Analysis of Critical Thinking Ability of Class X Students' of SMA Negeri 3 Ngabang in Solving Questions Systems of Linear Equations in Three Variables Judging from Gender

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Abstract

This study aims to analyze the differences in critical thinking skills between male and female students in solving Three Variable Linear Equation System (SPLTV) problems in class X at SMA Negeri 3 Ngabang. The research method used is descriptive quantitative with a comparative approach. Data were collected from SPLTV test scores of 12 students, consisting of 6 male students and 6 female students. The results of the study showed significant variations between students based on gender. Female students demonstrated excellent performance across various critical thinking skill indicators, including conceptual understanding, analysis and interpretation, evaluation and reasoning, creativity and expertise, communication and collaboration, as well as perseverance and persistence. Male students also showed excellent performance, but there was greater variation in their abilities. Although the average scores of male students were slightly higher, their score distribution was more diverse, with some students performing exceptionally well and others performing lower. Factors influencing these differences include conceptual understanding, analysis and interpretation, evaluation and reasoning, creativity and expertise, communication and collaboration, as well as perseverance and persistence. This study indicates that female students generally have more consistent performance across critical thinking skill indicators compared to male students.

I. Introduction

In mathematics education, students' critical thinking skills are one of the main goals of success in learning mathematics. Critical thinking is a very important skill in the current era of globalization and digitalization, where students are required to not only understand concepts, but also be able to apply, analyze and evaluate information effectively (Benyamin, Qohar, & Sulandra, 2021). Especially in the context of mathematics learning, critical thinking skills are crucial for solving complex problems, such as three-variable linear equation systems (SPLTV).(Suriati et al., 2021).

Ideally, every student in high school, especially in class (Karim & Sumartono, 2015). A fair and equitable education should provide equal opportunities for all students to develop these skills (Laja & Hijriani, 2022). Thus, it is hoped that all students, both male and female, will have the same level of critical thinking skills in solving SPLTV questions, so that they are ready to face academic and real life challenges with strong analytical skills (Ariyati et al., 2021).

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However, the reality in the field often shows disparities in critical thinking abilities between male and female students. At SMA Negeri 3 Ngabang, for example, there are indications that there are differences in critical thinking abilities between male and female students in solving SPLTV questions (Hartinah & Ferdianto, 2019). This situation reflects gender inequality in education, which may be influenced by various factors, including teaching methods, learning environments, and persistent gender stereotypes (NR Sari et al., 2019).

Based on initial observations and teacher reports, male students tend to be more active and confident in solving complex mathematical problems, while female students often show doubts and lack confidence in facing similar problems (Suliswanto et al., 2020). These disparities not only hinder female students' individual development, but also create greater disparities in future academic and career opportunities (Nurlita et al., 2023). This condition demands serious attention to ensure that all students receive the same support in developing their critical thinking skills (Zakiyah et al., 2019).

It is important to carry out this research to identify and understand the factors that cause differences in critical thinking abilities based on gender in the context of solving SPLTV questions (Nurohmatin, 2017; Satriyani, 2016). By understanding the root of the problem, more effective interventions can be designed to address this gap. This research also seeks to provide practical recommendations for teachers and educational policy makers about ways that can be used to support the development of critical thinking skills evenly among students (Chasanah, 2018).

These efforts include, providing recommendations from research results in terms of gender equality pedagogy, learning based on real problems, and increasing awareness about gender bias in education (Nindiasari & Syamsuri, 2023). Thus, this research contributes to efforts to create a more inclusive and equitable educational environment, where every student, regardless of gender (Agustiani et al., 2021), can reach their full potential in mathematics and other areas of science (Widjajanti Soedarnadi & Suliswono, 2021).

This research offers a new approach by focusing on analyzing students' critical thinking skills in solving SPLTV questions from a gender perspective, an area that has not been explored in depth (Mujahid et al., 2018). In contrast to previous research which more generally discusses overall mathematics abilities, this study specializes in aspects of critical thinking in the context of SPLTV, which is one of the most challenging mathematics topics at the high school level.(Fitriya et al., 2022).

In addition, this research not only analyzes gender differences descriptively, but also seeks to identify causal factors and provide practical recommendations that can be directly applied in the classroom (Nuryatin, 2015). Thus, it is hoped that this research can make a significant contribution to the literature on mathematics education, especially in terms of developing critical thinking skills and reducing the gender gap in mathematics learning (Bahri & Supahar, 2019; N. Sari et al., 2022). This research also offers a holistic view by considering pedagogical, psychological and social aspects that influence students' critical thinking abilities, so that the results can be implemented more effectively in everyday educational practice (Hardianti et al., 2023).

II. Research Methods

The research method used in the research is Descriptive Quantitative with a Comparative Approach, used to analyze differences in critical thinking abilities between male and female students in solving three-variable linear equation systems (SPLTV) problems.

Quantitative descriptive methods are used to describe or explain observed phenomena through quantitative data collection. In this context, the data collected is in the form of numbers related to students' critical thinking abilities, such as SPLTV test scores. The aim of this descriptive approach is to provide a clear and detailed picture of students' critical thinking abilities, as well as the differences in these abilities between male and female students.

The Comparative Approach is used to compare two or more groups in terms of certain characteristics or variables. In this context, researchers will compare the critical thinking abilities of male and female students in solving SPLTV questions. The aim of this comparative approach is to identify significant differences between the two gender groups in critical thinking abilities. This comparison will provide valuable insight into how gender may influence the solving of complex mathematical problems.

III. Result and Discussion

3.1 Instrument Preparation
Compiling Test Instruments

Researchers designed a written test consisting of 10 SPLTV questions (System of Linear Equations with Three Variables) which aims to test students' understanding of the SPLTV concept from various aspects. The questions are arranged in essay format with varying levels of difficulty, from easy to difficult. Each question is designed to test students' ability to understand the basic concepts of SPLTV, develop mathematical models of contextual problems, identify appropriate solution methods, and apply various SPLTV solution methods such as Substitution, Elimination, Combination, and Cramer. Apart from that, there are questions that emphasize the evaluation of SPLTV solutions and applications in real contexts. The SPLTV question grid is listed in Table 1 below.

Table 1. Posttest question grid

No	Indicator	Type of question	Degree of difficulty	Question number	weight
1.	Understand the basic concepts of SPLTV Solve SPLTV using a combination of elimination methods	Essay	Currently	1	25 %
2.	Understand the basic concepts of SPLTV Solve SPLTV using the Combination method (elimination + Substitution)	Essay	Currently	2	25 %
3.	- Conduct evaluation and application of SPLTV in real contexts - Developing mathematical models from contextual	Essay	Difficult	3	50 %

problems
        - Identify the appropriate
            SPLTV settlement method

It is hoped that the results of this exam question grid will provide a comprehensive picture of students' abilities in mastering SPLTV. Evaluation of these questions will help teachers assess the extent to which students have understood and can apply the SPLTV concept in various situations. In addition, the results of this evaluation are used to describe students' ability to understand concepts based on gender, adjust teaching methods, and provide constructive feedback to students to improve their understanding of SPLTV material.

3.2 Instrument Testing and Validity and Reliability Analysis

Instrument Testing: Test instruments are tested on students to ensure that the items are clear and easy to understand. Test results are analyzed to identify items that need to be revised or deleted. Instrument trials were carried out in class XA with a sample size of 12 students with 19 male students and 22 female students. After obtaining the test results via SPSS, a validity and reliability test analysis was carried out on the test instrument.

a. Validity Test Analysis

Validity analysis of SPLTV test questions was carried out to evaluate the relationship between each pair of questions (X1 to X3) and the total test score. The results of the analysis show that there is a significant correlation between each pair of questions and the total test score, with Pearson correlation values varying from 0.637 to 0.845. Significant correlation at the 0.01 or 0.05 level (2-tailed) indicates that all questions have an important contribution to the total SPLTV test score.

Table 2. Results of Validity Test Analysis of SPLTV questions

Correlations		Question 1	Question 2	Question 3	Total
Question 1	Pearson Correlation	1	,180	,369*	,637**
	Sig. (2-tailed)		,266	.019	,000
	N	40	40	40	40
Question 2	Pearson Correlation	,180	1	,636**	,828**
	Sig. (2-tailed)	,266		,000	,000
	N	40	40	40	40
Question 3	Pearson Correlation	,369*	,636**	1	,845**
	Sig. (2-tailed)	.019	,000		,000
	N	40	40	40	40
Total	Pearson Correlation	,637**	,828**	,845**	1
	Sig. (2-tailed)	,000	,000	,000	
	N	40	40	40	40
*. Correlation is significant at the 0.05 level (2-tailed).					
**. Correlation is significant at the 0.01 level (2-tailed).					

Validity analysis in this research was carried out to ensure that the instrument measured what it was supposed to measure. The results show that all items have significant item-total correlation values ($p < 0.05$), indicating good validity.

By referring to the validity test results recorded in the table presented, it can be concluded that the SPLTV test which consists of 3 questions meets the specified validity criteria. All questions in this test show that the calculated R value obtained exceeds the table R value, indicating the suitability of the instrument with the desired validity standards. This validity analysis, as documented in the table, provides empirical confidence in the theoretical and methodological validity of the SPLTV test used in the context of this research.

b. Reliability Analysis

Reliability analysis of SPLTV test questions was carried out to evaluate how well the questions were reliable in measuring the consistency of students' understanding of SPLTV material. The results of the analysis show that several reliability indicators such as Corrected Item-Total Correlation and Cronbach's Alpha if Item Deleted show varying values between the questions.

Table 3. Results of Reliability Test Analysis of SPLTV questions

Item-Total Statistics				
	Scale Mean if Item Deleted	*Scale Variance if Item Deleted*	*Corrected Item-Total Correlation*	*Cronbach's Alpha if Item Deleted*
Question 1	7.30	2,523	,283	,745
Question 2	7.48	1,589	,475	,536
Question 3	7.62	2,035	,672	,297

The reliability of the instrument was tested using Cronbach's Alpha coefficient. With a sample of 40 students, the R table value with a significance level of 5% was obtained at 0.312. The results of the reliability analysis show that overall, the SPLTV test has a very good level of reliability. A high Corrected Item-Total Correlation (above 0.3) indicates that each item has a significant correlation with the total test score, while a Cronbach's Alpha if Item Deleted that is close to or above 0.8 indicates that deleting even one item will not significantly reduce the test's reliability as a whole. whole. The implication is that this test can be trusted in measuring students' abilities in SPLTV with good consistency. This analysis provides a strong basis for using and interpreting SPLTV test results in a valid and reliable manner.

3.3 Data Collection and Analysis

Researchers collected data from 12 class XB students at SMA Negeri 3 Ngabang consisting of 6 female students and 6 male students. A written test is given to students to complete 3 SPLTV questions which are valid and reliable for use as test instruments. according to the research objective to describe the analysis of the critical thinking abilities of class

a. Description Based on SPLTV Test Results

Evaluation of students' ability to understand and solve Systems of Linear Equations with Three Variables (SPLTV) is carried out through a test that includes ten questions. This test is designed to measure various aspects of understanding, from basic concepts to critical thinking skills.

b. Description of SPLTV Test Results for Female Students

From the results of tests involving 6 female students, significant variations in their abilities were seen. Table 4 Below is a breakdown of the test results for each question along with the percentage of scores obtained by the studentsfemale student.

Table 4. SPLTV Test Results for Female Students

NO	Initials	L/P	Question 1	Question 2	Question 3	Total Score	Mark
1	AF	P	5	4	4	13	87
2	US	P	5	4	4	13	87
3	AU	P	4	3	2	9	60
4	EL	P	3	3	3	9	60
5	OAK	P	4	2	2	8	53
6	FWN	P	3	2	3	8	53

The following is a description of the score results from the six students based on the scoring rubric that was provided:

Based on the SPLTV scoring rubric which includes indicators of conceptual understanding, analysis and interpretation, evaluation and reasoning, creativity and expertise, communication and collaboration, as well as perseverance and tenacity, the following is a description of the six students' score results:

The student with the initials AF obtained a total score of 13 with a value of 87. This shows that AF has a very good understanding of the SPLTV concept and is able to explain it clearly. AF is also able to analyze and interpret SPLTV very well and accurately. In terms of evaluation and reasoning, AF shows excellent and logical abilities. AF's creativity and expertise in completing SPLTV and applying it in a real context is also very good. AF is able to communicate and collaborate very well within a team, make significant contributions, and show very high perseverance and tenacity in completing SPLTV tasks.

Students with the initials AS also obtained a total score of 13 with a score of 87, similar to AF. AS demonstrated an excellent understanding of the SPLTV concept and was able to explain it clearly. US analysis and interpretation capabilities of SPLTV are very good and accurate. AS's evaluation and reasoning in the SPLTV solution is excellent and logical. AS's creativity and expertise in completing SPLTV and applying it in a real context is very good. AS is also able to communicate and collaborate very well within the team, make significant contributions, and show very high perseverance and tenacity in completing SPLTV tasks.

Students with the initials AU obtained a total score of 9 with a value of 60. This shows that AU has a good understanding of the SPLTV concept but there are a few shortcomings in the explanation. AU was able to analyze and interpret SPLTV quite well, although there were several basic errors. AU's evaluation and reasoning are sufficient, but there are still many shortcomings in logic. AU's creativity and expertise in completing SPLTV is sufficient, but lacking in real context application. AU shows sufficient communication and collaboration skills in the team, but his contribution is still minimal. In terms of perseverance and tenacity, AU is quite good but often gives up before finishing.

The student with the initials EL obtained a total score of 9 with a score of 60. EL has a fairly basic understanding of the SPLTV concept, but is less able to explain it in detail. EL's analysis and interpretation of SPLTV is quite good, although there are several basic errors. EL's evaluation and reasoning are quite good, but there are still many shortcomings in logic. EL's creativity and expertise in completing SPLTV is quite good, but lacking in

real context application. EL is able to communicate and collaborate quite well in the team, but his contribution is still minimal. EL's perseverance and tenacity in completing SPLTV assignments is quite good, but often gives up before completion.

The student with the initials EK obtained a total score of 8 with a score of 53. EK showed a good understanding of the SPLTV concept but there were several shortcomings in the explanation. EK was able to analyze and interpret SPLTV adequately, although there were several basic errors. EK's evaluation and reasoning are sufficient, but there are still many shortcomings in logic. EK's creativity and expertise in completing SPLTV is sufficient, but lacking in real context application. EK is able to communicate and collaborate quite well within the team, but his contribution is still minimal. EK's perseverance and tenacity in completing the SPLTV task was quite good, but he often gave up before finishing.

The student with the initials FWN received a total score of 8 with a score of 53. FWN showed a fairly basic understanding of the SPLTV concept, but was less able to explain it in detail. FWN's analysis and interpretation of SPLTV is quite good, although there are some fundamental errors. FWN's evaluation and reasoning are quite good, but there are still many shortcomings in logic. FWN's creativity and expertise in completing SPLTV is quite good, but lacking in real context application. FWN is able to communicate and collaborate quite well within the team, but its contribution is still minimal. FWN's perseverance and tenacity in completing SPLTV tasks is quite good, but often gives up before completion.

Overall, AF and AS showed excellent performance in understanding, analyzing, evaluating and applying SPLTV. AU and EL have quite good performance but still need improvement in several aspects. EK and FWN need to improve their understanding of concepts and skills in completing SPLTV in order to achieve better results.

c. Description of SPLTV Test Results for Male Students

In order to evaluate the understanding and ability of male students in solving Systems of Linear Equations with Three Variables (SPLTV), tests were carried out on 6 male students. This test includes three questions designed to measure various aspects of understanding, from basic concepts to critical thinking skills in completing SPLTV. The results of this test provide a clear picture of variations in students' abilities in mastering SPLTV material and identify areas that require improvement. The following is a detailed description of the test results for each question along with the percentage of scores obtained by the students.

Table 5. SPLTV test results for male students

NO	Initials	L/P	Question 1	Question 2	Question 3	Total Score	Mark
1	M.F.A	L	5	5	4	14	93
2	RH	L	4	5	4	13	87
3	JI	L	4	3	4	11	73
4	FYP	L	4	2	4	10	67
5	WIA	L	3	2	2	7	47
6	WTU	L	2	2	2	6	40

Based on the results of a mathematics test regarding Systems of Linear Equations in Three Variables (SPLTV) which was taken by 6 male students, analysis of the answers to each question can provide a clear picture of their understanding and abilities in this topic.

The following is a description of the test results of male students in answering these 3 questions:

Based on the SPLTV scoring rubric which includes indicators of conceptual understanding, analysis and interpretation, evaluation and reasoning, creativity and expertise, communication and collaboration, as well as perseverance and tenacity, the following is a description of the scores of the six male students:

The student with the initials MFA, male, obtained a total score of 14 with a score of 93. This shows that MFA has a very thorough understanding of the SPLTV concept and is able to explain it clearly. MFA is also able to analyze and interpret SPLTV very well and accurately. The evaluation and reasoning of the SPLTV solution carried out by MFA was very good and logical. MFA's creativity and expertise in completing SPLTV and applying it in real contexts is very high. MFA demonstrated excellent communication and collaboration skills within the team, made significant contributions, and demonstrated very high levels of perseverance and tenacity in completing SPLTV assignments.

The student with the initials RH (Male), RH obtained a total score of 13 with a score of 87. RH has a very good understanding of the SPLTV concept, although there are a few shortcomings in the explanation. RH's analysis and interpretation of SPLTV was excellent and accurate, with only a few minor errors. The evaluation and reasoning carried out by RH were also very good and logical. RH's creativity and expertise in completing SPLTV and applying it in a real context is very good. RH is able to communicate and collaborate very well within the team, make significant contributions, and show very high perseverance and tenacity in completing SPLTV tasks.

The student with the initials JI (Male), JI obtained a total score of 11 with a score of 73. JI has a good understanding of the SPLTV concept but there are several shortcomings in the explanation. JI was able to analyze and interpret SPLTV quite well, although there were several basic errors. JI's evaluation and reasoning are quite good, but there are still many shortcomings in logic. JI's creativity and expertise in completing SPLTV is sufficient, but lacking in real context application. JI is able to communicate and collaborate quite well within the team, but his contribution is still minimal. JI's perseverance and tenacity in completing SPLTV tasks is quite good, but he often gives up before completion.

Students with the initials FYP (Male), FYP obtained a total score of 10 with a value of 67. FYP has a good understanding of the SPLTV concept but there are several shortcomings in the explanation. FYP was able to analyze and interpret SPLTV adequately, although there were several basic errors. FYP's evaluation and reasoning are quite good, but there are still many shortcomings in logic. FYP's creativity and expertise in completing SPLTV is sufficient, but lacking in real context application. FYP is able to communicate and collaborate quite well within the team, but his contribution is still minimal. FYP's perseverance and tenacity in completing SPLTV tasks is quite good, but often gives up before completion.

Students with the initials WIA (Male), WIA obtained a total score of 7 with a value of 47. WIA has a fairly basic understanding of the SPLTV concept, but is less able to explain it in detail. WIA's analysis and interpretation of SPLTV is adequate, but there are many fundamental errors. WIA's evaluation and reasoning are sufficient, but there are still many shortcomings in logic. WIA's creativity and expertise in completing SPLTV is sufficient, but lacking in real context application. WIA is able to communicate and collaborate quite well within the team, but its contribution is still minimal. WIA's perseverance and tenacity in completing SPLTV tasks is sufficient, but often gives up before completion.

Students with the initials WTU (Male), WTU obtained a total score of 6 with a value of 40. WTU had a very limited understanding of the SPLTV concept and many errors in the explanation. WTU's analysis and interpretation of SPLTV is not good and there are many fundamental errors. WTU's evaluation and reasoning are not good and there are many flaws in logic. WTU's creativity and expertise in completing SPLTV is lacking, as well as lacking in real context application. WTU is less able to communicate and collaborate well in teams. WTU's perseverance and perseverance in completing SPLTV tasks is very lacking and they often give up before completion.

Overall, MFA and RH showed excellent performance in understanding, analyzing, evaluating, and applying SPLTV. JI and FYP have quite good performance but still need improvement in several aspects. WIA and WTU need to improve their understanding of concepts and skills in completing SPLTV in order to achieve better results.

3.4 Analysis of SPLTV Test Results assessed based on Gender
a. Input Test Results into SPSS

Test and questionnaire result data were entered into SPSS statistical software for further processing. Each student response is entered carefully to ensure data accuracy.

Table 6. Recapitulation of SPLTV Test Scores Based on Gender

NO	SPLDV test value male students	SPLDV test value Female student
1	93	87
2	87	87
3	73	60
4	67	60
5	47	53
6	40	53
Average	68.00	67.00

b. Descriptive statistical test analysis

Researchers conducted descriptive analysis to evaluate and compare the results of the System of Three Variable Linear Equations (SPLTV) mathematics test between male and female students. The data analyzed involved 6 male students and 6 female students. Statistical analysis includes measures of central tendency (mean, median, mode), dispersion (standard deviation, variance), and distribution (skewness and kurtosis). These results provide a more in-depth picture of students' performance in taking the SPLTV test, making it possible to identify significant differences between the two groups as well as factors that influenced their performance..

Table 7. Descriptive statistical analysis of SPLTV test results based on gender

Statistics		Man	Woman
N	Valid	6	6
	Missing	1	1
Mean		67.8333	66.6667
Std. Error of Mean		8.63488	6.55574
Median		70.0000a	60.0000a
Mode		40.00b	53.00b
Std. Deviation		21.15104	16.05823

Variance		447,367	257,867
Skewness		-.237	,805
Std. Error of Skewness		,845	,845
Kurtosis		-1,614	-1,875
Std. Error of Kurtosis		1,741	1,741
Range		53.00	34.00
Minimum		40.00	53.00
Maximum		93.00	87.00
Sum		407.00	400.00
Percentiles	25	47,0000c	54.7500c
	50	70,0000	60,0000
	75	87,0000	80.2500
a. Calculated from grouped data.			
b. Multiple modes exist. The smallest value is shown			
c. Percentiles are calculated from grouped data.			

The following is a more complete description of the results of descriptive statistical tests for male and female students:

There are 6 valid data for male students, with 1 missing data. The average score (mean) of male students is 67.8333, with a standard error of the mean of 8.63488, which shows the accuracy of the estimate of the mean. The median score is 70.0000, indicating that half of the male students have scores above 70 and half below 70. The mode for Male' scores is 40.00, although there are several modes, the lowest score shown is 40.00.

The standard deviation for male students is 21.15104, indicating that there is considerable variation between the values. The variance, which is the square of the standard deviation, is 447,367. Skewness of -0.237 indicates that the distribution of values is slightly skewed to the left, meaning most of the values are on the right side of the distribution. A kurtosis of -1.614 indicates that the distribution of values is flatter than a normal distribution, meaning the values tend to be spread out more evenly rather than clustered around the mean.

The value range is 53.00, with a minimum value of 40.00 and a maximum value of 93.00. The total value (sum) is 407.00. At the 25th percentile, the male student's score was 47.0000, indicating that 25% of the students had a score below 47. At the 50th percentile (median), the student's score was 70.0000, and at the 75th percentile it was 87.0000, indicating that 75% of students have a score below 87.

There are also 6 valid data for female students, with 1 missing data. The average score (mean) of female students is 66.6667, with a standard error of the mean of 6.55574, which shows the accuracy of the estimate of the mean. The median score is 60.0000, indicating that half of the female students have scores above 60 and half below 60. The mode for female students' scores is 53.00, although there are several modes, the lowest score shown is 53.00.

The standard deviation for female students is 16.05823, indicating that the variation in scores among female students is quite large, although not as large as the variation among male students. The variance is 257,867. A skewness of 0.805 indicates that the distribution of values is skewed to the right, meaning that most of the values are on the left side of the distribution. A kurtosis of -1.875 indicates that the distribution of values is flatter than a normal distribution, meaning the values tend to be spread out more evenly rather than clustered around the mean.

The value range is 34.00, with a minimum value of 53.00 and a maximum value of 87.00. The total value (sum) is 400.00. At the 25th percentile, the female student's score was 54.7500, indicating that 25% of the students had a score below 54.75. At the 50th percentile (median), the student's score was 60.0000, and at the 75th percentile it was 80.2500, indicating that 75% of the students had a score below 80.25.

Overall, although the average score of male students (67.8333) is slightly higher than that of female students (66.6667), the variation in scores among male students is greater than that of female students, as shown by the standard deviation and variance higher. The distribution of male students' grades tends to be slightly skewed to the left, while the distribution of female students' grades is skewed to the right. Additionally, the range of scores for male students is larger than that for female students, indicating greater differences between male students' scores. Skewness and kurtosis for both groups indicate that the distribution of values is not normal and has a more even spread than a normal distribution.

c. Statistical analysis T-test

To evaluate the effect of female students' System of Linear Equations Three Variables (SPLTV) mathematics test results on male students' test results. Linear regression analysis was used to examine the relationship between female students' test scores (HT_Pr) as the independent variable and male students' test scores (HT_LK) as the dependent variable. The results of the t test provide insight into the significance and strength of the relationship between these variables, making it possible to understand whether the performance of female students can be used as a significant predictor of the performance of male students in the context of the SPLTV test.

Table 8. Statistical analysis of t-test of SPLTV test results based on gender

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	20,036	11,364		1,763	.153
	Man	,687	,161	,905	4,266	.013
a. Dependent Variable: Female						

Description of the results of the t test analysis according to the input in table 8 above. The regression model used has a constant coefficient of 20,036with standard erroras big as11,364. This means, theoretically, if the predictor variable "Male" has a value of zero, the mean value of the dependent variable "Female" is predicted to be 20.036. However, this constant coefficient is not statistically significant with a t-value of 1.763 and a p-value of 0.153. This indicates that the contribution of this constant to the regression model does not have a strong enough basis to be interpreted as a significant part of the model.

The unstandardized coefficient for the variable "Male" is 0.687 with standard erroras big as0.161. This coefficient indicates that each one unit increase in the variable "Male" is associated with an increase of 0.687 units in the variable "Female." The statistical significance of this coefficient is proven by a t-value of 4.266 and a p-value of 0.013, which is below the significance threshold of 0.05. Thus, the variable "Male" has a statistically significant influence on the variable "Female."

The standardized coefficient (Beta) for the variable "Male" is 0.905. This Beta Coefficientindicatedthat the "Male" variable has a very strong influence on the "Female"

variable in the context of this regression model. A beta that is close to 1 indicates that this predictor variable is one of the dominant factors that influences the dependent variable.

Previous descriptive analysis shows that the average score of male students is 67.8333 with a standard deviation of 21.15104, while the average score of female studentsis66.6667 with a standard deviation of 16.05823. Although the average grades of male students are slightly higher than those of female students, the variation in grades among male students is greater. This is indicated by the higher standard deviation and variance for male students.

The results of this statistical t test strengthen the findings from the previous descriptive analysis that there is a significant relationship between the grades of male students and the grades of female students. With a significant regression coefficient ($p = 0.013$), it can be concluded thatmarkmale students are a significant predictor of female students' grades. This may reflect the presence of the same or similar factors influencing the academic performance of both groups of students.

Academically, a significant relationship between the grades of male and female students shows that there islinkagesin learning dynamics or environmental factors that influence both groups. The strong influence of male students' grades on female students' grades (Beta = 0.905) indicates that further analysis is needed to identify specific factors that contribute to their academic performance. This could include teaching methods, curriculum, or socio-economic factors that affect both groups similarly.

Overall, the results of the statistical t test and descriptive analysis provide a comprehensive picture of the relationship between male and female students' grades. CoefficientregressionThe significant and high Beta indicates that the variable "Male" has a large and significant influence on the variable "Female," reinforcing the importance of further investigation into the factors that influence the academic performance of students in both groups.

3.5 Findings and Discussion

From the results of the analysis above, it can be concluded that there are variations in ability in solving SPLTV questions between female and male students. Female AF and AS students and male MFA and RH students performed very well in a variety of indicators measured. However, there are also students whose performance needs improvement in both groups.

In general, male students show greater variation in their abilities compared to female students. This can be seen from the higher standard deviation in the scores of male students. The distribution of male students' grades tends to be slightly skewed to the left, while the distribution of female students' grades is skewed to the right.

Although the average score of male students is slightly higher than that of female students, this analysis shows that both male and female students have their own strengths and weaknesses in understanding and solving SPLTV questions. Further analysis is needed to understand the factors that influence the academic performance of these two groups of students, as well as to develop teaching strategies that can help students of both genders improve their ability to solve SPLTV questions.

IV. Conclusion

Based on the results of research regarding the critical thinking abilities of class

1. Female students such as AF and AS show excellent performance in various indicators, including conceptual understanding, analysis and interpretation, evaluation and reasoning, creativity and expertise, communication and collaboration, and perseverance and tenacity. Male students such as MFA and RH also performed very well in these indicators. However, in general, male students show greater variation in their abilities compared to female students, as evidenced by higher standard deviations. Although the average score of Male is slightly higher, the distribution of their scores is more diverse with some students performing very well and others performing lower.

2. Factors influencing this difference include conceptual understanding, where female students generally demonstrate better understanding; analysis and interpretation, with female students performing consistently better; evaluation and reasoning, which are more consistent among female students; creativity and expertise, where female students show better results in real applications; communication and collaboration, which is better among high-achieving female students; as well as perseverance and tenacity, which are higher in high-achieving female students than in male students showing large variations in these aspects.

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