Learning Dimensions and Teachers' Art of Questioning: Implications to the Grade 12 Students' Critical Reading Abilities

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Abstract

Aim: This study examined the implications of learning dimensions and teachers' questioning techniques on the critical reading abilities of students enrolled in a public school in Cagayan de Oro City, Philippines, for the academic year 2024–2025. Specifically, it investigated participants' assessments of their teachers' questioning skills, their self-reported learning dimensions encompassing cognitive abilities, psychological attributes, socio-emotional competencies, and technological skills, as well as their levels of critical reading abilities in analyzing complex arguments, evaluating information from gathered texts, and synthesizing authors' intentions.

Methodology: A descriptive correlational research design was utilized, involving 200 Grade 12 Senior High School (SHS) Students from a public school in Cagayan de Oro City, Philippines. The study utilized a researcher-made questionnaire to compile quantitative information. Statistical tools, including Taro Yamane's formula with a 0.05 margin of error, was used to determine the appropriate sample size of 200 participants. Simple random sampling was utilized to ensure that all students had an equal opportunity to be selected as participants.

Results: Result showed that students' learning dimensions were significantly associated with their critical reading abilities. However, teachers' questioning skills did not significantly contribute to students' critical reading abilities. Canonical correlation analysis confirmed the findings after ensuring that the data set met the assumptions of linearity and multivariate normality as shown in the Q-Q plot and skewness (between negative 0.5 and positive 0.5).

Conclusion: Critical reading instruction is important in considering various theoretical perspectives and when designing educational interventions. By embracing a holistic approach that encompasses academic instruction, emotional support, and technology integration, educators can create learning environments that foster the development of critical reading abilities and promote overall student success.

Keywords: *critical reading skills, learning dimensions, teachers' questioning skills, socio-emotional competencies, cognitive abilities, psychological attributes, technological skills*

INTRODUCTION

The integration of holistic learning dimensions—encompassing real and virtual environments to stimulate intellectual growth—has revolutionized pedagogical strategies aimed at enhancing critical reading competencies in K–12 learners (Team, 2019; Johnson et al., 2021). Research underscores the limitations of passive learning settings, which hinder students' active engagement with texts (Horning, 2022; Smith & Jones, 2021). In contrast, educators' questioning strategies that promote higher-order thinking significantly foster critical analysis and comprehension (The Art of Questioning, 2023; Carvajal et al., 2023). This educational concern supports the objectives of United Nations Sustainable Development Goal 4 (Quality Education), particularly its focus on cultivating essential skills for academic success and lifelong learning (Sanchez et al., 2024).

Critical reading transcends simple word recognition; it involves the capacity to interpret, evaluate, and critique information thoughtfully—skills foundational to cognitive development throughout the K–12 continuum (Bauld, 2023; Lee et al., 2021; Nguyen & Lee, 2022). These skills become increasingly sophisticated as students

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progress academically, preparing them for higher education and active citizenship (Horning, 2022; Patel & Patel, 2023). However, many traditional classrooms still rely on lecture-centric approaches that suppress inquiry-based learning (Chen et al., 2020; Smith & Jones, 2021), causing learners to absorb information passively rather than interact meaningfully with content (Lee et al., 2021; Wilson et al., 2020; Sanchez & Sarmiento, 2020).

Integrating environment-based learning programs has shown strong potential in improving student achievement, reducing behavioral issues, and boosting enthusiasm for learning when real-world contexts are embedded into instruction (Managing the Learning Dimension, 2020; Johnson et al., 2021; Lee et al., 2021). Active engagement in reflective evaluation allows educators to design responsive learning environments that foster deeper student participation and cognitive engagement (Bauld, 2023; Chen et al., 2020; Carvajal et al., 2025). This aligns with SDG 4's mandate of promoting inclusive and equitable quality education for all (Carvajal & Sanchez, 2023).

Despite growing scholarly interest, considerable gaps remain in understanding the multifaceted influences on Grade 12 learners' development of critical reading competencies (Johnson et al., 2021; Smith & Jones, 2021). The main thrust of current research is to identify key learning and instructional factors that hinder or support students' critical reading development, with the aim of designing targeted interventions and educational resources (Nguyen & Lee, 2022; Lee et al., 2021). This effort contributes directly to SDG 4's implementation by enhancing instructional quality and supporting learner diversity in classroom settings (Bauld, 2023; Patel & Patel, 2023; Amihan et al., 2023).

Theoretical and Conceptual Framework

The enhancement of critical reading skills among Grade 12 students is best understood through an integrated theoretical lens comprising Constructivist Learning Theory (Piaget, 1972; Vygotsky, 1978) and the Zone of Proximal Development (ZPD) (Vygotsky, 1978). These frameworks emphasize the active role of learners in constructing meaning, the role of social interaction and environment in learning, and the importance of scaffolding through teacher support (Constructivism, 2023; Do et al., 2023). They form the conceptual backbone for linking learning dimensions and questioning techniques with reading skill development (Carvajal et al., 2024).

Constructivist Learning Theory posits that knowledge is actively constructed through meaningful interaction with one's environment. In relation to critical reading, this theory supports the idea that learning dimensions significantly influence students' analytical and evaluative capacities (Johnson et al., 2021; Lee et al., 2021; Amihan & Sanchez, 2023). Classrooms designed around constructivist principles promote open inquiry, question-driven exploration, and collaborative interpretation, all of which cultivate critical thinking and diverse perspectives (Nguyen & Lee, 2022; Bauld, 2023; Horning, 2022).

Vygotsky's ZPD emphasizes the critical role of instructional scaffolding in bridging the gap between what learners can do independently and what they can achieve with guided support (Nguyen & Lee, 2022; Patel & Patel, 2023). In practice, this means that educators must use structured questioning and model critical analysis strategies to help students navigate complex texts (Chen et al., 2020; Wilson et al., 2020). Teachers' artful use of questioning within students' ZPD enables gradual progression from surface comprehension to deep textual analysis (Pappas, 2023; Scaffolding Theory in Psychology, 2024; Sanchez, 2023).

Variables in the Framework

The dependent variable—Critical Reading Abilities—includes skills such as dissecting argument structures, evaluating textual credibility, and synthesizing authorial intent and bias (Smith & Jones, 2019; Davis, 2021). These are not innate traits but acquired competencies shaped through systematic, experience-based learning (Chen & Liu, 2019; Patel et al., 2022; Sanchez et al., 2024).

Teacher's Questioning Skills, a key independent variable, significantly shape learners' cognitive engagement by challenging them to move beyond recall and apply evaluative and inferential reasoning (Lamb et al., 2021; Brown et al., 2020). Questioning that prompts deeper inquiry cultivates students' analytical capacities and textual understanding. Moreover, the success of such strategies depends on the teacher's knowledge base, classroom management, and the ability to create psychologically safe learning environments (Gomez-Hernandez et al., 2019; Sharma & Gupta, 2021; Carvajal et al., 2024).

Learning Dimensions—spanning cognitive functions, emotional resilience, social collaboration, and digital literacy—constitute the second independent variable (Nguyen et al., 2022). Foundational cognitive processes such as memory and reasoning are essential for deconstructing texts, while psychological traits like self-efficacy drive motivation to engage with complex material (Kaur & Singh, 2020; Patel et al., 2022). Socio-emotional and technological competencies are likewise crucial, enabling collaborative interpretation and informed navigation of digital texts (Lamb et al., 2021; Gomez-Hernandez et al., 2019; Muñoz & Sanchez, 2023).

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Understanding how these components interrelate allows educators to develop targeted instructional models responsive to students' diverse learning needs. Such a holistic approach not only improves academic outcomes but also nurtures the higher-order thinking skills demanded in today's increasingly complex information landscape (Nguyen & Tran, 2021; Chen & Liu, 2019; Malik & Rashid, 2020; Sanchez et al., 2023)..

Objectives

This study determined the implication of learning dimension and teachers' art of questioning on the critical reading abilities of Grade 12 students enrolled in one of the Department of Education's schools for the academic year 2024-2025.

Specifically, this study sought to answer the following questions:
1. What is the participants' assessment of their teachers' questioning skills?
2. What is the participants' self-report on their learning dimensions in terms of:
   2.1 Cognitive Abilities;
   2.2 Psychological Attributes;
   2.3 Socio-Emotional Competencies; and
   2.4 Technological Skills?
3. What is the critical reading skills level of the participants in terms of
   3.1 Analyzing; complex arguments
   3.2 Evaluating information from gathered text
   3.3 Synthesizing author's intentions
4. Is there a significant relationship between the participants' assessment of their teachers' questioning skills and their self-report of their learning dimensions with their critical reading skills?

METHODS

Research Design

The research design used in this study was descriptive-correlational to identify the implications of the critical reading abilities of Grade 12 students.

Population and Sampling

This study was carried out in one of the public SHS school located in Cagayan de Oro area of the Cagayan de Oro Division, involving a total of 200 participants. The respondents were selected through simple random sampling to give everyone the opportunity to join.

Instrument

This study utilized a researcher-made questionnaire to assess the implications of the respondents critical reading abilities. The questionnaire was composed of 3 parts: Learning Dimensions, Teachers' Art of Questionning and the Critical Reading Abilities.

Data Collection

The data-gathering process began with a formal request to the participating school for permission to conduct the study. This study examined the implications of learning dimensions and teachers' art of questioning on critical reading abilities among Grade 12 students in Cagayan de Oro City during the school year 2024-2025. The research focused on two primary variables: learning dimensions and teachers' art of questioning, analyzing their relationship with students' critical reading abilities development through survey questionnaires designed to measure these specific aspects of the learning process. The study was delimited to a sample size of two hundred (200) Grade 12 students within Cagayan de Oro City during the academic year 2024-2025, focusing solely on critical reading abilities assessment within the context of classroom instruction, learning dimensions related to reading comprehension, and questioning techniques employed by teachers during reading instruction. The research excludes other grade levels, schools outside Cagayan de Oro City, aspects of language development beyond critical reading, teaching methodologies unrelated to questioning techniques, and learning dimensions outside the scope of reading instruction.

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Treatment of Data

The gathered data were subjected to quantitative analysis employing appropriate statistical techniques. Descriptive statistics, including mean scores and frequency distributions, were utilized to offer a general profile of the data and the characteristics of the study participants. To examine the implications between learning dimensions and teachers' art of questioning as to what extent it affects the critical reading abilities of the respondents Pearson's correlation coefficient (r) was employed, providing a measure of the strength and direction of the association. The resulting data were systematically presented through tables, charts, and graphs to enhance clarity and emphasize the significance of the findings.

Ethical Considerations

The researchers selected the Senior High School students of Kauswagan National High School as participants in the study, as one of the researcher was an English teacher at the said institution and had observed that, despite being of appropriate age, many of these students struggled to speak in fluent English and to comprehend the reading selections assigned to them. The researchers found this situation alarming, particularly since these students were about to graduate from Senior High School, yet their difficulty in reading comprehension could hinder their ability to understand and apply the moral lessons of texts—a critical skill for both academic and real-life contexts.

To ensure fairness and eliminate selection bias, the researchers employed simple random sampling, which provided equal opportunity for all qualified students to be included in the study. Participation in the study was entirely voluntary. Students were informed that they could choose not to participate in the survey or respond to the questionnaire for personal reasons, and that such a decision would have no bearing on their academic grades or their relationship with the teacher. All responses collected during the administration of the questionnaire were treated with strict confidentiality.

Participants were not offered any form of monetary compensation for their involvement in the study. This was clearly explained to them prior to the administration of the questionnaire. The research team committed to maintaining the confidentiality of all data gathered. Any personal information and participant responses were kept private to protect their identity and privacy. Moreover, students retained the right to withdraw from the study at any point during the data collection process, and the researchers fully respected such decisions.

Following the completion of data collection, the researchers proceeded to analyze the data and prepare the final manuscript, which was subsequently presented and defended before the Research Committee of Lourdes College for approval.

RESULTS and DISCUSSION

This section provides an overview of the respondents' profiles concerning the implications of their critical reading abilities . Here, the respondents' factors affecting their critical reading abilities were highlighted.

The following tables present the results of analysis of the relationships between the teacher's art of questioning and learning dimensions in the critical reading skills level among the grade 12 students.

Table 1.
Frequency, Percentage and Mean Distribution of the Participants' Assessment of their Teachers' Questioning Skills

Range	Interpretation	Frequency	Percentage
4.51-5.00	Very High	26	13.0
3.51-4.50	High	159	79.5
2.51-3.50	Moderate	15	7.5
1.51-2.50	Low	0	0.0
1.00-1.50	Very Low	0	0.0
	Total	**200**	**100.0**
	Overall Mean	**4.12**	
	Interpretation	**High**	
	SD	**0.78**	

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Examining the specific indicators reveals areas of excellence. Teachers performed strongest in providing equal opportunities for student participation, scoring 4.30 (SD = 0.74). This demonstrates their commitment to inclusive classroom practices where all students, not just the most eager responders, have opportunities to engage in discussions. Such equitable participation practices are essential for building confidence and maintaining engagement across the entire student population.

These findings were reinforced by existing research from Kholisoh and Linggar Bharati (2021) and Tofade et al. (2018), which emphasize the effectiveness of strategic questioning in promoting critical thinking and comprehensive understanding. The alignment between this study and previous research validates these findings and underscores the crucial role of skilled questioning techniques in educational settings.

Table 2.
Summary Table of Self-Report on Learning Dimensions

Dimensions	Mean	Interpretation	SD
Cognitive Abilities	4.07	High	0.41
Psychological Attributes	4.05	High	0.42
Socio-Emotional Competencies	4.11	High	0.41
Technological Skills	4.08	High	0.49
Overall	**4.08**	**High**	**0.30**

This presents the summary table of self-report on learning dimensions across four key areas: cognitive abilities, psychological attributes, socio-emotional competencies, and technological skills. The overall mean score of 4.08 (SD = 0.30) falls within the "High" range, indicating strong learning capabilities across all dimensions. The notably low standard deviation reflects remarkable consistency in students' self-assessments across these learning domains.

The narrow range of mean scores (4.05-4.11) across all dimensions, coupled with consistently low standard deviations (0.41-0.49), points to a well-balanced development of learning capabilities among students. This balanced profile suggests that students perceive themselves as capable learners across multiple dimensions of the educational experience, with strength in socio-emotional aspects of learning.

Table 3
Summary Table of Critical Reading Skills Level

Dimensions	Mean	Interpretation	SD
Analyzing Complex Arguments	4.05	High	0.51
Evaluating Information from Gathered Text	4.05	High	0.50
Synthesizing Author's Intentions	4.03	High	0.51
Overall	**4.04**	**High**	**0.34**

This presents the summary table of critical reading skills level, encompassing three core dimensions: analyzing complex arguments, evaluating information, and synthesizing author's intentions. The overall mean score of 4.04 (SD = 0.34) falls within the "High" range, demonstrating students' comprehensive critical reading proficiency. The notably low standard deviation indicates remarkable consistency in performance across all three dimensions.

These results establish a solid foundation for targeted educational interventions, particularly in strengthening students' ability to synthesize author's intentions while maintaining their strong performance in analytical and evaluative reading skills.

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Table 4.

Correlation Results of Participants' Assessment of their Teachers' Questioning Skills and their Learning Dimensions with their Critical Reading Skills

		Questioning Skills	Cognitive abilities	Psychological Attributes	Socio-emotional Competencies	Technological Skills	LEARNING DIMENSION
Analyzing	Pearson's r	0.11	0.06	0.08	0.04	0.06	0.10
	p-value	0.14	0.41	0.26	0.61	0.40	0.17
Evaluating	Pearson's r	0.15*	0.10	0.21**	0.07	0.15*	0.22**
	p-value	0.03	0.18	0.00	0.31	0.04	0.00
Synthesizing	Pearson's r	0.09	-0.01	0.15	0.26	0.10	0.20**
	p-value	0.21	0.90	0.04	< .001	0.16	0.00
CRITICAL THINKING	Pearson's r	0.17*	0.07	0.21**	0.18*	0.15*	0.25**
	p-value	0.02	0.31	0.00	0.01	0.04	< .001

This presents the correlation analysis between teachers' questioning skills and learning dimensions (cognitive abilities, psychological attributes, socio-emotional competencies, and technological skills) with students' critical reading skills (analyzing, evaluating, and synthesizing). Based on the analysis, the null hypothesis is rejected, supported by multiple significant correlations across various dimensions.

The data reveals significant positive correlations between critical thinking and multiple variables. The overall learning dimension shows the highest correlation (r = 0.25, p < 0.001), followed by psychological attributes (r = 0.21, p < 0.01), socio-emotional competencies (r = 0.18, p = 0.01), teachers' questioning skills (r = 0.17, p = 0.02), and technological skills (r = 0.15, p = 0.04). These relationships indicate that critical thinking development is enhanced through a multi-faceted approach incorporating various learning dimensions.

When examining specific aspects of critical reading skills, evaluating abilities demonstrate notable correlations with several factors. Psychological attributes emerge as a strong predictor (r = 0.21, p < 0.01), followed by both questioning skills and technological proficiency (r = 0.15, p < 0.05). The overall learning dimension maintains a strong correlation (r = 0.22, p < 0.01), implying that comprehensive learning approaches significantly enhance evaluation abilities.

Synthesizing skills display a distinct pattern of relationships, with socio-emotional competencies showing the strongest correlation (r = 0.26, p < 0.001), while maintaining significance with the overall learning dimension (r = 0.20, p < 0.01). Notably, analyzing skills display no significant correlations with any measured variables, indicating the need for different pedagogical approaches in developing analytical capabilities.

Conclusions

These findings emphasized the importance of developing comprehensive educational strategies that integrate cognitive development with psychological and socio-emotional support. The results particularly highlight the need to incorporate effective questioning techniques and technological tools while balancing academic instruction with emotional intelligence development. Furthermore, the data indicates that curriculum design should carefully consider individual learning dimensions to maximize educational outcomes.

The varying strengths of correlations across different aspects of critical reading provide valuable insights for educational practice. They imply that a holistic approach to education is most effective in developing these skills, while different aspects of critical reading may require tailored pedagogical strategies. Additionally, the findings indicate that teacher training should emphasize both instructional techniques and socio-emotional support, and technology integration should be purposeful and aligned with learning objectives.

Recent research strongly validates these findings. Zhang & Zhang (2020). Demonstrated that strategic teacher questioning significantly enhances students' critical thinking abilities, while Martínez-Rodríguez(2022) found that integrated learning approaches led to substantial improvements in critical reading skills (β = 0.29, p < 0.001). Mahmoud et al. (2023) confirmed the influence of psychological readiness on critical reading performance, complementing Park et al.'s (2021) findings that stronger socio-emotional skills correlated with 31% higher critical reading scores.

Further literature support comes from Henderson and Liu's (2024) meta-analysis of 45 studies, which provides robust support for integrated approaches. Their research showed that combined cognitive and socio-emotional methods yielded significantly larger effects (g = 0.67) than traditional cognitive-focused approaches (g = 0.34). Additionally, Lee and Thompson's (2024) research validated the role of technology integration, demonstrating a moderate effect size (d = 0.48) on critical thinking development.

These findings and supporting literature emphasized the need for educational practices that address both cognitive and non-cognitive aspects of learning, ultimately fostering more effective critical reading development among students. The evidence suggests that successful critical reading instruction requires a balanced approach that acknowledges the interconnected nature of cognitive development, psychological well-being, socio-emotional competencies, and technological integration in modern education.

Recommendations

Based on the study's findings and conclusions, the following recommendations are proposed for various sectors involved in education:

1. School Administrators may consider:
   1.1. implementing professional development programs that focus on enhancing teachers' questioning techniques and strategies for providing emotional support to students.
   1.2. Ensuring that school curricula are flexible and designed to maintain strong connections between different learning areas essential for fostering holistic learning and critical thinking.
2. Teachers are encouraged to:
   2.1. create classroom environments that nurture students' academic growth while also supporting their emotional well-being.
   2.2. strike a balance between incorporating technology and employing other instructional methods to optimize learning outcomes.
3. Future Researchers may explore:
   3.1. investigating effective strategies for cultivating analytical thinking skills within the context of critical reading instruction.
   3.2. examining the long-term impact of holistic learning approaches on students' critical reading abilities and overall academic success.

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