Think Talk Write: Efforts to Improve Students' Critical Thinking In A Rural School Environment

Ari Suningsih[1*], *I* Ketut Budayasa[2], *Ismail*[3]

[1*,2,3] Faculty of Mathematics and Natural Sciences, Universitas Negeri Surabaya, Surabaya 60321 Indonesia
[1]mathematics education, Faculty of Teacher Training and Education, Universitas Muhammadiyah Pringsewu, Lampung 35373 Indonesia

Abstract This study aims to explain the impact of learning model and gender on critical thinking skills of junior high school students in a rural school environment. The population used is the students of the State High School IX first semester who have acquired material on the Circles and Circle Line in Pringsewu Lampung District. Think Talk Write (TTW) is a learning model that is used with the type of descriptive research and experimental semu. Data analysis using two-way ANOVA assisted SPSS 25 with a significant scale of 0.05. After the treatment, the difference in critical thinking ability based on gender obtained a significance of 0,072 > 0,05. The significance value of the learning model factor is 0,013 < 0,05, while the significance rate of the interaction of the learning model with gender is 0,230 > 0,05, so it does not give a difference to the ability to think critically. Therefore, this study indicates that only model factor influences the ability to think critically about geometry.

1 Introduction

One of the implementations of educational curricula in Indonesia today is independent curricula. In this curriculum, the learning approach emphasizes student independence in understanding concepts. However, implementation in the field of this new curriculum does not necessarily effectively facilitate the development of critical thinking skills of students because the ability of a person to succeed in life, among other things, is determined by his thinking skills, especially in the attempt to solve problems – life problems faced [1]. Thinking is generally considered a cognitive process, a mental activity emphasizing reasoning to acquire knowledge. In addition, it is also argued that the thought process is related to other types of behaviour and requires the active involvement of the thinker. Critical thinking is promoted as a central competence in today's society and the school curriculum [2]. Besides review, the main product of thought can be knowledge, reasoning, and higher processes such as consideration. Three terms related to thinking skills are pretty different: high-order, complex, and critical thinking [3].

Critical thinking is now necessary for social and economic survival in a world that is changing quickly and becoming more interconnected and complex [4]. Success in the twenty-first century is thought to need thinking [1]. [5] makes the case that critical thinking is reflective and logical, emphasizing actions and beliefs. Being rational is holding a viewpoint or point of view that is substantiated by sufficient, real, appropriate, and pertinent evidence.

*Corresponding author: ari.21019@mhs.unesa.ac.id

As part of critical thinking, knowledge must be gathered, arranged, memorized, and analyzed, as well as tested, connected, and evaluated from all angles [6]. Critical thinking can also be defined as an adept process that makes use of reason to solve problems, recognize problems, discover appropriate solutions, resolve conflicts, analyze problems, and derive conclusions from problem-solving. (7) Reading comprehension and the capacity to recognize the required elements are also aspects of critical thinking. Additionally, it is the capacity to identify contradictions and inconsistencies in a given data set and make inferences from it. Analytical and introspective thinking is critical thinking. The steps involved in critical thinking are clarification, comparison, evaluation, and conclusion drawing. The goal of objective, critical thinking is to comprehend anything that intentionally moves one closer to a goal. Ennis was able to make a decision in the end since thinking was necessary (1995).

In daily life, critical thinking is a valuable skill that must be developed and practiced. We get increasingly sharper as we coach him. Critical thinking is necessary because it can help us view an issue from an alternative angle. Thinking necessitates analyzing a phenomenon by pointing forth the advantages and disadvantages of the current situation. A critical thinker will be able to provide insightful answers to important questions. Also, one will think appropriately and with clarity. Furthermore, it can efficiently develop a problem-solving model using abstract concepts.

A high degree of thinking capacity is indicated by critical thinking. The development of left and right brain performance abilities, which can be attained through studying in school and require ongoing training, will not affect the development of critical thinking. One of the higher order thinking skills that might help students develop their conceptual framework is critical thinking. Making it a habit to analyze crucial situations improves critical thinking. Analytical and strategic thinking processes help cultivate critical thinking skills. A slightly different definition of critical thinking was presented by Paul and Elder. They define critical thinking as analyzing and assessing ideas in order to make them better. Understanding the fundamental structures of thought, such as intellectual standards and thinking elements, is necessary for critical thinking.

When formulating particular problems and situations, the quality of one's reasoning is tested using universal intellectual criteria. Academic standards are the components or features that are used to assess the caliber of reasoning, claims [4]. Furthermore, Paul and Elder [4] stated that the following characteristics of intellectual standards relate to critical thinking and include: significance, logic, depth, breadth, clarity, correctness, precision, relevance, and precision. (significance). Bedlam (in Geu, 2010) refers to the intellectual standards put forward by Paul and Elder with the components of critical thinking, which are the standards that must exist in critical thought and include aspects of clarity, accuracy, relevance, consistency, logical truth, completeness, and reliability. This research refers to the components or elements presented by Paul and Elder in identifying critical-thinking students in solving geometry problems. The geometry material that is still a barrier in the field, especially in the eighth grade of High School State 1 Ambarawa, is the circle's material and its applications in everyday life. Circle matter belongs to the category of abstract value that requires a deep understanding. Observations and interviews with mathematics teachers revealed that students often find it challenging to understand geometry concepts, including circles, requiring high critical thinking. Implementing an independent

curriculum during classroom assessments should support the desired learning objectives of developing deep understanding, student independence, and critical thinking skills. In addition, the assessment methods used should be consistent with the learning approach in the Free Curriculum. Based on information from the mathematics teacher in class IX and information from the vice principal for student affairs, at SMP Negeri 1 Ambarawa there is a gap between male and female students in terms of learning achievement, especially in mathematics learning. The class rank is dominated by female students.

SMP N 1 Ambarawa is a rural school where most of the students are employed in the agriculture industry. It goes without saying that most parents of schoolchildren are also farmers. The vice principal for student affairs, the counseling and guidance instructor, and the math teacher all believe that the learning endurance of both male and female students is one of the root causes of the discrepancy overall. When it comes to learning mathematics, female students are more dedicated than male students. This could be due to a variety of factors, including social roles (education is seen as a way to increase a person's role and contribution in society), family and cultural expectations (which encourage female students to achieve higher levels), and limited access to other options for women. This is consistent with study findings that show female students are more successful in learning mathematics and are more critical, creative, and driven to learn [22, 23, 24].

Even though these variables might offer some preliminary understanding, more investigation is required to determine how gender affects arithmetic learning, particularly in rural areas.. This is because each individual is unique, and the influence of factors between students may vary. In addition, shifting social values and cultural changes can result in changing patterns in learning motivation based on gender, especially in the digital era which affects the way students learn, work and communicate in an independent curriculum.

Classroom discussions are a vital component of curriculum-based learning that is free of charge. During debates, students' engagement, contributions, and capacity for critical thought can all be used to evaluate them. Critical thinking is emphasized in the TTW learning model, among other learning strategies. It is anticipated that this particular learning style will enhance students' comprehension and communication skills related to mathematics. The paradigm was developed by Huinker Laughin and was based on the processes of speaking, writing, and thinking. You can use this technique one-on-one or with small, diverse groups of three to five pupils. Students work in small groups, reading aloud, taking brief notes, explaining things, listening, and sharing ideas with peers. They are then expected to write up what they discussed and how it turned out. The reading materials are the initial step in the TTW learning process for students. Discussions and reports of those discussions/presentations follow, along with the sharing of reading outcomes. This learning paradigm is intended to satisfy the needs of a market for education that is very competitive. Students must possess excellent critical thinking abilities in the information and technology age of today in order to compete and overcome obstacles in the future..

The usefulness of the TTW learning model and practical learning in enhancing students' critical thinking abilities on circular content is still not well-documented empirically, particularly when considering the Merdeka Curriculum. Given the background of the aforementioned concerns, more research is required to fully assess the effectiveness of the TTW Learning Model and practical learning toward the development of SMP students' critical thinking abilities on the circular matter. It is also necessary to determine how much the Merdeka curriculum can contribute to the development of these critical thinking abilities. The findings of this study can shed more light on instructional strategies that help Indonesian students' critical thinking abilities

2 Method

Experiments and descriptive research designs were employed using the data. The consequences of learning are explained through descriptive approaches. Simultaneously, experimentation is employed to quantify the impact of gender and learning methods on the capacity for critical analysis of geometry content in certain domains. The sample consisted of 256 ninth-grade N 1 Ambarawa Pringsewu pupils. The cluster random sampling technique was used in this study to determine the study's groups. While the second group employed a live learning paradigm, the first group used the Think Talk Write learning methodology. The findings of the post-test on critical thinking abilities following treatment provided the data for this study. According to Paul and Elder's (2007) assessment of critical thinking, critical thought is composed of the following elements: importance, depth, breadth, logic, clarity, precision, relevance, and logic. (importance) Measurement and treatment instruments make up the instruments used. This study employed learning instruments, such as learning implementation plans, curriculum, and expert-validated problem-solving problems.

The masculine male and feminine female candidates are identified using the gender instrument. Prospective participants must respond to these sixty questions by assigning a score between one and seven. The following criteria are used to identify candidates for masculine and feminine subjects: 1) The subject candidate is manly if the mean masculine score is more than the median masculine score and the mean feminism score is less than the median feminism score. 2) The subject candidate is feminine if the mean masculine score is less than the median masculine score and the mean feminine score is more than the median feminine score. The Bem Androgyny test, which was adapted from the BSRI instrument created by Sandra L. Bem in 1974, serves as the standard form of the gender questionnaire. Two-way ANOVA is used for data analysis, with a significance level of 0.05. Before conducting in-depth research, pre-conditional tests are run on the data. Tests for homogeneity, correlation, and normalcy on standardized residues are prerequisites.

3 Results and Discussion

The geometry problem solving exam yielded the study results, which were used to gauge the students' post-learning capacity for critical thinking. The TTW learning paradigm was used to implement learning over the course of four in-person encounters. Table 1 displays data regarding the outcomes of learning implementation.

Table 1. Implementation of Learning

	Think Talk Write		**Direct learning**	
	Activity			
	Teacher	Student	Teacher	Student
Percentages	*83%*	*84%*	*78%*	*76%*
category	*good*	*good*	*good*	*good*

Table 1 shows that more than 75,0% of teaching and student activities are implemented. The implementation achievement of both learning, i.e. on the TTW model and the live learning model, obtained the category "Good". The type indicates that the prepared learning device does learning. On the TTW learning model, students are expected to develop mathematical understanding and communication skills in thinking, speaking, and writing. Students in small groups are asked to read, make small notes, explain, listen and share ideas with friends, then convey the outcome of the discussion through writing. Whereas the live learning model is commonly referred to as the conventional model used in the context of the Free Learning curriculum, the emphasis is on collaboration, student choice, and independence in learning.

In this study, a significant gradation of 0.05 is used. Table 2 presents the results of the preliminary analysis test, namely the F-test or normality test. The development of the Lilliefors Significance Correction normality test with a significant 0.05

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Model	Statistic	df	Sig.	Statistic	df	Sig.
Prestasi	TTW	.159	32	.039	.938	32	.066
	Konvensional	.167	32	.024	.919	32	.020

a. Lilliefors Significance Correction

In Table 2, the significance of the test for the TTW method is 0.39 > 0.05, so the data is normally distributed. Meanwhile, in the conventional method, the significance of the test is 0.24 > 0.05, meaning that the value is also normally distributed. Visually, the Normal Q-Q Plots graph is presented in Figure 1 below:

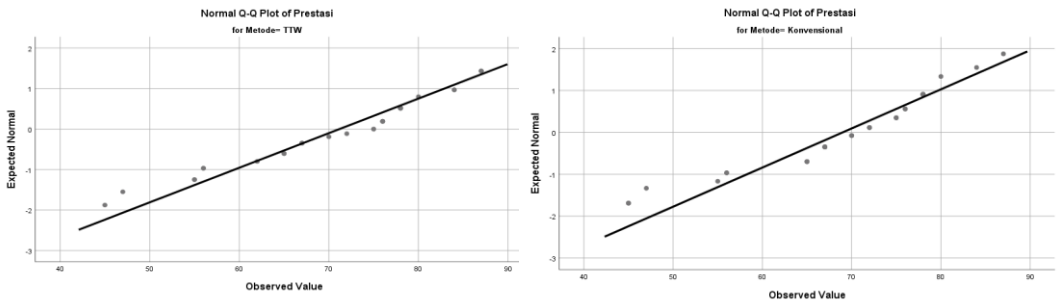

Figure 1 Normal Q-Q Plots

In Figure 1, visually from the Q-Q plot, the results show that all the points are close to the line, so it can be concluded that the data is normally distributed. Therefore, it can be supposed that the test using Kolmogorov Smirnov and looking at the visual appearance of the Q-Q Plot graph can conclude that the data is normally distributed. The homogeneity test using Levene's test obtained significant values presented in Table 3 below:

Table 3. Homogeneity test

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Prestasi	Based on Mean	.755	1	62	.388
	Based on Median	.448	1	62	.506
	Based on Median and with adjusted df	.448	1	61.422	.506
	Based on trimmed mean	.714	1	62	.401

In Table 3 above, a significant value of 0.388 > 0.05 is obtained, so it can be concluded that the critical thinking abilities of both groups have a homogeneous distribution or that the two groups of data come from populations with the same variance. Furthermore, the two-way ANOVA test analysis results are presented in Table 4 below.

Tests of Between-Subjects Effects

Dependent Variable: Prestasi

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	107.288[a]	3	35.763	.276	.842	.014	.829	.100
Intercept	313600.301	1	313600.301	2423.449	.000	.976	2423.449	1.000
Model	72.943	1	72.943	.564	.013	.009	.564	.114
Gender	.931	1	.931	.007	.072	.000	.007	.051
Model * Gender	29.815	1	29.815	.230	.330	.004	.230	.076
Error	7764.150	60	129.402					
Total	322312.000	64						
Corrected Total	7871.438	63						

a. R Squared = ,014 (Adjusted R Squared = -,036)

b. Computed using alpha = ,05

In Table 4, the learning model factors obtained a significance of 0.013 <0.05, showing differences in critical thinking abilities. Meanwhile, the gender factor acquired a significance of 0.072 > 0.05, which indicates that there is no difference in critical thinking abilities. Based on the interaction of the learning model with gender, a significance of 0.330 > 0.05 was obtained, which concluded that there was no difference in students' critical thinking abilities. The results show that only the learning model factor influences critical thinking skills. Based on the Partial Eta Squared value, it is known that TTW affects 9%. Below, Table 5 shows a descriptive description of the average results of critical thinking abilities.

Table 5. Descriptive Statistics

Dependent Variable: Prestasi

Model	Gender	Mean	Std. Deviation	N
TTW	LK maskulin	70.33	11.543	15
	Pr Feminin	71.94	12.147	17
	Total	71.19	11.705	32
Konvensional	LK maskulin	69.56	11.454	16
	Pr Feminin	68.44	10.230	16
	Total	69.00	10.698	32
Total	LK maskulin	69.94	11.311	31
	Pr Feminin	70.24	11.225	33
	Total	70.09	11.178	64

Table 5 above shows that the average critical thinking ability of the group using the TTW model is higher than the conventional model. The total average of the TTW model is 71.19, while the total average of the traditional model is 69.00. Meanwhile, for the gender factor, the total average for the two masculine male models was 69.94, and the total average for feminine gender was 70.24. Visually, for greater clarity, Figure 2 below presents the average critical thinking abilities of the two learning models

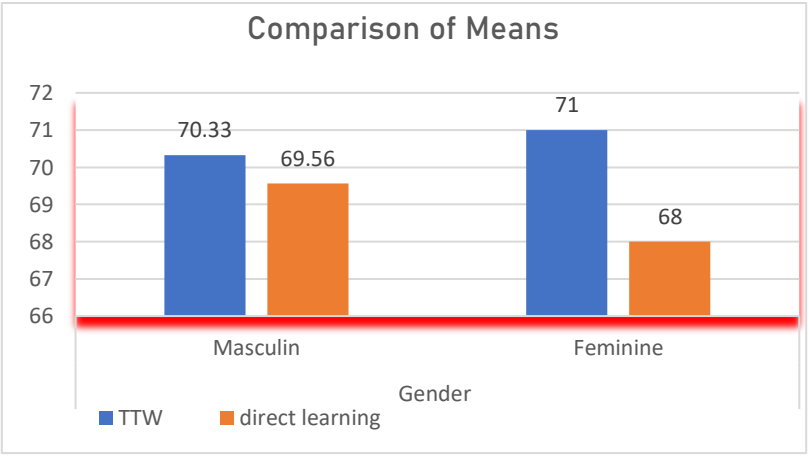

Figure 2. **Comparison of Means**

Figure 3 below shows students' critical thinking abilities for each critical thinking indicator. Figure 3 shows that the number of students identified as having critical thinking skills in the TTW group is more significant than in the Direct Learning group in all indicators. The most widely known difference in indicator 5 in depth

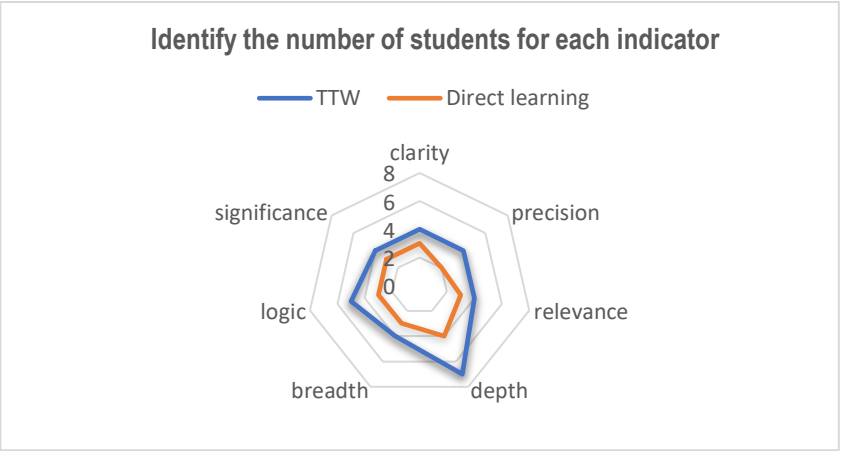

Figure 3. Identify the number of students for each indicator in the TTW and DL classes

In Table 1, it can be concluded that the implementation of learning went well according to the learning tools that had been planned. This cannot be separated from the roles of teachers and students. In education using TTW modelling, the role of the teacher as giving instructions is still needed [8], directing observations and drawing conclusions [9]. Students are given direct experience [10] and play a more active role [11] in solving problems. Dewanti's research [12] shows an increase in students' critical thinking skills using the Think Talk Write learning model. The study also reinforces the results that students' critical thinking abilities improve well through applying the TTW learning model [13].

The TTW learning model influences critical thinking abilities. However, this learning model only has a low influence, namely 9.3%, on necessary thinking abilities. The joint effect of the learning model shows that there are other factors. Two of the three elements that hinder junior high school students in learning communication, critical thinking and problem-solving are the structure of the education system and the complexity of the skills themselves [14]. The learning phase and learning performance are also influenced by motivation [15]. Reason has a fundamental construct of self-efficacy [16], which plays a role in student success at school [17]. Extrinsic motivation is an essential factor in aspirations to study mathematics [18]. Motivation can be said to be a factor that plays an indispensable role in learning. The learning model for critical thinking skills is known to have a low effect. However, the average critical thinking ability in the group using the TTW learning model was higher than the group using the direct learning model (Table 5).

Comparing the mastery of each critical thinking indicator in Figure 3, it is known that the most significant difference in the number of students is in the 4th indicator. The 4th indicator is the depth aspect. A significant difference was obtained in the depth category compared to elements of other types. Depth is defined as a complex answer formulated to address the question; the problem in the question is described in such a way that the problem has been connected to factors that are significant to solving the problem. The critical thinking questions for this category consist of two essay questions. The first problem is about deducing from an analysis the relationship between the

central angle and the circumferential angle facing the same arc with a point on the circumference of the circle that is changed. In contrast, the central angle and the two points on the circle that form the chord are kept constant.

Meanwhile, the second problem is designed to find the relationship between the length of the rope to tie the pipes and the circle's circumference. The questions are presented with actual events, namely regarding how long the cord is needed to connect 2 lines, 3 tubes, 4 pipes and five pipes. Critical thinking skills are measured by presenting real symptoms [19,20]. Students still make mistakes in deduction and induction and considering the results. Concrete and abstract thinking is involved in concluding [21]. Students still have many difficulties in representing problems in mathematical symbols. Students only understand practically the formula commonly used to find the relationship between the central angle and the circumferential angle if facing the same arc without knowing how to get it if the location of the point on the circumference of the circle is shifted, as in Figure 4 below.

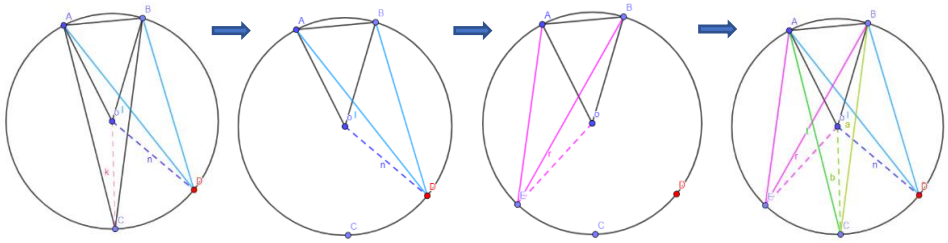

Figure 4. Shift of points on the circumference of a circle

Meanwhile, in the second question, students are asked to find the length needed to tie '*n*' pipes with a pipe diameter of '*d*'; some students use the formula that has been taught, namely.

*Length of rope =(n * d)+(1* circumference of circle)*

However, some critical-thinking students do their work according to the instructions as shown in Figure 5 below:

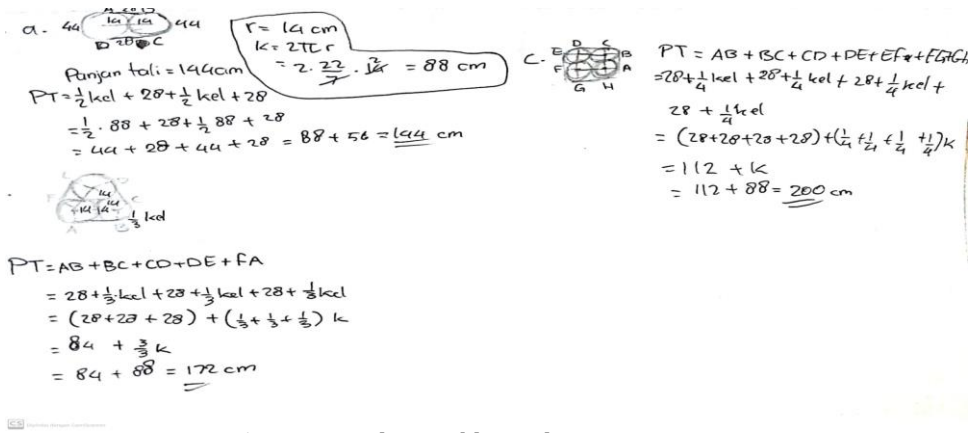

Figure 5. Student problem solving

Table 5 also shows no difference in students' critical thinking abilities based on gender and the interaction between learning models and gender. However, the average critical thinking ability of feminine women is known to be higher than that of women. This aligns with research by Azizah et al. (2021) and Harun (2020) that female students have a higher average critical thinking ability than male students.

Critical thinking skills should not be influenced by gender. Critical thinking involves the ability to analyze information, evaluate arguments, and develop a deep understanding of a concept. There are several reasons why there should not be significant differences in students' critical thinking ability based on gender: critical thinking ability is more related to individual intelligence [26] gender is only one aspect of a person's identity because each student has different backgrounds, interests and strengths. This individual variability can cause differences in their critical thinking abilities. The next reason is education and environment, logically this is because the learning environment, the quality of education and the way students are encouraged to think critically can have a greater influence than gender factors. If students of both genders are given the same influence to develop critical thinking skills, then gender differences become insignificant [27].

In addition, an equitable educational approach that provides equal opportunities for students to develop critical thinking skills can help reduce differences that may arise due to gender factors. Encouragement and expectations from family, teachers and society can also play an important role in the development of critical thinking skills. If all students receive equal support, gender differences in critical thinking skills can be minimized [28, 29]

4 Conclusion

Students' critical thinking skills with TTW and direct learning differ from one another. The two-way ANOVA test findings, with $F = 5.640$ and a significance level of $0.013 < 0.05$, demonstrate this difference. The variations indicate a 9% influence of the TTW model on critical thinking abilities. Extrinsic incentive elements, which predominate in the TTW greater than in the direct learning group, are the cause of this low influence (Mujtaba & Reiss, 2014). The two-way ANOVA test findings with $F = 0.007$ and a significance of $0.072 > 0.05$ demonstrate that gender has no effect on pupils' critical thinking skills. On the other hand, the average critical thinking score of female homework students (70.24) is greater than that of male homework students (69.00). The two-way ANOVA test findings showed that there was no significant difference in critical thinking skills between the gender and learning model interaction, with a significance level of $0.330 > 0.05$ and a $F = 0.230$ result. The average critical thinking capacity in TTW is higher than in direct learning, suggesting that critical thinking ability is only influenced by the learning approach. TTW can assist students with critical thinking abilities in understanding geometric material, specifically tangents to circles, according to the average value of critical thinking skills.

Both the sample size and the research's scope are constrained in this study. More data on a larger sample size and coverage regions are required in future studies. TTW still has little effect on critical thinking abilities. In light of this, it is imperative to compare alternative learning models and conduct a more thorough evaluation of other variables

that affect critical thinking skills. Analysis must be done on various mathematical resources because this research is restricted to information regarding tangents to circles.

Reference

1. R.H. Ennis**,** Critical Thinking Dispositions: Their Nature and Assessability. Informal Logic, **18** 2 (1996).
2. T.Nygren, J. Haglund,C.R. Samuelsson, Å.Af Geijerstam, J.Prytz, Critical thinking in national tests across four subjects in Swedish compulsory school. Education Inquiry, **10** 1 (2019).
3. R.Rosnawati,. Berpikir Kritis melalui Pembelajaran Matematika untuk Mendukung Pembentukan Karakter Siswa. Seminar Nasional Pendidikan, (2012).
4. R.Paul & E.elder. Critical Thinking Concepts and Tools.pdf. In *27th International Conference on Critical Thinking*. (2007)
5. R. H Ennis. The Nature of Critical Thinking. Informal Logic, ***6*** 2 (2011).
6. S.Krulik, J.A Rudnick, The New Sourcebook for Teaching Reasoning and Problem Solving in Elementary School. Massachusetts: Allyn & Bacon A Simon & Schuster Company. (1995).
7. B., Leest, & M. H. J. Wolbers, Critical thinking, creativity and study results as predictors of selection for and successful completion of excellence programmes in Dutch higher education institutions. European Journal of Higher Education, **11** 1 (2021).
8. J. W Santrock,.. Educational Psychology Fifth Edition. (E. Grelak & S. Colwell, Eds.). Michael Sugarman, (2011)
9. C. J.Wenning,. The Levels of Inquiry Model of Science Teaching Wenning for explications of real-world applications component of the Inquiry Spectrum.) A Levels of Inquiry Redux. Journal of Physics Teacher Education Online, **6** 2 (2011).
10. C. J.Wenning,. Levels of inquiry: Using inquiry spectrum learning sequences to teach science (Shaded sections added January 2012). J. Phys. Tchr. Educ. Online, **5** 3 (2010).
11. A. G.Balim,. The Effects of Discovery Learning on Students' Success and Inquiry Learning Skills. Eurasian Journal of Educational Research Egitim Arastirmalari-Eurasian Journal of Educational Research, **35** 35 (2009).
12. A.P. Dewanti, A.Dewi, Samiji, JAS (2019)
13. A.W. Priyatna, RUEd, (2022)
14. T.Carlgren, Communication, Critical Thinking, Problem Solving: A Suggested Course for All High School Students in the 21st Century. Interchange **44** 1–2 (2013).
15. D. H.Schunk,. Learning theories: an educational perspective 6th ed. Pearson Education. (2012).
16. Cetin-Dindar, A. Student motivation in constructivist learning environment. Eurasia Journal of Mathematics, Science and Technology Education. **12** 2 (2016).

17. D.Cheung, The Combined Effects of Classroom Teaching and Learning Strategy Use on Students' Chemistry Self-Efficacy. Research in Science Education. **45** 1 (2014).
18. T., Mujtaba, & M. J.Reiss,. a Survey of Psychological, Motivational, Family and Perceptions of Physics Education Factors That Explain 15-Year-Old Students' Aspirations To Study Physics in Post-Compulsory English Schools. International Journal of Science and Mathematics Education. **12** 2 (2014).
19. N.Erceg, I.Aviani,., & V. Mešić, Probing stuDents' critical thinking processes by presenting ill-Defined physics problems. Revista Mexicana de Fisica *E*.59 1 (2013).
20. C.Thompson,. Critical thinking across the curriculum: Process over output. International Journal of Humanities and Social Science. **1** 9 (2011).
21. S.Arslan, Investigating Predictive Role of Critical Thinking on Metacognition with Structural Equation Modeling. Malaysian Online Journal of Educational Sciences. (2015).
22. S. C. Dilla, W.Hidayat, & E.E.Rohaeti, E. E, Faktor Gender dan Resiliensi dalam Pencapaian Kemampuan Berpikir Kreatif Matematis Siswa SMA.Journal of Medives, **2** 1 (2018).
23. W. Oksara & H. Nirwana, H. Perbedaan Motivasi Belajar Antara Siswa Laki-Laki dan Siswa Perempuan. Jurnal Neo Konseling, **1** 2. (2019).
24. Z. AmirPerspektif Gender Dalam Pembelajaran Matematika. Marwah: Jurnal Perempuan, Agama Dan Jender. **12** 1 (2013).
25. S.L.Bem). The Measurement of Psychological Androgyny. Journal of Consulting and Clinic Psycology, **42** (1974]
26. S.Rejeki & L. Isharyanti . Hubungan Kemampuan Berpikir Kritis dengan Kecerdasan Intrapersonal Siswa di SDN 2 Jontlak Kabupaten Lombok Tengah. *CIVICUS*. **8** 1 (2020).
27. S.Marni, M. Aliman, S. Suyono, R. Roekhan & T. Harsiati, Students' Critical Thinking Skills Based on Gender And Knowledge Group. *Journal of Turkish Science Education*, **17** 4 (2020).
28. J. A.Plucker, J.Giancola, G.Healy, D. Arndt, & C. Wang. Equal talents, unequal opportunities. March.(2015).
29. A. Ramdani, A. W. Jufri., M. G. Fahrurrozi., & M. Yustiqvar. Analysis of students' critical thinking skills in terms of gender using science teaching materials based on the 5e learning cycle integrated with local wisdom. Jurnal Pendidikan IPA Indonesia, **10** 2 (2021)