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Improving Critical Thinkingability Through Guided Discovery Methods Assisted By *Cabri 3d* Software

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ABSTRACT
This research proves that the use of knowledge of software programs such as Cabri 3D improves college students' Critical Thinking competencies compared to those with the software program's help. This evidence is accomplished to reach the development of college students' numerical thinking capacities instructed to use guided disclosure gaining knowledge of strategies assisted with the aid of using Cabri 3D with the guided discovery gaining knowledge of approach without a Computer program. This lesson experimental research takes a look at a populace of 122 people. Randomly instructions are decided on from the to be had guides divided into pattern instructions. The first experimental magnificence changed into given remedy with the aid of using Guided Discovery gaining knowledge of Method assisted with the support of using an Cabri 3D software program, at the same time as some other degree changed into given remedy with the aid of using guided discovery gaining knowledge of approach without Cabri 3D software program. The tool used on this take a look at changed into a check. Then the check effects are examined through the use of the t-check with the assist of SPSS. The check standards are rejected H0 if the table of t is smaller than the t count. Effects confirmed rely on changed into 2,785 simultaneously as the t desk changed into 2,000. The college students taught with the aid of using the guided discovery gaining knowledge of approach assisted with using Cabri 3D (First experiment) are better than without software.

Keywords : **Cabri 3D; Guided Discovery Learning; Critical Thinking.**

INTRODUCTION

The reasoning is essential in a person. Without motive approximately the fabric, a person can not be capable of grasp the fabric. For an educator, good judgment can not be arranged in expressions of usage Tri Dharma of Higher Education, which wrote each teacher needs to learn. Moreover, with a coach and potential, the authority of texture and thinking are exceptionally critical. Deplorably, numerous college students no longer have gifted mathematical modeling courses, which can be instructional substances in faculties, including linear and crucial. One of the occurrences is that they can not draw a way to create a chart from a work, circles, trigonometry, and others number of the scholars dubious and demanding to clear up the problem. To rise as a teacher, we got to clarify the subject and switch know-how and possible. The disparity amongst fact and wish develops into my records to analyze and discover an answer and examine reasoning scholar competencies. They are using the guided discovery mastering version assisted through *Cabri 3D* software. With this software, it's far was hoping that scholars may be more significantly interested in mastering to enhance college students' Critical Thinkingcompetencies to grow better than getting without the use of the software.

Suprihatin et al., (2018) states, "Critical Thinkingis the inspiration for developing mathematical knowledge. " This way, reasoning capacity arithmetic is the inspiration for gaining mathematical knowledge—excellent reasoning capacity associated with logical, analytical, and vital questioning patterns. Through sound reasoning, someone will draw conclusions or choices

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related to his everyday life. Thing This is consistent with other opinion, which states that reasoning is a pastime, questioning process, or pastime to attract conclusions or make an announcement whose reality has been formerly demonstrated or assumed. Someone with reasoning competencies will always have various problems because of the shortage to narrate information to conclude. Therefore, Somebody should reason should be advanced in each individual. The reasoning is cut up into deduction and colligation (Dhiman, 1981). Reasoning deductive is that the drawing of conclusions from the general to the species supported the information. Meanwhile, inductive reasoning might be an ideal technique for taking alternatives to a fashionable nature or creating a substitute announcement from significant cases. Guided Discovery Learning (GDL) is a specific way of the keys to fixing the issue. GDL is getting to know with the aid of using giving college learners an impediment early. Scholar accumulates information, modifies the presumes, experiment, search as precision, brings together the designation, and shows even if the accusation is authentic or no longer next. That approach lets college graduates construct their cognition components via numerous sports created to supply a complexity relying on scholar intelligence.

ICT assistance Cabri 3D and other programs are the particular answer that could appeal to college students' hobby in getting to know. As defined, the Cabri 3D-assisted PBL version is pleasantly recycled while mixed by applied science (Husnah et al., 2020), (Batubara, 2017), (Batubara, 2018), (Batubara et al., 2020). Form at the worry ended, further, too many effects formerly recorded, the researcher combines educated analysis to know among the operating system. Irvan (Irvan & Muslihudin, 2020) defined that the instructor should use laptops or multimedia to make it enjoyable to get to know.

METHODS

The purpose of deciding on this study is that the researcher gave the remedy withinside the shape of a getting-to-know version to the two training with elegance A, which were given extra software program simultaneously as elegance B did now no longer get the software program. The activity' getting to know effects will then be compared to peer the elegance with a better boom in seeing the impact. These studies hold at the University of Muhammadiyah Sumatera Utara, Jl Mukhtar Basri Number. 3 Medan. The populace of the study is the fifth semester in mathematic education. This research has a look at's samples that had been training decided on from the arithmetic schooling. Look at software FKIP UMSU for the 2019/2020 instructional year, achieved earlier than and after the COVID 19 pandemic. The level of trying out getting to know the equipment and study instruments, the test level, and Analyzing the study decision. The form of investigation is formulated below:

O_1	X	O_2
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O_1	Y	O_2

X = Learning + Software
Y = Just a learning
O1= pretest
O2= Posttest (Saragih, 2007)

Table 1. Variables' Relation of Weinner

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Capability of Mathematical	**Critical Thinking (CT)**	
	(01)	**(02)**
Great (G)	CTG01	CTG02
Middle (M)	CTM01	CTM02
Below (B)	CTB01	CTB02
Whole	CT01	CT02

All the instrument starts offevolved through checking out the statistical, consisting of the information normally and homogeneity checked by SPSS 16. . The Statistical conjecture using t analysis. Rejecting Ho if the table of t is smaller than the count of t. and accepts Ho for different situations.

Result and Discussion

The effects are decided through testing: if the importance received is > 0.05, then the pattern comes from a commonly allotted population. If the significance is < 0.05, the instance isn't from a typically allocated community.

Table 2. Normality Test

Test of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
Ex 1	.117	30	.200	.943	30	.206
Ex 2	.134	30	.251	.933	30	.070
a. Lilliefors Significance Correction						
*. This is a lower bound of real significance.						

The significant value were 0.200 and 0.251 for Kolnogorov, while for Shapira were 0.206 and 0.070. So we can conclude that both of clas is normal. The value for homogeneity showed below:

Table 3. Homogeneity

Test of Homogeneity			
RESULT			
Levene Statistic	df1	df2	Sig.
.074	1	58	.357

The significance of this result is 0.357. So that the value is homogeny for all. Therefore the statistical of students' preliminary mathematical skills are usually allotted and homogeneous. The check became accomplished twice, pretest and post-test. The Critical Thinkingcap potential

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check includes five items, each pretest, and post-test. The pretest, post-test, and N-advantage statistics processing have been accomplished to achieve the bottom score, maximum score, and standard deviation. The result of hypothesis in this research using parametric evaluation of N gain t-test to increasing reasoning formulated by:

Ho: μx = μy
Ha: μx ≠ μy
Clue:

μ_x : Critical Thinking taught by *Cabri 3D*

μ_y : Critical Thinking without Software

The product of the t-test analysis is presented below:

Table 4. Results of the t-test for Critical ThinkingAbility Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
									Lower	Upper
Critical Thinking	Equal variances assumed	.056	.274	2.174	58	.004	.13100	.03686	.05721	.20479
	Equal variances not assumed			2.174	57.708	.004	.13100	.03686	.05720	.20480

Based on the table, we can state that the t table is higher than the t number (2.274 > 2.00). It means that Ha is accepted. We can explain that reasoning ability by Cabri 3D is higher than the improvement of reasoning without Cabri 3D. Likewise, the identical opinion is defined by way of research, told that gaining knowledge with computer program techniques can enhance maths expertise and talent's student higher than traditional/regular gaining knowledge. Further (Batubara & Ammy, 2018) in his studies, college students' Critical Thinkingcompetencies who acquired problem-based knowledge have been higher than college students who received traditional knowledge. Students' Critical Thinkingchanged into categorized as moderate. Students nevertheless have trouble giving motives for a statement, checking the problem's adequacy's adequacy, and wearing out calculations primarily based totally on rules. Students' Critical Thinkingcompetencies who're given a gaining knowledge of technique will assist college students in apprehending gaining knowledge of (Afifah, 2019), (Batubara IH, 2017) and understanding reasoning and evidence as essential mathematics (Mushlihuddin et al., 2020), (Dachi & Batubara, 2020).

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The outcomes of this look at and a few functional studies results show that software program-assisted gaining knowledge of fashions can enhance college students' Critical Thinkingcompetencies because, with the usage of software program, college students are more significant interested in gaining experience of with era so that it will perform trials, make their conclusions, assume logically and make choices speedy as defined via way of means of numerous specialists above.

CONCLUSION

This research concludes that students studying results in improving reasoning ability by software *Cabri 3D* was higher than beyond software. Infinitely using this program is one alternative to enhance students' knowledge. The limitation is an internet connection, college students' restrictions who have laptops, and a few materials related to integrals that ought to be explained one by one made more time-consuming. Hopely that, on the other chance, I need a longer time to do learning by software and more practical activities in operating this program. This paper's contribution is that the researcher can use GDL assisted by *Cabri 3D* to increase college students' thinking. Particularly in reasoning, so that the effects acquired of college students' means will assume analytical, thoughtfully, and attempt to resolve their problems.

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