

Students' Mathematical Creative Thinking Ability Strategy *Mathematical Habits Of Mind* based in Geometry Course

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Abstract

This study aims to describe students' mathematical creative thinking abilities based on *Mathematical Habit of Mind* strategies in geometry course. This research was conducted at the Mathematics Department of Medan State University in 2023. The population in this study were all students majoring in Mathematics at Medan State University. While the sample was taken by pure positive sampling as many as two classes, namely PSPM 22 A with 32 people and PSPM 22 C with 32 people. Strategy *Mathematical Habit of Mind* (MHM) is a learning that consists of 6 components, namely (1) exploring mathematical ideas, (2) reflecting suitability solution or strategy solved problem, (3) identify strategy or approach problem used can be applied to problems other, (4) identify there is "something more" to activity math that has carried out / generalization, (5) formulate question, and (6) construct example. Components in strategy MHM can look at as habits think high-level mathematics. Thinking ability creative is a standard product of mathematics and embodiment from high order thinking. The results of the study found that students' creative thinking abilities were given geometry lessons with *Mathematical Habits of Mind* strategies better than students who were given ordinary learning. Thus, it can be said that the MHM strategy can improve the ability to think creatively mathematically. Hence, MHM can be made as an alternative to get used to student in think creative and able to trigger growth think high level.

Keywords : Mathematical Habit of Mind ; think high level ; creative ; geometry .

Introduction

Mathematics is one of the auxiliary sciences that is very important and useful in everyday life and in supporting the development of human resources and the development of science and technology. Mathematics is a means of thinking to develop a logical, systematic, objective, critical and rational mindset that must be nurtured since elementary education. The more advanced the development of science and technology demands that mathematics finds new forms both as a science and in terms of learning [1]. one _ objective Study mathematics is for students capable think rational and creative. Mathematics more emphasize activity think, no emphasize from results experiment or results observation [2]. at the moment Now This the world is changing so fast, ability thinking and creativity as intelligence artificial be a determinant of excellence someone. Lots of fields lost jobs _ Because development technology in this era, but also a lot field Work new ones popping up that can become A today 's profession. A person's competitive power is determined by ability think level height and creativity [17]. Think level High creativity and creativity are also prerequisites for individual success. Individual success is largely determined by ability thinking and creativity in doing and solving problems [3]. Individuals who have _ ability think creative is someone who can look at the problem from multiple perspectives so that will get effective solution [4]. No wonder when demands on educational institutions to develop students ' creative thinking abilities become increasingly surfacing.

because _ it, for habituation and improve the ability to think creatively achieved student need For maintained through the *Mathematical Habits of Mind* (MHM) strategy. Strategy MHM is strategy development ability think creative mathematical through habituation or civilisation think creative mathematical [5]. The MHM strategy consists of on 6 activities, namely (1) exploring mathematical ideas (*explore mathematical ideas*), (2) reflect is answers obtained _ has in accordance or Still there is error (*reflect on their answer to see whether they have made an error*), (3) identify approach possible problem _ used or applied on problem in scale more big (*identify problems solved approaches that are useful for large classes of problems*), (4) ask on self Alone or identify there is " something more " to activity math that has done / generalized (*ask themselves whether there is " something more " / generalization*), (5) formulate question (*formulated question*), and (6) construct example (*construct example*). The MHM strategy can be used independently effective to develop thinking skills mathematical creative thinking through habituation of rational and creative mathematical thinking [6]. On the side Therefore, through MHM learning strategies, students are expected to have leap deep learning (*hypothetical learning trajectory*). improve thinking skills rational, logical, analytical, systematic, critical and creative and have the ability to work together.

Components in strategy *MHM* can be looked at as habits that can trigger growth ability to think creatively. Developability to think creatively with method grow habit to think creatively and creativity is something habits [7]. This is understandable because creative habits that are carried out consistently and continuously will have implications for the formation of creative thinking abilities. Thus, capacity building student thinking through habituation of creative thinking needs to be done continuously and sustainably, although this is not always easy to do. Likewise, students' creative construction activities also do not always happen easily. Therefore, the learning model or strategy learning mathematics with find the device is essential.

Creativity in mathematics is termed as the ability to think creatively mathematically or briefly called the ability to think creatively. Creative thinking is a type of thinking that directs the acquisition of new insights, new approaches, new perspectives, or new ways of understanding things [8]. Creative thinking can occur when triggered by challenging tasks or problems. Think creative is embodiment from think level high (*higher-order thinking*). it _ Because ability to think creative is competence cognitive highest necessary _ owned student. Think creative is something Suite actions that people do with use sense his mind For create fruit thought new from gathering contained memory _ various ideas, descriptions, concepts, experiences, and knowledge. Think creative is something mental activity for make ongoing connections _ _ _ continuously (*continuous*), so found correct combination [9].

In this study, the notion of creative thinking ability is associated with problem solving activities math. *Mathematical* creative thinking ability is an *ability that* includes *sensitivity*, fluency, flexibility, originality, and elaboration [10]. Sensitivity is the ability to detect, identify, or capture key ideas or concepts in a situation or problem and provide clear and accurate explanations of these ideas or concepts. Fluency includes the ability to (1) provide many solutions, (2) provide many examples or illustrations of a concept, or (3) make many statements or questions related to a situation or problem. Flexibility includes the ability to (1) use various problem-solving strategies, (2) produce various solutions, or (3) make various statements, questions, or questions related to a situation or problem. Authenticity includes the ability to (1) use strategies that are unique, new, or unusual in solving problems or (2) make statements, questions, or questions that are unique or new. Detail includes the ability to develop, expand, enrich, or explain in detail to a data, illustration, situation, idea, concept, problem, solution, or problem solving strategy [16]. This can be done by adding, changing, combining concepts, or using various relevant representations.

Development ability to think creative is one _ focus learning geometry. Development ability to think creative need done along with development method evaluate or method measure it [17]. So, think creative as a process of constructing ideas that emphasize aspects fluency, flexibility, novelty, and detail For generate ideas or method new in produce something product.

Research Methods

In accordance with objective study this, type study This is semi- experimental with two class Experiment design - post-test control. Research location This implemented in the Department Mathematics Faculty of Mathematics and Science Knowledge Nature, Medan State University. Population study is whole student Major Mathematics FMIPA Medan State University. Research sample taken two classes in a manner aim with one each class experiment and one Again as control class. Class experiment taken _ is 33 PSPM 2022 A students, with control class taken is 33 PSPM 2022 B students. Instruments used _ in study This form test form essay as many as 2 questions load ability reasoning and thinking creative. Test results analyzed with the t-test, that is see the mean difference between the two classes with assumption variance different.

Study This done with carry out learning in a manner direct through as many *Mathematical Habits of Mind* (MHM) strategies four meeting Then post-test was carried out. Every learning started with gift problem challenge form conflict to student. Then, with learning based on MHM facilitated by lecturers during four meeting and ended with do a post-test.

Research Results

A. Learning Process

In accordance with objective study This that is For analyze ability to think creative given student _ learning geometry with based *Mathematical Habits of Mind* (MHM) strategy problem, then following describe the process and results. The learning process is carried out in accordance the characteristics and stages of the MHM strategy, namely; (1) exploring mathematical ideas, (2) reflecting answers obtained _ has in accordance or Still there is error, (3) identify approach possible problem _ used or applied on problem in scale more big, (4) ask on self Alone or identify there is "something more" to activity math that has carried out / generalization, (5) formulate question, and (6) construct example.

At a meeting First in a manner offline, given problem _ is " *Known There is a plot paper shaped rectangle long and have circumference 32 cm. Question ; a) how much Lots rectangle that has circumference 32 cm? b) how much size rectangle length that has wide area biggest ?*

Response student on problem mentioned above, among others ;

S1:

Bila ada persegi panjang yang memiliki keliling 32 cm, maka tentukan ukuran persegi panjang dengan luas daerah paling maksimum

Jawab

$$\text{keliling persegi panjang} = 2 \times (p+l)$$

$$32 = 2 \times (p+l)$$

$$(p+l) = \frac{32}{2}$$

$$p+l = 16$$

Luas persegi panjang didapatkan dari hasil kali antara panjang dan lebar. Jadi luas maksimum di dapatkan jika panjangnya 10 cm dan lebar 6 cm

Bukti.

$$L = p \times l$$

$$= 10 \text{ cm} \times 6 \text{ cm}$$

$$= 60 \text{ cm}^2$$

S2:

Nama : NICA AULIA
 NIM : 421511084
 Kelas : KEMZIE

Bila ada persegi panjang yang memiliki keliling 32 cm, maka tentukan ukuran persegi panjang dengan luas daerah paling maksimum.

Kenyataan

Dik : - Keliling persegi panjang = 32 cm
 Dit : - ukuran persegi panjang dengan luas paling maksimum

Jawab :

$$\text{keliling persegi panjang} = 2(p+l) = 32$$

$$p+l = 16$$

$$l = 16-p$$

Luas persegi panjang = $L = p \times l = p \times (16-p) = 16p - p^2$

Agar luasnya maksimum, maka rumusnya :

$$L' = 0$$

$$16 - 2p = 0$$

$$-2p = -16$$

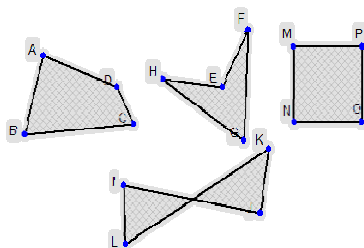
$$p = 8$$

maka $l = 16 - p = 16 - 8 = 8$

$$L = p \times l = 8 \times 8 = 64 \text{ cm}^2$$

Jadi, luas maksimum persegi panjang adalah 64 cm^2 dengan ukuran panjang 8 cm dan lebar 8 cm.

From the solutions given students at meetings first , in general they Not yet Can get correct solution , then _ lecturer give learning in a manner *Mathematical Habit of Maind* in a manner *offline* . First very lecturer give challenge with given problem _ is “ observe four picture following one by one with carefully , choose whichever is __facet four , then mention what is meant with facet four ”



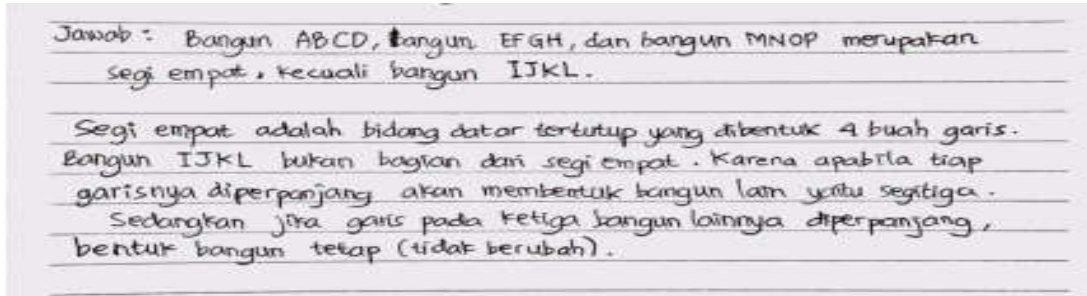
Then, through student *exploration* , students respond to the following problems. Student response to the problems above;

S1:

Menurut pendapat saya, dari gambar diatas yang termasuk segiempat adalah Gambar ABCD, EFGH, dan MNOP. Dan yang tidak termasuk segiempat adalah gambar KILJ

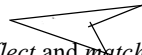
So, quadrilateral is polygon with four side and four corner .

S2:



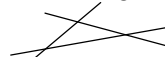
From the answers of the two respondents above, it can be concluded that students still have doubts about the definition of a quadrilateral. Thus the above problems will require discussion in order to find answers rationally. Nelly Rhosyida (2017); Rina Oktavianthi1, Ria NovianaAgus (2019), said that learning with explore or reflect problem will can grow ideas and give instruction to reasoning and thinking creative .

then . in discussion class , lecturer give chance to student For inspect return while identify and explore or reflect his opinion after lecturer provide scaffolding in the form of draw get up triangle on 3 lines , facet four on 4 lines , and so on . From the *hint* given , student do *identification* and deliver comment For construct his thoughts , among others; facet four is get up plane that has 4 lines and 4 angles . Next , lecturer describe A a shape that has 4 lines and 4 angles , ie



Then students *identify* created image _ lecturer while *reflect* and *match* picture with their definition _ give .

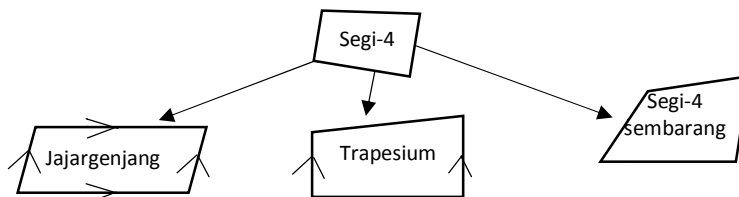
Then , lecturer give emphasis with make picture facet three through draw a line sequentially so that something forms _ triangle , that is



Then , lecturer give chance to student For draw facet three with method *construct* or *imitate* created image _ lecturer . Then , lecturer request student For *construct* get up facet four from get up facet three formed . _ So , student can say or find knowledge or draft that get up facet four is field flat closed which is built by 4 lines . Very gosh , lecturer give strengthening on concept ; lines, rays and segments . Next , students can find definition 5 , 6 and so on until with facet infinity , that is circle . This mathematical process is referred to as a process of increasing students' reasoning abilities and creative thinking.

At a meeting second , lecturer give challenge while discussion classical , that is with request student mention definition get up facet the four depicted on the board write , then student mention definition facet four with right , that is field flat closed which is built by 4 lines .

Then , lecturer continue build draft new with describe get up facet four others (*parallelogram*)with say " *there is sometimes facet four That painted like following , while draw like following .*



By focusing student For they can *explore* and *identify* picture , lecturer give instructions *take note the shapes in the picture* (above)! Then , lecturer request student mention definition of each, while say *You just say what you see !*

Student : Parallelogram is facet four with two pairs of sides same . (opinion most student) .

Student : Jajargenjang is facet four two pairs of sides and two pairs of angles The same big . (opinion most student) .

Lecturer : remind student with question guide (*scapolding*) “ whether You There is see sign side The same big ?

Student : Then, with notice while evaluate or match picture with question . Then , immediately lay out answer , jjar parallelogram is facet four have _ direction .

Lecturer : Then, lecturer emphasize understanding student with give question , how your direction _ see ?

Student : Then , student construct and match with example , new can say that “A parallelogram is facet four of which have two pairs of sides in the same direction .

Lecturer : with answer this , lecturer give rewards to student with say YES, YES, YES!

With questions similar ,

Lecturer : lecturer request student mention appropriate trapezium definition with what are you see .

Student : with notice while identify as well as explore drawing and constructing example on jajar parallelogram as above , then _ say that Trapezoid is facet four that have one pair of sides aligned .

Lecturer : then lecturer give strengthening or *rewards* with say YES, AWESOME!

Next ,

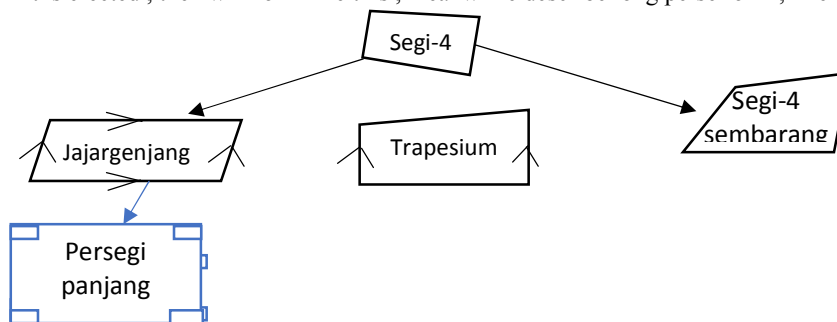
Lecturer : ask student mention definition facet four any .

Student : terms four any is facet four that don't own side aligned .

Lecturer : give *rewards* with say GREAT.

Learning process the expected will increase ability reason and creativity think student .

At a meeting next (to three) , lecturer give challenge to student with utilise understanding before , that is through picture following , while say " there is sometimes , jar parallelogram this , meanwhile pointing line up parallelogram , if it is erected , then will form like this , meanwhile describe long perse form , like following .



Lecturer : ask , then , what is the rectangle ?

Student : identify while explore and answer question , ie Rectangle is _ facet four with two pairs of sides same .

Then For reach reasoning and thinking creative student , lecturer continue questions , like following .

Lecturer : ask , yes sign long his side same as you see ? Then, lecturer continue the part is , Try to name it what are you see !

Student : then , say " Square long is facet the four corners upright . Because the answer Not yet systematic and correct .

Then , for build think systematic or good reasoning , lecturer _ give question strengthening as following .

Lecturer : repeat construct rectangle long from wake up line up parallelogram with give emphasis , see this , meanwhile repeat the question "if jajar parallelogram This enforced , then happen this , meanwhile show get up rectangle Panang on the image . Then ask , square long is ...? "

Student : meanwhile identify , explore , construct , formulate question while match with those already there is , then , mentions , rectangle is " a parallelogram with right angles".

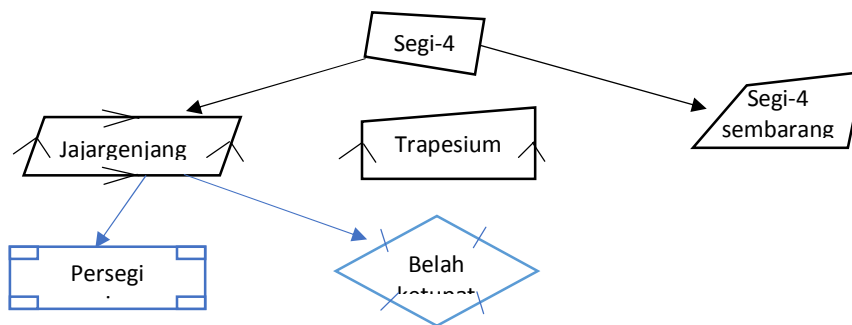
Lecturer : give *rewards* with say SWEET, while request a student mention repeat ,

Student : rectangle is parallelogram whose angles are right angles.

Lecturer : OK.

Such is the learning process That done for students can improve and get used to think creative and reasoned them .

Then lecturer continue with give question next while construct get up rhombus of _ get up parallelogram , with mention ..



Lecturer : jajargenjang This There is sometimes made with the sides The same long , while pointing get up rhombus formed , then _ ask to student , this get up what ?

Student : rhombus , sir.

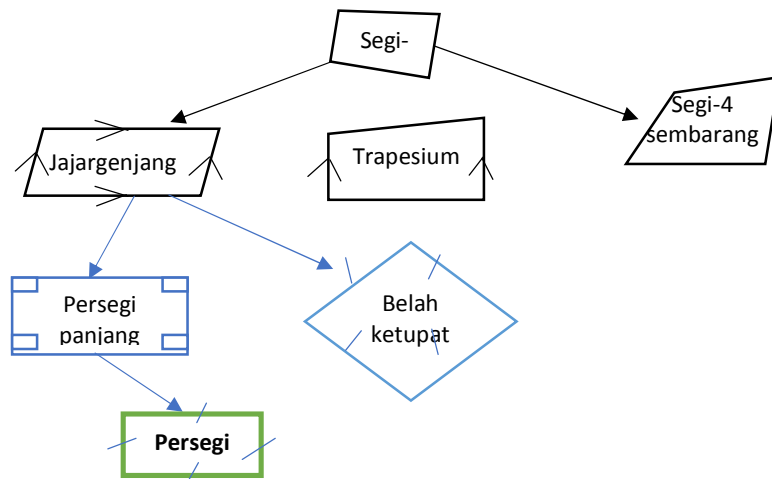
Lecturer : then continue ask , then rhombus , what ?

Students : explore , reflect , identify , ask while formulate question and construct example , then mention “ a rhombus is parallelograms whose sides same .

Lecturer : YES, YES, GREAT!

then ,

Lecturer : continue construct rectangle from get up rectangle , meanwhile say " there is sometimes rectangle That dinuat the sides same . Then ask while pointing get up formed square , get up what is formed this ? Like following .



Student : square , sir.

Lecturer : then , get up square (rectangle) that , what ?

Student : wake up rectangle is rectangle with sides The same long .

Lecturer : YES, GREAT. Then, ask a student mention repeat definition square .

Student : square is rectangle with sides same .

Then , lecturer ask ..

Lecturer : is it rectangle That is along ?

Student : by simultaneously they say , same .

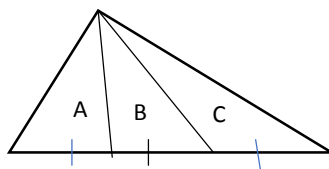
After that , lecturer return review to question beginning while read it that is *Is known There is a plot paper shaped rectangle long and have circumference 32 cm. Question ; a) how much Lots rectangle length that has circumference 32 cm? b) how much size rectangle length that has wide area biggest ?*

Then ask to student , while give chance to student For can exploring , reflecting , identifying , asking while formulate question and construct example .

Finally , students can answer with true and convincing that size rectangle that has wide blood biggest from rectangle that has the circumference of 32 cm is 6 cm x 6 cm.

Meeting fourth .

Lecturer : give problem form challenge conflict that is *Mr. Somat has a plot land shaped triangle , ie shared to their 3 children which man with method divide by 3 one side The same big the ground , then at point for him he Draw a line from corner in front of him . As in the picture following . The question is , is it fair? Mr. Somat did distribution with method that ? Give your answer .*



A number of response student is as follows .
Student,S 1:

Pak somat memiliki sebidang tanah berbentuk segitiga, yang dibagikannya kepada 3 orang anaknya yang laki-laki dengan cara membagikan 3 sisi sama besar tanahnya, lalu pada titik baginya ia tak garis dari sudut depannya seperti pada gambar berikut. Pertanyaannya, adakah pak somat melakukan pembagian dengan cara itu? Berilah jawaban anda.

⇒ Pada gambar disamping :
Saya merasa jrg adalah segitiga yang memiliki sudut 90°
Sehingga jika dibagi 3 dengan sisi yang sama besarnya akan menghasilkan 30° setiap sisinya.

Student,S2:

Pak Somat memiliki sebidang tanah berbentuk segitiga yg dibagikannya kepada 3 orang anaknya yg laki-laki dengan cara 3 sisi sama besar tanahnya, lalu pada titik baginya ia Tak garis dari sudut depannya seperti pada gambar berikut. Pertanyaannya, adakah pak somat melakukan Pembagian dengan cara itu? Berilah jawaban Anda.

Jawab: Adil
Walaupun dari gambar ke-3 segitiga berbeda & berbeda sisi, tapi tetap sama karena saya buat rumus:
 $l = \frac{1}{2} \times 180^\circ = 90 \div 3 = 30$

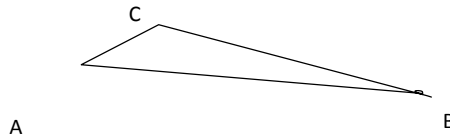
Sehingga setiap anak mendapatkan sebidang tanah dengan adil.

Student , S3:

Jawaban Anola.
Jawaban.
Dikendakan tanah yang dibagi berbentuk segitiga kumpul maka pak somat melakukan pembagian dengan adil. Yang mana segitiga kumpul keidrajat 90° yang bila dibagi 3 menjadi $\frac{90}{3} = \frac{90}{30} + \frac{90}{30} + \frac{90}{30}$. Jadi tiap anak mendapat 30°/anak

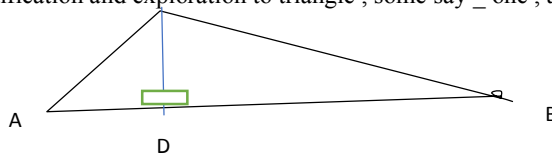
From several response student to problem conflict that , student Not yet can finish problem in a manner reason and think right creative . _ That's it , lecturer give *scaffolding* form challenge cognition process as _ following .

Lecturer : lecturer describe get up triangle anything on the board write , like following ,



Then , for reach rational and creative thinking , lecturer _ request student For mention How many high number of lines triangle and paint a high line triangle the .

Student : through identification and exploration to triangle , some _ one , and describe it like following .



Lecturer : which base and height ?

Student : the base is AB, the height is CD.

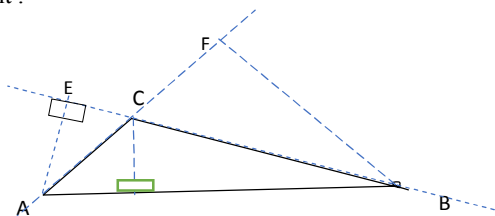
Lecturer : what if the base line is BC, what is it There is height ?

Student : Mostly _ student answer No there and only one line high triangle the . However , there is different students _ opinion , he , while explore , identify and construct image , then he answer that there are 3 grs in height .

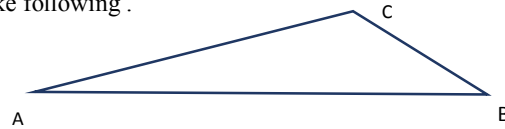
For reach think rational or high - minded and on his own ideas as think creative , then lecturer continue question form conflict to student , as following .

Lecturer : ask student the draw it on the board write .

Student : describe it with right .



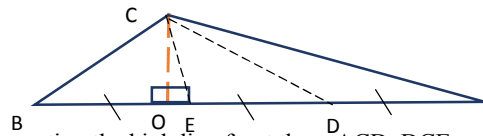
By mentioning the high lines There are 3, namely CD, AE and BF.
 Lecturer : describe triangle any else , like following .



Then , ask student paint the height line . After it , ask student divides 3 sides AB equally big .
 Student : with explore , and construct examples already _ there are , then , they are can paint it , like following .



Then continue For answer question next , that is divide into 3 equal parts AB side . Exactly _ they can paint it , like following .



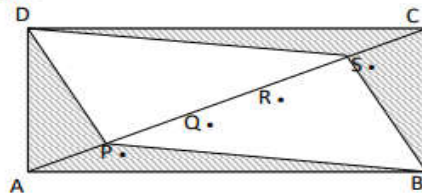
Lecturer : show and mention the high line facet three ACD, DCE and BCE.
 Student : while identify , explore , reflect , formulate questions , and construct example so that answer is the CO line.
 Lecturer : then , what can _ You conclude ?
 Student : broad area facet three-sided three ACD, DCE and BCE are same .
 Lecturer : can You prove it ?
 Student : area facet three-sided three ACD, DCE and BCE are same . Because all three have a high line fellowship and common ground .
 Lecturer : give reinforcement and at the same time close meeting at a time remind upcoming meeting will be held Formative .

Inside test results research .

After done learning geometry through the Mathematical Habit of Mind strategy for students class experimental and control class , obtained data about ability think creative . Test ability think given creative _ to student as many as 2 questions namely ;

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.



2. If any facet three ; elbows, same sides , isosceles and any own the same perimeter , then specify which triangle has wide area biggest and give reason the answer ,
 As for the answers student is as following .

Nama : Angel Monica Panjaitan
 Kelas : DPM 21 A
 NIM : 2113211069
 Dosen Pengampu : Prof. Dr. Hazratuddin, M.Pd

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 P, Q, R, dan S. Tentukan was 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 ABCD = L Δ ABC, dimana L persegi panjang = L ABCD + L ABC
 $L ABCD = \frac{1}{2} \cdot a \cdot t = \frac{1}{2} \cdot 24 \cdot 7 = 84 \text{ cm}^2$

\rightarrow Karena diagonal dibagi 5 bagian dgn sama besar, maka:
 L persegi panjang = 2 L ABCD
 $L ABCD = 84$
 $L ABCD = \frac{84}{5} = 16,8 \text{ cm}^2 \rightarrow \Delta APD = \Delta APB = \Delta CSD = \Delta CSC$
 $= 16,8 \text{ cm}^2$

L srt yg diarsir = $4 \times 16,8 = 67,2 \text{ cm}^2$

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.

Jawab:

$L_{ABPS} = L_{CBPS}$
 $L_{ABPS} = \frac{a \times t}{2}$ maka
 $L_{ABPS} = \frac{2 \cdot a \times t}{2}$
 $= a \times t$
 $= 15 \times \sqrt{74}$
 $= 15 \times 8,6 = 129 \text{ cm}^2$

Maka luas daerah yang diarsir
 $= L \text{ persegi panjang} - L_{2 \Delta BPS}$
 $= 168 \text{ cm}^2 - 129 \text{ cm}^2$
 $= 39 \text{ cm}^2$

From the results tests performed , obtained _ results in summary statistical calculations as following . As for the statistical test that will be tested is ;

$H_o : \mu_1 = \mu_2$; None _ difference ability think creative given students _ learning MHM strategy geometry with given students _ learning normal .

$H_a : \mu_1 \neq \mu_2$; there is difference ability think creative given students _ learning MHM strategy geometry with given students _ learning normal .

Table 1. Ability score think creative student class experimental and control class .

	Total	Total
Means	85.87879	52.33333
Variances	57.42235	158.6667
Observations	33	33
Hypothesized Mean Difference	0	
df	52	
t Stats	13.10914	
P(T<=t) one-tailed	2.06E-18	
t Critical one-tail	1.674689	
P(T<=t) two-tailed	4,11E-18	
t Critical two-tail	2.006647	

From table 1 above seen that the t- count value (13.109) is more big of t- critical (1.675). this show that H_0 rejected and H_a accepted . So so that can concluded that there is difference ability think creative given student learning MHM strategy geometry with given students learning normal . Due to average ability think creative students who were given the MHM strategy (85,879) were more big of average ability think creative given student learning ordinary (52.333) , then can concluded that ability think creative given students more MHM strategy learning Good from given student learning normal . this in accordance with results research conducted .There is the influence of Mathematical *Habits of Mind Strategy* on ability think creative mathematical to students of the Mathematics Education Study Program Indonesian Institute of Education [11]. Likewise , Mahmudi (2009) said that activity exploration of ideas on stage MHM learning can push student think flexible , ie identify various method or solution strategy problem [12]. Ability think creative increase consequence happening activity exploration , and this as one MHM strategy stages . With such activities it is possible to obtain strategies that are unique or new [15]. Strategy Mathematical habits of mind support student For more thinking , reflective , and creative [18]

More further , the difference ability think creative the can seen from per indicator , that is as following .

	<i>Sensitivity</i>	<i>Sensitivity</i>	<i>fluency</i>	<i>fluency</i>	<i>flexibility</i>	<i>flexibility</i>	<i>originality</i>	<i>originality</i>	<i>elaboration</i>	<i>elaboration</i>
Means	16.48485	11.51515	17.21212	10.93939	17.87879	11.42424	16.93939	10.21212	17.36364	8.242424
Variances	7.445076	27.44508	4.172348	11.93371	4.234848	10.50189	5.933712	16.92235	7.801136	12.75189
Observations	33	33	33	33	33	33	33	33	33	33
Hypothesized Mean Difference	0		0		0		0		0	
df	48		52		54		52		60	
t Stats	4.833208		8.978809		9.658771		8.083423		11.5577	
P(T<=t) one-tailed	7,1E-06		1.87E-12		1.15E-13		4.7E-11		3.36E-17	
t Critical one-tail	1.677224		1.674689		1.673565		1.674689		1.670649	
P(T<=t) two-tailed	1.42E-05		3.74E-12		2,3E-13		9,4E-11		6.72E-17	
t Critical two-tail	2.010635		2.006647		2.004879		2.006647		2.000298	

Table 2. Calculations ability indicators _ think creative .

a. Sensitivity

From table 2 above seen that the t- count value (4.833) is more big of t- critical (2.010). this _ show that H_0 rejected and H_a accepted . So so that can concluded that there is difference ability element sensitivity given student _ learning MHM strategy geometry with given student _ learning normal . Due to average ability sensitivity students who were given the MHM strategy (16,484) were more big of average ability sensitivity given student _ learning ordinary (11.515) , then can concluded that ability sensitivity given student _ more MHM strategy learning Good from given student _ learning normal .

b. Elements of Proficiency (Fluency)

From table 2 above seen that the t- count value (8.978) is more big of t- critical (2.006). this _ show that H_0 rejected and H_a accepted . So so that can concluded that there is difference ability element of student fluency given learning MHM strategy geometry with given student _ learning normal . Because the average fluency ability of students who were given the MHM strategy (17.212) was higher big of the average fluency ability of the students given learning ordinary (10.939) , then can concluded that fluency ability of students given more MHM strategy learning Good from given student _ learning normal . Creativity think will born if ability explore circumstances [14]

c. Flexibility Element

From table 2 above seen that the t- count value (9.658) is more big of t- critical (2.004). this _ show that H_0 rejected and H_a accepted . So so that can concluded that there is difference ability elements of student flexibility are given learning MHM strategy geometry with given student _ learning normal . Because the average flexibility ability of students who were given the MHM strategy (17.212) was higher big from the average flexibility ability of students who are given learning ordinary (10.939) , then can concluded that

flexibility ability of students who are given more MHM strategy learning Good from given student _ learning normal .

d. Indicator element of originality

From table 2 above seen that the t- count value (8.083) is more big of t- critical (2.006). this _ show that H_0 rejected and H_a accepted . So so that can concluded that there is difference ability elements of student originality that are given learning MHM strategy geometry with given student _ learning normal . Because the average originality ability of students who were given the MHM strategy (16.939) was higher big of the average originality ability of the students given learning ordinary (10.212) , then can concluded that originality ability of students who are given more MHM strategy learning Good from given student _ learning normal .

e. Elaboration element indicator

From table 2 above seen that the t- count value (11.557) is more big of t- critical (2.003). this _ show that H_0 rejected and H_a accepted . So so that can concluded that there is difference ability elements of elaboration students are given learning MHM strategy geometry with given student _ learning normal . Because the average elaboration ability of students who were given the MHM strategy (17.363) was higher big from the average elaboration ability of students who are given learning ordinary (8.242) , then can concluded that given student elaboration abilities _ more MHM strategy learning Good from given student _ learning normal .

Conclusion

Ability think creative given student learning geometry with more Mathematical Habits of Mind strategies Good from given student ordinary learning _ conducted in the Department Medan State University Mathematics . Where, the average ability think creative gain _ given student _ learning geometry with the MHM strategy is 85.878 while on learning normal is 52.333. Next , when seen of the average ability per element indicator of thinking creative among others; sensitivity , fluency , flexibility , originality and elaboration , then all the indicator element learning with more MHM strategy Good from learning normal . Differences in average ability per ability indicator think creative between students who were given the MHM strategy with learning usually have _ difference biggest is element elaboration . this _ in accordance with results research conducted by _

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