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## The Influence of Technical Support and Emotional Endurance on E-Critical Thinking Ability Among Senior High School Students

Mary Christelle Concepcion C. Bienes, MAFIL<sup>1</sup>, & James L. Paglinawan, Ph.D.<sup>2</sup>

<sup>1</sup>Department of Education, Kalilangan National High School, Philippines

<sup>2</sup>Department of Language Education, Central Mindanao University, Philippines

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### Abstract

In the contemporary digital learning landscape, the development of E-Critical Thinking ability is paramount for senior high school students. This study investigated the influence of technical support and emotional endurance on this crucial skill, addressing a gap in understanding their relative predictive power. A quantitative, correlational design was employed with 300 senior high school students selected via convenience sampling. Data were collected using validated Likert-scale questionnaires measuring Technical Support, Emotional Endurance, and E-Critical Thinking Ability. Data analysis involved descriptive statistics, Pearson correlation, and multiple regression. Findings indicated moderately high levels of technical support ( $M=3.66$ ), emotional endurance ( $M=3.88$ ), and E-Critical Thinking ( $M=3.76$ ). Correlation analysis revealed both emotional endurance ( $r=.690$ ,  $p<.01$ ) and technical support ( $r=.369$ ,  $p<.01$ ) had significant positive relationships with E-Critical Thinking. However, regression analysis established that only emotional endurance ( $\beta=.658$ ,  $p<.001$ ) was a significant unique predictor, accounting for 44.6% of the variance in E-Critical Thinking, while technical support was not a significant predictor in the combined model. The results underscore that emotional endurance is a substantially stronger and more direct contributor to E-Critical Thinking than technical support. This suggests that while robust technical infrastructure is foundational, students' psychological resilience is the primary driver of their critical thinking competencies in digital environments. Educational strategies should, therefore, prioritize fostering emotional endurance alongside providing reliable technical resources.

**Keywords:** critical thinking, emotional endurance, technical support, senior high school students, digital learning, regression analysis

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### 1. Introduction

In today's digital era, critical thinking is regarded as an essential skill for academic success and lifelong learning, particularly among senior high school students who are transitioning to more technology-driven education models. E-Critical Thinking Ability—the capacity to analyze, evaluate, and synthesize information accessed through electronic means—plays a vital role in enabling students to navigate complex digital information effectively. While the Philippine education system has integrated technology into classrooms, the quality of technical support and the emotional endurance of students significantly influence how these abilities develop. Technical support encompasses the hardware, software, and assistance that facilitate effective use of technology in learning, while emotional endurance refers to students' resilience in

managing academic stress, frustration, and motivation during critical thinking tasks in an online or blended environment. This study aims to examine the relationships among technical support, emotional endurance, and E-Critical Thinking Ability of senior high school students, contributing to the growing body of research focused on optimizing educational outcomes amidst evolving instructional modalities.

Many Filipino learners struggle to develop higher-order thinking skills, including critical thinking. The 2023 National Achievement Test (NAT) results from a national school indicated a critical thinking proficiency rate of just 32.97%, underscoring the limitations of traditional didactic teaching approaches marked by rote memorization (Researcher, 2025). Moreover, despite the K to 12 curriculum's emphases on enhancing critical thinking, many teachers face difficulties in implementation due to insufficient instructional materials and inadequate training, which restrains the potential of technological tools in classrooms (Pacheco & Ramos, 2021; Santos & Garcia, 2023). A review by Lopez (2023) highlighted not only the scarcity of research on Filipino students' dispositions toward critical thinking but also the lack of studies addressing the role of technical support systems in this development. Internationally, Jaffar (2025) discussed how language barriers, prior education systems, and absence of specialized staff compromise international students' advancement of critical thinking skills. His findings underscore the need for content-specific language courses and interactive teaching approaches, which are relevant in the Philippine context due to its diverse linguistic landscape.

Concurrently, the psychological dimension, particularly emotional endurance, critically affects student engagement in critical thinking activities. Locally, Pagutayao et al. (2024) revealed that psychological factors, including emotional regulation and resilience, strongly correlate with students' attitudes towards critical thinking when exposed to computer-assisted instruction. This is echoed by Vince et al. (2024), who found that emotional endurance and support influence students' capacity to sustain cognitive effort during demanding problem-solving tasks. International studies further affirm this association; for instance, Palma-Luengo et al. (2025) demonstrated that emotional intelligence training enhances critical thinking across educational settings. Similarly, Guamanga et al. (2024) established that psychological well-being positively impacts academic performance through mediation by critical thinking skills. The role of technical support as a facilitator of E-Critical Thinking Ability is widely documented both locally and internationally. Lagare and Paglinawan (2024) showed a strong correlation between collaborative teaching practices, a positive technology mindset, and higher critical thinking performance among Filipino students. This aligns with findings by Dermawan (2025), who reported that interactive e-modules improve critical thinking in elementary learners by providing accessible, user-friendly platforms. Moreover, studies within the Philippines emphasize the need for stable infrastructure and responsive technical support to maximize digital learning efficacy (Molina & Yabut, 2025; Kris & James, 2024). Internationally, researchers like Nurhasanah (2025) and Rodriguez-Sabiote (2022) corroborate these findings, emphasizing adequate infrastructure and accessible technical assistance as foundational to fostering critical thinking through digital modalities.

The integration of effective technical support and emotional endurance mechanisms is instrumental in cultivating E-Critical Thinking Ability. Social media engagement studies among Filipino senior high students revealed that educationally oriented social media use correlates positively with critical thinking, contingent upon the learners' focus and the quality of their interactions (Duterte, 2025). This suggests that technical support that facilitates

productive interaction, coupled with emotional endurance that sustains engagement, can jointly enhance cognitive outcomes.

This will address the Filipino students' low critical thinking proficiency; multi-dimensional interventions are necessary. These include investing in robust technological infrastructure and support services, developing psychological resilience programs, and tailoring pedagogic strategies to support cognitive and emotional needs. Research supporting inquiry-based and problem-based learning frameworks, particularly those coupled with multimedia and interactive tools, is promising for the Philippine educational landscape (Suniasih, 2021; Santos & Garcia, 2023; Pacheco & Ramos, 2021). Additionally, the cross-cultural insights from international studies on emotional endurance and technical support provide valuable templates for contextually adapting support systems for Filipino learners.

The study seeks to contribute to closing research gaps by empirically investigating the combined effects of technical support and emotional endurance on the E-Critical Thinking Ability of senior high school students in the Philippines. This research underscores the necessity of a holistic approach that synergizes technological facilitation and emotional resilience to enhance critical thinking skills vital for academic success and lifelong learning in a digital age.

## **Methods**

### **Research Design**

This study employed a quantitative, correlational research design. This approach was deemed appropriate for describing the levels of technical support, emotional endurance, and E-Critical Thinking among senior high school students and for examining the relationships between these variables without any manipulation.

### **Participants and Sampling**

The participants consisted of 300 senior high school students. A convenience sampling method was used to select the respondents. The sample included students from various strands to ensure a representative cross-section of the senior high school population.

### **Data Collection Instruments**

Data were collected using a structured survey questionnaire comprising four sections. The first section gathered demographic information, including respondents' age, grade level, and gender. The subsequent sections utilized validated scales adapted from existing literature. The **Technical Support Scale** was anchored on the work of Lagare and Paglinawan (2024), which examined the correlation between technology infrastructure and critical thinking. This scale consisted of 40 items across four sub-scales: Availability of Technical Resources (e.g., "The school provides adequate technological devices for learning"), Technical Support Services (e.g., "Technical support staff quickly respond to technical problems"), Ease of Use of Technology (e.g., "The learning technologies used are user-friendly"), and Technical Reliability and Accessibility (e.g., "Technical tools consistently function without unexpected breakdowns"). The **Emotional Endurance Scale** was adapted from Pagutayao et al. (2024), who studied the relationship between psychological factors and critical thinking. This 40-item scale included sub-scales for Emotional Regulation (e.g., "I can stay calm even during stressful learning situations"), Persistence and Resilience (e.g., "I continue trying even when a task is

very difficult"), Optimism and Positive Outlook (e.g., "I believe I can improve my critical thinking abilities"), and Coping and Support-Seeking (e.g., "I seek help from teachers or peers when I feel overwhelmed"). Finally, the **E-Critical Thinking Ability Scale** was developed based on the framework by Jaffar (2025), which outlines the challenges and components of critical thinking in academic settings. This 24-item scale measured three dimensions: Understanding and Interpretation (e.g., "I accurately interpret information presented in electronic formats"), Critical Analysis and Evaluation (e.g., "I evaluate the credibility of information from electronic sources"), and Decision Making and Problem Solving (e.g., "I use electronic information to draw well-founded conclusions"). All items across the three main scales were rated using a 5-point Likert scale.

### Data Analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics, including means and standard deviations, were computed to determine the levels of technical support, emotional endurance, and E-Critical Thinking ability. Pearson's Product-Moment Correlation was used to test the significance of the relationships between the main variables. Furthermore, the reliability of the instruments was assessed, and the result of Cronbach's Alpha was all highly acceptable for Technical Support (0.940), Emotional Endurance (0.956), and E-Critical Thinking Skills (0.943).

### 4. Levels of Technical Support, Emotional Endurance, and E-Critical Thinking

**Table 1. Distribution of the Level of Technical supports the Senior High School Students (N=300)**

Variable	Mean	Standard Deviation	Interpretations
Ease of Use of Technology	3.78	.56	High Technical Support Received
Technical Support Services	3.72	.55	High Technical Support Received
Availability of Technical Resources	3.59	.56	High Technical Support Received
Technical Reliability and Accessibility	3.57	.61	High Technical Support Received
Technical Support Overall	3.66	0.44	Moderately High

Note. The descriptive interpretation for individual variables is based on the following legend: 1.00—1.50 = Strongly Disagree (No Technical Support Received); 1.51-2.50 = Disagree (Less technical support received); 2.51-3.50 = Undecided (Moderate technical support received); 3.51-4.50 = Agree (High Technical Support received); 4.51-5.00 = Strongly Agree (Very high technical support received).

The mean scores revealed that students perceive all facets of technical support favorably, with all individual variable means falling within the "Agree" or "High Technical Support Received" range (3.51 to 4.50). The dimension with the highest perceived support is Ease of Use of Technology (M=3.78, SD=.56), closely followed by Technical Support Services (M=3.72, SD=.55). The dimensions with the lowest, yet still positive, ratings are Availability of Technical Resources (M=3.59, SD=.56) and Technical Reliability and Accessibility (M=3.57, SD=.61).

The overall mean for technical support ( $M=3.66$ ,  $SD=0.44$ ) is a composite that falls within the high support range, though it was originally interpreted as "Moderately High." The standard deviations across all variables are relatively low and similar, indicating a consistent pattern of responses among the participants with little variation.

It indicated that the senior high school students generally agree that they are receiving a high level of technical support. The highest rating for "Ease of Use of Technology" suggests that the digital tools and platforms provided to the students are considered user-friendly and intuitive. This is a critical finding, as perceived ease of use is a significant predictor of technology acceptance and successful integration in educational settings (Davis, 1989). The strong performance of "Technical Support Services" implies that the helpdesk or personnel assistance available to students is effective and responsive, which is essential for minimizing frustration and downtime during learning activities (Isaias et al., 2020).

Conversely, the relatively lower scores for "Technical Reliability and Accessibility" and "Availability of Technical Resources" point to areas for potential improvement. While still rated positively, these aspects suggest that students may occasionally experience issues with internet connectivity, system downtimes, or a lack of sufficient hardware or software. This aligns with existing literature which identifies reliable infrastructure and equitable access as foundational pillars for sustainable technology-enhanced learning (Zhao et al., 2021). The slight dip in these scores, compared to ease of use and support services, implies that the institution's human and procedural support systems are currently stronger than its physical and connectivity infrastructure. To optimize the learning environment, institutional efforts could focus on strengthening these technical foundations to ensure that the positive user experience is not hindered by accessibility or reliability issues.

**Table 2. Distribution of the Level of Emotional Endurance among Senior High School (N=300)**

Variable	Mean	Standard Deviation	Interpretations
Optimism and Positive Outlook	4.01	.58	High Emotional Endurance Received
Persistence and Resilience	3.98	.63	High Emotional Endurance Received
Coping and Support-Seeking	3.82	.66	High Emotional Endurance Received
Emotional Regulation	3.69	.65	High Emotional Endurance Received
Emotional Endurance Overall	3.88	0.51	High

Note. The descriptive interpretation for individual variables is based on the following legend: 1.00—1.50 = Strongly Disagree (No Emotional Endurance Received); 1.51-2.50 = Disagree (Less Emotional Endurance Received); 2.51-3.50 = Undecided (Moderate Emotional Endurance Received); 3.51-4.50 = Agree (High Emotional Endurance Received); 4.51-5.00 = Strongly Agree (Very High Emotional Endurance Received).

The mean scores revealed a highly positive profile of emotional endurance among the students. All dimensions, as well as the overall score, fall within the "High Emotional Endurance

Received" range (3.51 to 4.50). The dimension with the highest rating is Optimism and Positive Outlook (M=4.01, SD=.58), which is notably close to the "Very High" classification. This is closely followed by Persistence and Resilience (M=3.98, SD=.63). The dimension of Coping and Support-Seeking (M=3.82, SD=.66) also shows a strong result. The lowest rated dimension, though still high, is Emotional Regulation (M=3.69, SD=.65). The standard deviations across all variables are moderately low and consistent, suggesting a general consensus among the students in their perceptions.

The results indicated that the student population possesses a high level of emotional endurance, with a particular strength in maintaining an Optimism and Positive Outlook. This suggests that students are generally able to anticipate positive outcomes and maintain hope even when facing academic or personal challenges. This trait is a cornerstone of positive psychology and is strongly linked to greater academic achievement, life satisfaction, and better mental health (Seligman, 2011). The similarly high score in Persistence and Resilience indicates that students demonstrate a robust capacity to persevere through difficulties and recover from setbacks, a critical skill for navigating the demands of senior high school (Duckworth et al., 2007).

The strong performance in Coping and Support-Seeking is another encouraging finding, as it reflects the students' proactive use of strategies and social resources to manage stress. This aligns with research showing that effective coping and the willingness to seek support are key protective factors against burnout and psychological distress (Skinner & Zimmer-Gembeck, 2007). The comparatively lower, though still high, score for Emotional Regulation suggests that while students are optimistic, persistent, and seek support, they may find it slightly more challenging to directly manage and control the intensity of their momentary emotional responses. This is a common developmental area for adolescents, as the neural circuits for emotional regulation are still maturing (Gross, 2015). Overall, the high composite score presents a picture of a student body that is well-equipped emotionally to handle the pressures of their academic stage, with strengths that can be leveraged to support the continued development of their emotional regulation skills.

**Table 3. Distribution of the level of E-Critical Thinking Ability to Senior High School Students (N=300)**

Variable	Mean	Standard Deviation	Interpretations
Decision Making and Problem Solving	3.79	.63	High E-Critical Thinking Ability Display
Understanding and Interpretation	3.76	.64	High E-Critical Thinking Ability Display
Critical Analysis and Evaluation	3.73	.63	High E-Critical Thinking Ability Display
E-Critical Thinking Overall	3.76	0.52	Moderately High

Note. The descriptive interpretation for individual variables is based on the following legend: 1.00—1.50 = Strongly Disagree (No E-Critical Thinking Ability Display); 1.51-2.50 = Disagree (Less E-Critical Thinking

Ability Display); 2.51-3.50 = Undecided (Moderate E-Critical Thinking Ability Display); 3.51-4.50 = Agree (High E-Critical Thinking Ability Display); 4.51-5.00 = Strongly Agree (Very High E-Critical Thinking Ability Display).

The mean scores indicated that students demonstrate a high level of e-critical thinking ability across all measured dimensions, with each individual variable mean falling within the "Agree" or "High E-Critical Thinking Ability Display" range (3.51 to 4.50). The dimension with the highest rating is Decision Making and Problem Solving (M=3.79, SD=.63), followed very closely by Understanding and Interpretation (M=3.76, SD=.64). The dimension with the lowest, though still positive, rating is Critical Analysis and Evaluation (M=3.73, SD=.63). The standard deviations for all three dimensions are nearly identical, indicating a consistent level of response variation among the participants for each facet of e-critical thinking.

The results suggested that students are effectively applying critical thinking skills in digital environments. The highest performance in Decision Making and Problem Solving indicates that students are confident in their ability to use online information to draw conclusions and devise solutions. This skill is paramount in the digital age, where individuals are constantly required to filter information and make informed choices (Heijltjes et al., 2014). The strong showing in Understanding and Interpretation reflects a solid capacity to comprehend and synthesize meaning from digital content, which is the foundational step in the critical thinking process.

However, the slightly lower score for Critical Analysis and Evaluation, while still high, points to a relative area for development. This dimension involves judging the credibility, relevance, and bias of information—a core competency for navigating the complex and often misleading digital information landscape (List, 2019). The fact that this skill is less pronounced than the others may indicate that while students can understand information and use it to solve problems, they may be less practiced in systematically critiquing the source and quality of the information itself. This finding aligns with broader educational concerns about the need for explicit instruction in digital literacy and source evaluation to combat misinformation (McGrew et al., 2018). The overall mean, interpreted as "Moderately High," is a composite that accurately reflects this profile: high abilities in application and comprehension, with a slight dip in the more advanced skill of critical evaluation, suggesting a pathway for targeted educational intervention.

### Relationships Between Variables

**Table 4. Correlations between Technical Support, Emotional Endurance, and E-Critical Thinking.**

Variables	Pearson r	P-Value	Interpretation
Emotional Endurance to E-Critical Thinking	.690	.000	Highly Significant
Technical Support to E-Critical Thinking	.369	.000	Highly Significant

*Note.* The interpretation of significance is based on the following legend:  $p > .05$  = Not Significant;  $p \leq .05$  = Significant;  $p \leq .001$  = Highly Significant.

This study revealed that both technical support and emotional endurance have statistically significant positive relationships with e-critical thinking. The correlation between Emotional Endurance and E-Critical Thinking is strong and positive ( $r = .690$ ,  $p < .001$ ). The correlation

between Technical Support and E-Critical Thinking is also positive and statistically significant, but demonstrates a moderate strength ( $r = .369, p < .001$ ). When arranged by the strength of the correlation, emotional endurance shows a substantially stronger association with e-critical thinking than technical support does.

The highly significant correlations indicated that both technical support and emotional endurance are important factors associated with students' e-critical thinking abilities. The strong positive relationship between emotional endurance and e-critical thinking suggests that students' capacity for optimism, resilience, and emotional regulation is closely linked to their ability to think critically in digital environments. This finding aligns with the research of Gross (2015), which posits that effective emotion regulation is crucial for higher-order cognitive processes, as it frees up cognitive resources that would otherwise be allocated to managing distress. A student with high emotional endurance is likely better equipped to persist through challenging problems, tolerate the ambiguity of complex online information, and maintain the cognitive flexibility required for critical analysis (Ivcevic & Brackett, 2014).

The moderate, yet still highly significant, relationship between technical support and e-critical thinking implied that while a reliable and user-friendly technological infrastructure is important, it may function more as an enabling factor rather than a direct driver. This supports the concept of the Technology Acceptance Model (Davis, 1989), where perceived ease of use and usefulness influence the actual utilization of a system. When students do not struggle with technical glitches or inaccessible resources, they can direct their full cognitive effort toward the critical evaluation and application of information rather than troubleshooting. However, the stronger correlation with emotional endurance suggests that even with excellent technical support, a student's internal psychological resources are a more powerful determinant of their ability to engage in sophisticated e-critical thinking. This interplay can be represented by the following regression equation, which models how these variables might jointly predict e-critical thinking:

$$\text{E-Critical Thinking} = a + b_1(\text{Technical Support}) + b_2(\text{Emotional Endurance})$$

Where  $a$  constant represents the baseline level of e-critical thinking, and the coefficients ( $b_1$  and  $b_2$ ) represent the unique contribution of each predictor. Based on the correlation results, one would expect  $b_2$  (the weight for Emotional Endurance) to be considerably larger than  $b_1$  (the weight for Technical Support), highlighting its greater relative importance.

### **The variables, singly or in combination best predict students' E-Critical Thinking Ability.**

**Table 5. Regression Analysis Predicting E-Critical Thinking.**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	2.359	.770		3.063	.005
	Emotional Endurance	.677	.149	.658	4.543	.000

Technical Support_	-.305	.180	-.246	-1.696	.101
R=0.668 <sup>a</sup>		R <sup>2</sup> =0.446		F-Value= 10.861	
				P=0.000	

*Note. Dependent Variable: EC\_Overall (E-Critical Thinking). The model was significant,  $p < .001$ . The predictor Emotional Endurance was a significant unique predictor ( $p < .001$ ), while Technical Support was not ( $p = .101$ ).*

The regression equation derived from the analysis is:

$$\text{Predicted EC\_Overall} = 2.359 + (0.677 \times \text{Emotional\_Endurance}) + (-0.305 \times \text{Technical\_Support})$$

The analysis aimed to determine the extent to which Emotional Endurance and Technical Support collectively and individually predict E-Critical Thinking. The model was tested for its significance, the variance it explains, and the unique contribution of each predictor. The multiple correlation coefficient ( $R = 0.668$ ) indicates a strong positive relationship between the combination of the two predictors and the dependent variable. The coefficient of determination ( $R^2 = 0.446$ ) reveals that approximately 44.6% of the variance in E-Critical Thinking scores can be explained by the linear combination of Emotional Endurance and Technical Support. The adjusted  $R^2$  value of 0.405 provides a more conservative estimate for the population. The overall model was statistically significant,  $F(2, 27) = 10.861$ ,  $p < .001$ , confirming that the regression model is a better predictor of E-Critical Thinking than a model with no predictors.

When examining the unique contribution of each predictor, the results are distinct. Emotional Endurance ( $\text{Beta} = 0.658$ ,  $p < .001$ ) emerged as a highly significant positive predictor. In contrast, Technical Support ( $\text{Beta} = -0.246$ ,  $p = 0.101$ ) was not a statistically significant predictor in this model. The negative unstandardized coefficient ( $B = -0.305$ ) for Technical Support suggests a potential inverse relationship, but its lack of significance means this finding is not reliable and should not be generalized.

The findings strongly indicated that a student's level of E-Critical Thinking is positively and significantly influenced by their Emotional Endurance. The positive and significant standardized coefficient ( $\text{Beta} = 0.658$ ) suggests that for every one standard deviation increase in Emotional Endurance, E-Critical Thinking increases by approximately 0.658 standard deviations, holding Technical Support constant. This aligns with educational psychology theories that emphasize the role of non-cognitive factors in learning. Emotional endurance, which likely encompasses grit, resilience, and the ability to manage academic stress, creates the psychological stability necessary for engaging in the demanding cognitive process of critical thinking (Jensen, 2021). A student who is not overwhelmed by emotional challenges is better positioned to analyze information deeply, evaluate perspectives, and synthesize complex ideas.

The non-significant relationship between Technical Support and E-Critical Thinking was a critical point of interpretation. The negative, non-significant coefficient implies that, in this model, the level of technical support provided did not have a statistically meaningful unique effect on fostering critical thinking skills. This can be interpreted through the lens of the "hygiene factor" concept from motivation theory (Herzberg, 1968). Technical support may function as a baseline requirement—its absence causes significant frustration and hinders learning, but its presence alone is not a direct motivator or enabler of higher-order cognitive engagement. Once a basic, functional level of support is established, other factors, such as

emotional resilience, become the primary drivers of advanced learning outcomes like critical thinking. Therefore, Technical Support may be a necessary precondition for online learning but is not a sufficient condition for developing E-Critical Thinking.

The significant role of emotional factors in cognitive performance was well-established in the literature. Research on academic resilience and grit shows that these traits are robust predictors of student success because they enable persistence through challenges, a key component of critical thought (Sinclair & Oliver, 2020). Similarly, Jensen (2021) links the ability to regulate emotion and maintain endurance under pressure directly to improved cognitive load management and executive function, which are essential for critical thinking.

The interpretation of Technical Support as a hygiene factor was supported by models of user satisfaction in educational technology. As suggested by Delone and McLean's Information Systems Success Model (2003), system quality (which includes reliability and support) is a fundamental antecedent to use and user satisfaction. However, its impact on higher-level "net benefits" (like critical thinking) is often mediated by other factors, such as the quality of the learning interaction and the individual characteristics of the user. This explains why, in a model that includes a potent personal factor like Emotional Endurance, the direct effect of Technical Support becomes non-significant; its primary role is to enable the engagement process, not to directly cause it.

## **5. Conclusion**

The findings of this study collectively paint a comprehensive picture of the factors influencing e-critical thinking in senior high school students. The descriptive results reveal that students possess a high degree of emotional endurance, with particular strengths in optimism and resilience, and they generally perceive the technical support provided to be at a high level. Furthermore, their self-reported e-critical thinking abilities are strong, especially in the realm of decision-making and problem-solving. The correlation analysis established that both emotional endurance and technical support are positively and significantly associated with e-critical thinking, with emotional endurance demonstrating a substantially stronger relationship. However, the regression analysis provided a more nuanced understanding, indicating that the overall e-critical thinking score is a direct and exclusive function of its three core subcomponents: understanding and interpretation, critical analysis and evaluation, and decision making and problem solving. This suggests that while a supportive emotional and technical environment is correlated with better outcomes, it is the direct enhancement of these fundamental cognitive skills that most precisely defines and builds a student's overall capacity for critical thought in digital environments. Therefore, it is concluded that to foster e-critical thinking, educational interventions must prioritize the direct instruction and practice of analytical and evaluative skills, while simultaneously cultivating a learning atmosphere that supports psychological well-being and provides reliable technological infrastructure to facilitate these cognitive processes.

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