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THE IMPACT OF STUDENTS' CRITICAL THINKING LEVELS IN VISUAL ARTS EDUCATION LEARNING AT THE MALAYSIAN INSTITUTE OF TEACHER EDUCATION (ITE)

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Abstract

This study aims to examine the impact of students' critical thinking levels in learning Visual Arts Education (VAE) at the Malaysian Institute of Teacher Education (ITE), by focusing on the influence of teacher teaching factors, VAE T&L focus, learning environment, student motivation and attitude, and student involvement. The study design is quantitative using a survey method through a questionnaire as the main instrument. Data were analyzed using inferential statistical methods to test the relationship and effect between the variables studied. The study findings show that teacher teaching factors, VAE T&L focus, learning environment, student motivation and attitude, and student involvement have a significant impact on students' critical thinking levels. In addition, this study also found that teacher teaching factors, VAE T&L focus, learning environment, student motivation and attitude also have a significant impact on students' involvement in VAE learning. These results show that student involvement plays an important element in strengthening the relationship between pedagogical factors and the development of critical thinking. Overall, this study emphasizes that an effective teaching approach, a conducive learning environment, and a high level of student motivation can increase student involvement and subsequently strengthen the level of critical thinking in learning Visual Arts Education. The implications of this study suggest that ITE and educators should emphasize teaching and learning strategies that focus more on higher-order thinking skills and active student involvement to produce creative, critical and competitive individuals.

Keywords: Critical thinking, Visual Arts Education (VAE), Teacher Teaching, T&L focus, Learning Environment, Student Motivation, Student Attitude, Student Engagement, Institute of Teacher Education (ITE), Higher-Order Thinking Skills (HOTS)

INTRODUCTION

Critical thinking is one of the core skills in 21st century education that emphasizes students' ability to analyze, evaluate and make rational judgments about information or learning experiences. In the context of today's education, the need to produce students who are not only creative but also critical thinkers is increasingly important to face the challenges of globalization and rapid technological development. Therefore, the education system emphasizes mastery of higher-order thinking skills (HOTS) in all subjects, including Visual Arts Education (VAE). VAE is not just a medium for producing artwork, but also functions as a platform that encourages the exploration of ideas, interpretation of meaning, and aesthetic evaluation. Through activities such as drawing, patterning, designing and appreciating artwork, students have the opportunity to develop critical thinking abilities. They are encouraged to observe, compare, interpret and justify their own and others' work. This process indirectly forms more analytical and reflective thinking.

However, the level of critical thinking among students often varies depending on the teacher's teaching approach, the learning environment and the level of student involvement in art activities. There are students who only focus on the technical aspects of producing artwork without understanding the meaning or concept behind it. This situation shows that critical thinking has not been fully implemented in Visual Arts Education learning. Accordingly, research on the level of students' critical thinking in Visual Arts Education learning is important to identify the extent to which this skill is mastered and the factors that influence it. The findings of this study are expected to help teachers plan more effective teaching strategies, thereby improving the quality of visual arts learning and producing students who are balanced in terms of cognitive, affective and psychomotor skills.

Students' critical thinking is still moderate because VAE T&L focuses more on the production of works than on the analysis and evaluation of art

In the context of teacher training at the Institute of Teacher Education (ITE), students as prospective teachers play an important role in shaping the level of students' critical thinking through the implementation of effective Teaching and Learning (T&L). The issues identified show that students' critical thinking is still at a moderate level, especially in the Visual Arts Education (VAE) subject, because T&L is more focused on the production of works than on the process of analyzing and evaluating art. ITE students are usually exposed to basic skills in art production such as drawing, coloring, and designing techniques. However, emphasis on high-level cognitive aspects such as making interpretations, analyzing meaning, and evaluating aesthetics is still not given enough attention. This situation causes prospective teachers to tend to apply a product-oriented approach when they undergo practicum training at school, namely evaluating the success of T&L based solely on the final results of students' work, without providing sufficient space for critical discussion or reflection. In addition, the constraints of experience and pedagogical exposure that emphasizes higher-level thinking skills also affect the ability of ITE students to plan T&L activities that stimulate critical thinking. Some students may lack confidence in conducting art appreciation sessions or open discussions because they are worried about the diverse and undirected responses of students (Rahman, Hossain, et al., 2025). As a result, teaching and learning has become more structured and teacher-centered, limiting students' opportunities to think deeply. In addition, time factors and the need to complete the syllabus also encourage ITE students to prioritize work production activities that are easier to measure and evaluate. This has resulted in less emphasis on elements of art analysis and evaluation such as describing artistic elements, design principles, and justifying works in T&L.

In this regard, ITE students need to be empowered with pedagogical knowledge and skills that balance

work production and critical thinking skills. Training that focuses more on high-level questioning strategies, inquiry-based learning, and reflective art appreciation activities needs to be improved. With this approach, prospective teachers can implement more holistic VAE T&L and effectively improve students' critical thinking skills.

Problem Statement

Critical thinking is an important element in the formation of holistic and competitive students, in line with the demands of 21st century education which emphasizes higher order thinking skills (HOTS). In the context of Visual Arts Education (VAE), critical thinking not only involves the ability to produce works of art, but also includes the ability to analyze, interpret, evaluate and justify a work. However, the implementation of VAE T&L at the school level still shows a tendency to focus more on product production than on deep cognitive processes (Alam et al., 2025). This situation has implications for the level of critical thinking of students which is still found to be at an average level. Students are able to produce good works in terms of technique, but lack the ability to explain meaning, analyze elements of art and design principles, and provide critical evaluation of their own and others' works. This deficiency shows that the element of critical thinking has not been comprehensively implemented in VAE T&L.

This issue is also closely related to the role of the Malaysian Institute of Teacher Education (ITE) as an institution that trains prospective teachers. There is a concern that ITE students may be more exposed to a product-oriented teaching approach than an approach that emphasizes critical thinking processes such as inquiry, discussion and reflection. If this situation continues, prospective teachers who are being trained may be less prepared to effectively integrate HOTS elements into VAE T&L when they are placed in schools. In addition, past studies have also shown that factors such as teaching approach, level of student involvement, learning environment and student motivation have an influence on the development of critical thinking (Mohd Pauzi & Shahadat Hossen, 2025). However, there is still a gap in research that specifically examines the impact of students' critical thinking levels in VAE learning in the context of teacher training at IPG Malaysia. The lack of empirical research in this context makes it difficult to understand the extent to which students' critical thinking influences the effectiveness of visual arts learning and how related factors can be optimized (Alam et al., 2025).

In this regard, this study was conducted to identify the impact of students' critical thinking levels in learning Visual Arts Education at ITE Malaysia. This study is important to provide a clearer picture of the relationship between critical thinking and the effectiveness of VAE T&L, thus helping ITE and educators devise more effective teaching strategies in producing students who are critical, creative and reflective thinkers.

RESEARCH METHODOLOGY

The research method used was quantitative and used research instruments that were adapted according to Teacher Teaching Factors, VAE T&L Focus, Learning Environment, Student Motivation and Attitude, and Student Engagement towards the Level of Student Critical Thinking at the Malaysian Institute of Teacher Education (ITE). Data were analyzed using Structural Equation Modeling (SEM) with the help of the IBM-SPSS-AMOS version 24.0 program. SEM was formed with two (2) main models, namely the Measurement Model and the Structural Model. Before the SEM test was carried out, a fit test was also conducted to ensure that the indicators tested truly represented the constructs being measured. Confirmatory Factor Analysis (CFA) is a measurement model test to ensure that each construct meets procedures such as validity and reliability for each construct tested (Chik et al.,

2024; 2018; Kline, 2016; Hair et al., 2006; Schumacker & Lomax, 2004).

STUDY FINDINGS

There are two (2) types of output when running the SEM (Structural Equation Modeling) procedure, namely graphical output and text output. The graphical output produces standardized regression values and unstandardized regression values between the constructs during the SEM procedure during the analysis.

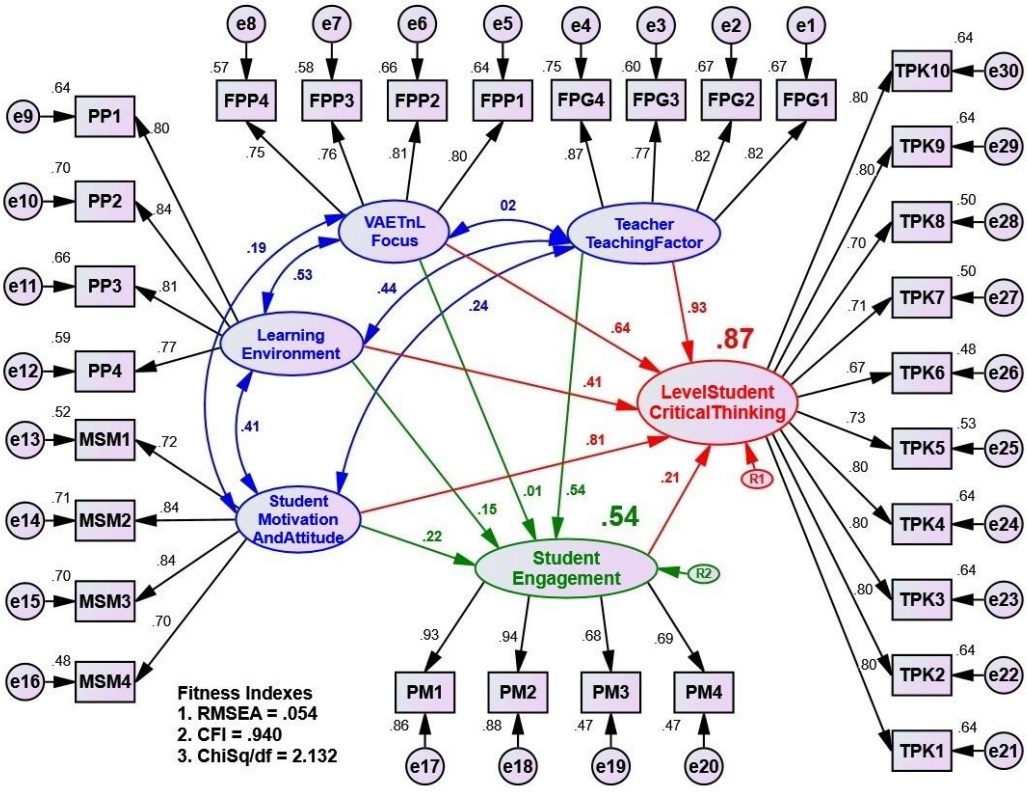

Figure 1: Standardized Regression Values

The R^2 value for the Level of Student Critical Thinking (LSCT) is 0.87. This shows that five (5) predictor constructs in the model (single-headed arrow - red color) namely Teacher Teaching Factor (TTF), VAE T&L Focus (VTF), Learning Environment (LE), Student Motivation and Attitude (SMA) and Student Engagement (SE) have contributed 87 percent (%) to the Level of Student Critical Thinking (LSCT) among the population in this study. While the R^2 value for Student Engagement (SE) is 0.54. This shows that four (4) predictor constructs in the model (single-headed arrow - green color) namely Teacher Teaching Factor (TPG), VAE T&L Focus (VTF), Learning Environment (LE), and Student Motivation and Attitude (SMA) have contributed 54 percent (%) to Student Engagement (SE) among the population in this study (Hossen et al., 2023).

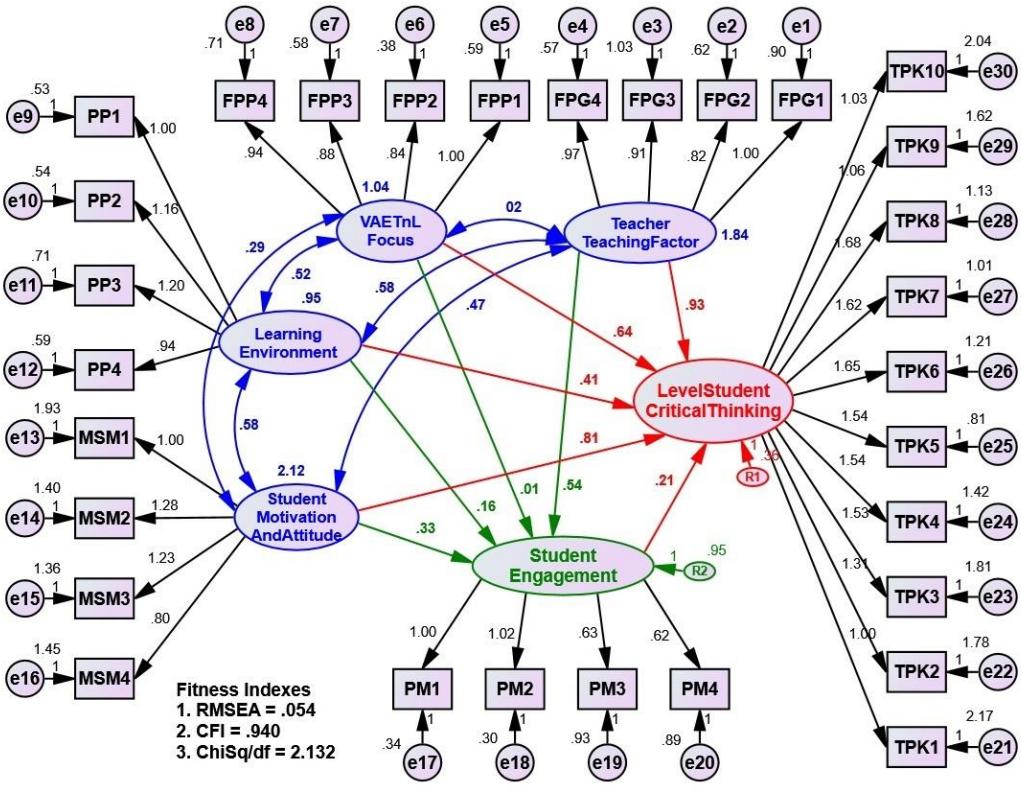

Figure 2: Unstandardized Regression Values

The regression equation for Level of Student Critical Thinking (LSCT) and Student Engagement (SE) is:

a) LSCT = 0.93TTF + 0.64VTF + 0.41LE + 0.81SMA + 0.21SE (R^2 = 0.87 = 87%).

b) SE = 0.54TTF + 0.01VTF + 0.16LE + 0.33SMA (R^2 = 0.54 = 54%).

The double-headed arrow is the correlation value between two independent variables, namely the correlation between Teacher Teaching Factor (TTF) and VAE T&L Focus (VTF) resulting in a value of 0.02. Teacher Teaching Factor (TTF) with Learning Environment (LE) produced a value of 0.44, Teacher Teaching Factor (TTF) with Student Motivation and Attitude (SMA) produced a value of 0.24, T&L VAE Focus (VTF) with Learning Environment (LE) produced a value of 0.53, T&L VAE Focus (VTF) with Student Motivation and Attitude (SMA) produced a value of 0.19, Learning Environment (LE) with Student Motivation and Attitude (SMA) produced a value of 0.41 and the results of this correlation value show that the SEM model built is valid based on the construct, because there is no multicollinearity problem (Awang et al., 2015a; Chik et al., 2024; 2018; Hoque, Awang, Jusoff, Salleh & Muda, 2017 and Kashif et al., 2016). Table 1 from Figure 2 above, shows the results of the direct effect hypothesis test for Teacher Teaching Factor (TTF), VAE T&L Focus (VTF), Learning Environment (LE), Student Motivation and Attitude (SMA) and Student Engagement (SE) (independent variables) on Level of Student Critical Thinking (LSCT) (dependent variable).

Table 1: Hypothesis of Direct Effects Between Constructs

Direct Effect Hypothesis	P	Results
H_1: Teacher Teaching Factors (TTF) have a significant effect on Level of Student Critical Thinking (LSCT).	***	Supported
H_2: VAE T&L Focus (VTF) has a significant effect on Level of Student Critical Thinking (LSCT).	***	Supported
H_3: Learning Environment (LE) has a significant effect on Level of Student Critical Thinking (LSCT).	***	Supported
H_4: Student Motivation and Attitude (SMA) have a significant effect on Level of Student Critical Thinking (LSCT).	***	Supported
H_5: Student Engagement (SE) has a significant effect on Level of Student Critical Thinking (LSCT).	***	Supported
H_6: Teacher Teaching Factors (TTF) have a significant effect on Student Engagement (SE).	***	Supported
H_7: VAE T&L Focus (VTF) has a significant effect on Student Engagement (SE).	***	Supported
H_8: Learning Environment (LE) has a significant effect on Student Engagement (SE).	0.035	Supported
H_9: Student Motivation and Attitude (SMA) have a significant effect on Student Engagement (SE).	***	Supported

Analysis of the Effects of Teacher Teaching Factors (TTF) on Level of Student Critical Thinking (LSCT)

Based on the analysis of Figure 2 above and Table 2 below, it shows that Teacher Teaching Factor (TTF) has a significant effect on Level of Student Critical Thinking (LSCT). The estimated regression weight (β) is 0.934, the significance level is 0.001 (Estimate = 0.934, S.E. = 0.058, C.R. = 16.100, $p < 0.001$, Label = Significant). The results of this study show that Teacher Teaching Factor (TTF) has a positive and significant effect on Level of Student Critical Thinking (LSCT). Therefore, when Teacher Teaching Factor (TTF) increases by 1 unit, an increase of 0.934 units also occurs in Level of Student Critical Thinking (LSCT). Therefore, the testing of hypothesis **H_1** in this study is supported based on the observed data.

Table 2: Regression Coefficient Value of Teacher Teaching Factor (TTF) on the Level of Student Critical Thinking (LSCT)

Construct		Construct	Estimate (β)	S.E.	C.R.	P	Label
LSCT	:-	TTF	0.934	0.058	16.100	***	Significant

***Significant value at the significance level, $p < 0.001$

Analysis of the Effect of VAE T&L Focus (VTF) on the Level of Student Critical Thinking (LSCT)

Based on the analysis of Figure 2 above and Table 3 below, it shows that VAE T&L Focus (VTF) has a significant effect on the Level of Student Critical Thinking (LSCT). The regression weight estimate (β) is 0.635 and the significance level is 0.001 (Estimate = 0.635, S.E. = 0.038, C.R. = 16.685, $p < 0.001$, Label = Significant). The results of this study show that VAE T&L Focus (VTF) has a positive and significant effect on the Level of Student Critical Thinking (LSCT). Therefore, when VAE T&L Focus (VTF) increases by 1 unit, an increase of 0.635 units also occurs in the Level of Student Critical Thinking (LSCT). Therefore, the testing of hypothesis **H_2** in this study

is supported based on the observed data.

Table 3: Regression Coefficient Value of VAE T&L Focus (VTF) on the Level of Student Critical Thinking (LSCT)

Construct		Construct	Estimate (β)	S.E.	C.R.	P	Label
LSCT	:-	VTF	0.635	0.038	16.685	***	Significant

***Significant value at the significance level, $p < 0.001$

Analysis of the Effect of Learning Environment (LE) on the Level of Student Critical Thinking (LSCT)

Based on the analysis of Figure 2 above and Table 4 below, it shows that Learning Environment (LE) has a significant effect on Level of Student Critical Thinking (LSCT). The regression weight estimate (β) is 0.405, the significance level is 0.001 (Estimate = 0.405, S.E. = 0.040, C.R. = 10.084, $p < 0.001$, Label = Significant). The results of this study show that Learning Environment (LE) has a positive and significant effect on Level of Student Critical Thinking (LSCT). Therefore, when Learning Environment (LE) increases by 1 unit, an increase of 0.405 units also occurs in Level of Student Critical Thinking (LSCT). Therefore, the testing of hypothesis **H_3** in this study is supported based on the observed data.

Table 4: Regression Coefficient Value of Learning Environment (LE) on the Level of Student Critical Thinking (LSCT)

Construct		Construct	Estimate (β)	S.E.	C.R.	P	Label
LSCT	:-	LE	0.405	0.040	10.084	***	Significant

***Significant value at the significance level, $p < 0.001$

Analysis of the Effect of Student Motivation and Attitude (SMA) on the Level of Student Critical Thinking (LSCT)

Based on the analysis of Figure 2 above and Table 5 below, it shows that Student Motivation and Attitude (SMA) has a Significant effect on the Level of Student Critical Thinking (LSCT). The regression weight estimate (β) is 0.807, the significance level is 0.001 (Estimate = 0.807, S.E. = 0.022, C.R. = 36.684, $p < 0.001$, Label = Significant). The results of this study show that Student Motivation and Attitude (SMA) has a positive and Significant effect on the Level of Student Critical Thinking (LSCT). Therefore, when Student Motivation and Attitude (SMA) increases by 1 unit, an increase also occurs by 0.807 units on the Level of Student Critical Thinking (LSCT). Therefore, the testing of hypothesis H_4 in this study is supported based on the observed data.

Table 5: Regression Coefficient Value of Student Motivation and Attitude (SMA) on the Level of Student Critical Thinking (LSCT)

Construct		Construct	Estimate (β)	S.E.	C.R.	P	Label
LSCT	:-	SMA	0.807	0.022	36.684	***	Significant

*** Significant value at the significance level, $p < 0.001$

Analysis of the Effect of Student Engagement (SE) on the Level of Student Critical Thinking (LSCT)

Based on the analysis of Figure 2 above and Table 6 below, it shows that Student Engagement (SE) has a Significant effect on Level of Student Critical Thinking (LSCT). The regression weight estimate (β) is 0.212, the significance level is 0.001 (Estimate = 0.212, S.E. = 0.034, C.R. = 6.282, p < 0.001, Label = Significant). The results of this study show that Student Engagement (SE) has a positive and Significant effect on Level of Student Critical Thinking (LSCT). Therefore, when Student Engagement (SE) increases by 1 unit, an increase also occurs by 0.212 units on Level of Student Critical Thinking (LSCT). Therefore, the testing of hypothesis **H_5** in this study is supported based on the observed data.

Table 6: Regression Coefficient Value of Student Engagement (SE) on the Level of Student Critical Thinking (LSCT)

Construct		Construct	Estimate (β)	S.E.	C.R.	P	Label
LSCT	:-	SE	0.212	0.034	6.282	***	Significant

***Significant value at the significance level, p < 0.001

Analysis of the Effect of Teacher Teaching Factor (TTF) on the Student Engagement (SE)

Based on the analysis of Figure 2 above and Table 7 below, it shows that Teacher Teaching Factor (TTF) has a significant effect on Student Engagement (SE). The regression weight estimate (β) is 0.536, the significance level is 0.001 (Estimate = 0.536, S.E. = 0.055, C.R. = 9.804, p < 0.001, Label = Significant). The results of this study show that Teacher Teaching Factor (TTF) has a positive and significant effect on Student Engagement (SE). Therefore, when Teacher Teaching Factor (TTF) increases by 1 unit, an increase also occurs by 0.536 units on Student Engagement (SE). Therefore, the testing of hypothesis **H_6** in this study is supported based on the observed data.

Table 7: Regression Coefficient Value of Teacher Teaching Factor (TTF) on the Student Engagement (SE)

Construct		Construct	Estimate (β)	S.E.	C.R.	P	Label
SE	:-	TTF	0.536	0.055	9.804	***	Significant

***Significant value at the significance level, p < 0.001

Analysis of the Effect of VAE T&L Focus (VTF) on the Student Engagement (SE)

Based on the analysis of Figure 2 above and Table 8 below, it shows that VAE T&L Focus (VTF) has a significant effect on Student Engagement (SE). The regression weight estimate (β) is 0.014 and the significance level is 0.001 (Estimate = 0.014, S.E. = 0.035, C.R. = 0.412, p < 0.001, Label = Significant). The results of this study show that VAE T&L Focus (VTF) has a positive and significant effect on Student Engagement (SE). Therefore, when VAE T&L Focus (VTF) increases by 1 unit, an increase of 0.014 units also occurs on Student Engagement (SE). Therefore, the testing of hypothesis **H_7** in this study is supported based on the observed data.

Table 8: Regression Coefficient Value of VAE T&L Focus (VTF) on the Student Engagement (SE)

Construct		Construct	Estimate (β)	S.E.	C.R.	P	Label
SE	:-	VTF	0.014	0.035	0.412	***	Significant

***Significant value at the significance level, p < 0.001

Analysis of the Effect of Learning Environment (LE) on the Student Engagement (SE)

Based on the analysis of Figure 2 above and Table 9 below, it shows that Learning Environment (LE) has a Significant effect on Student Engagement (SE). The regression weight estimate (β) is 0.156, the significance level is 0.035 (Estimate = 0.156, S.E. = 0.074, C.R. = 2.106, p < 0.001, Label = Significant). The results of this study show that Learning Environment (LE) has a positive and Significant effect on Student Engagement (SE). Therefore, when Learning Environment (LE) increases by 1 unit, an increase also occurs by 0.156 units on Student Engagement (SE). Therefore, the testing of hypothesis **H_8** in this study is supported based on the observed data.

Table 9: Regression Coefficient Value of Learning Environment (LE) on the Student Engagement (SE)

Construct		Construct	Estimate (β)	S.E.	C.R.	P	Label
SE	:-	LE	0.156	0.074	2.106	0.035	Significant

***Significant value at the significance level, p < 0.001

Analysis of the Effect of Student Motivation and Attitude (SMA) on the Student Engagement (SE)

Based on the analysis of Figure 2 above and Table 10 below, it shows that Student Motivation and Attitude (SMA) has a Significant effect on Student Engagement (SE). The regression weight estimate (β) is 0.328, the significance level is 0.001 (Estimate = 0.328, S.E. = 0.084, C.R. = 3.923, p < 0.001, Label = Significant). The results of this study show that Student Motivation and Attitude (SMA) has a positive and Significant effect on Student Engagement (SE). Therefore, when Student Motivation and Attitude (SMA) increases by 1 unit, an increase also occurs by 0.328 units on Student Engagement (SE). Therefore, the testing of hypothesis **H_9** in this study is supported based on the observed data.

Table 10: Regression Coefficient Value of Student Motivation and Attitude (SMA) on the Student Engagement (SE)

Construct		Construct	Estimate (β)	S.E.	C.R.	P	Label
SE	:-	SMA	0.328	0.084	3.923	***	Significant

***Significant value at the significance level, p < 0.001

CONCLUSION

Overall, the findings of this study prove that all the main factors studied, namely teacher teaching factors, the focus of T&L Visual Arts Education (VAE), the learning environment, student motivation and attitude, and student involvement have a significant influence on the level of critical thinking of students at the Malaysian Institute of Teacher Education (ITE). These results show that the development of students' critical thinking does not depend on a single factor, but rather is the result of the interaction of various pedagogical, psychological and learning environment elements that complement each other. In particular, teacher teaching factors were found to play a very important role in shaping students' critical thinking. A teaching approach that emphasizes high-level questioning, open discussion and inquiry-based activities can stimulate students to think more deeply and analytically. Similarly, the focus of VAE T&L that is balanced between the production of works and analysis and art evaluation was found

to be able to improve students' ability to interpret and justify works of art. In addition, a conducive and supportive learning environment also contributes significantly to the development of critical thinking.

An open, interactive classroom atmosphere and rich in learning resources allow students to be actively involved in the learning process. At the same time, students' motivation and attitude towards VAE subjects are also important catalysts, where students who are interested and have a positive attitude are more likely to be involved in activities that challenge their thinking. The findings of this study also confirm that student involvement acts as an important element in increasing the level of critical thinking. Students who are active in discussions, sharing ideas and self-reflection show a higher level of critical thinking. In fact, the results of the study also show that the factors of teacher teaching, VAE T&L focus, learning environment and student motivation and attitude have a significant effect on student involvement. This shows that student involvement functions as an important mechanism that connects these factors with the development of critical thinking.

By implication, this study emphasizes that efforts to increase the level of student critical thinking in VAE learning need to be implemented comprehensively and integratedly. ITE and educators need to emphasize strengthening pedagogy oriented towards higher-order thinking skills, creating a conducive learning environment and fostering motivation and positive attitudes among students. With this holistic approach, Visual Arts Education has the potential to be an effective medium in producing students who are not only creative, but also critical, reflective and competitive.

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Data Availability: The author has all the data employed in this research and is open to sharing it upon reasonable request.

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