .325 (Adjusted R Squared = .301)

From table 4 above seen that score significance between class experimental and control is 0.000, and more small from level confidence 0.05. This show that H_0 rejected. So that could concluded that there is difference ability think critical student Among control class with class experiment. By graphics, can seen in the picture following.

From the graph on the side, it can be seen that that class line experiment more tall from control class, then could concluded that ability think critical mathematical student who was given Realistic learning based problem non-routine by blended learning more good from student who was given learning normal online.

Next seen that score significance between group ability beginning math in class experimental and control is 0.308, and more big from level confidence 0.05. This show that H_0 accepted. So that could concluded that no there is interaction Among learning with ability beginning to ability think critical mathematical student. And, by chart could seen that ability think critical student who was given learning with based realistic approach problem non-routine more tall from every group on learning normal online. Finding this strengthen results study ability think critical mathematical student school advanced first, show that which is given learning mathematics with more realistic approach online _ good from learning what teachers usually do at school that.

Analysis of each capability indicator solving problem between group class experiment with class control.

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Indicator	Sum of Squares	df	Mean Square	F	Sig.
5. understanding	28,409	1	28,409	3,713	.057
Planning	4,545	1	4,545	.598	.441
Doing	1,136	1	1,136	.052	.821
Looking back	501.136	1	501.136	11,670	.001

tical calculations on capability indicators solution problem.

From table 5 above seen that for each indicator of understanding problem, planning completion and implementation plan solution ability problem _ solution problem mathematics have score significance more than level confidence 0.050, then could declared that H_0 rejected. This show that ability understanding problem, planning completion and implementation plan solution problem mathematics student class experiment different with student control class against theory geometry. Because of the graphics ability understanding problem , planning completion and implementation plan solution problem mathematics student in class experiment more tall from control class, then could said that ability understanding problem, planning completion and implementation plan solution problem mathematics student to field geometry student who was given learning with based realistic approach problem non-routine by blended learning more good from student who was given learning normal online . Meanwhile, for the looking back indicator, the value of the significance is 0.001 and more small from tarap significance 0.05 then H_0 accepted. This thing show that ability check return solution mathematical student to given geometry material __ learning with based realistic approach problem non-routine by same blended learning just with student who was given learning normal online.

Analysis of each capability indicator think critical between group to second class experiment and control.

Indicator	Sum of Squares	df	Mean Square	F	Sig.
Connection	.284	1	.284	.094	.760
Exploration	10,227	1	10,227	1.358	.247
Generalization	.284	1	.284	.015	.904
Clarification	92.045	1	92.045	6,100	.015
Solution	955,682	1	955,682	24,157	.000

Table 6. Results of statistical calculations on indicators of ability think critical .

From table 6 above seen that for each indicator think critical; connect, describe, attract conclusion and clarify student show that class experiment have score significance more tall from level confidence 0.050, then could declared that H_0 rejected. This show that ability connect, describe, attract conclusion and clarify solution student class experiment different from student control class against Theory geometry. Due to the average ability connect, describe, attract conclusion and clarify student in class experiment more than control class, then could said that ability connect, describe, attract conclusion and clarify student to field geometry student who was given learning with based realistic approach problem non-routine by blended learning more than from student who was given learning normal online. Meanwhile, for the indicator to complete score the significance is 0.000 and more than significance value 0.05 then H_0 accepted. This thing show that ability complete student to field given geometry _ learning with based realistic approach problem non-routine by same blended learning just with student who was given learning normal online.

Conclusion

1. There is difference ability solution problem field geometry among student who was given learning with based realistic approach problem non-routine by blended learning with student who was given learning normal online. By general could said that ability complete problem geometry student who was given based realistic approach problem non-routine by blended learning more good from student who was given learning normal online. This thing showed that 3 out of 4 indicators ability solution problem geometry student that is ability understand, plan and complete problem student who was given based realistic approach problem non-routine by blended learning more than student who was given learning normal online. Only indicator check return from ability solving problem same geometry _ among student who was given learning with based realistic approach problem non-routine by blended learning with the given learning normal online.
2. There is difference ability think critical Among student who was given learning with based realistic approach problem non-routine by blended learning with student who was given learning normal online. By general could said that ability think critical geometry student who was given based realistic approach problem non-routine by blended learning more than student who was given learning normal online. This thing showed that 4 out of 5 indicators ability think critical student that is ability connect, describe, attract conclusion and clarify solution student who was given based realistic approach problem non-routine by blended learning more than student who was given learning normal online. And, only indicator completes from ability think critical same geometric _ among student who was given learning with based realistic approach problem non-routine by blended learning with student who was given learning normal online.
3. Not there is interaction Among learning with ability beginning to ability complete problem nor ability think critical student. With so, can concluded that in increase ability solution trouble geometry student nor think critical geometric student through based realistic approach problem non-routine by blended learning no need to do grouping on ability student low, medium nor high.

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