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Critical Thinking Skills and Academic Performance: A Study of Junior High School Students at Dapitan City National High School, Schools Division of Dapitan City

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ABSTRACT: This study aimed to determine the methods utilized in developing critical thinking skills and their relationship with the academic performance of Junior High School students at Dapitan City National High School, Schools Division of Dapitan City, during School Year 2026–2027. The study employed a descriptive-correlational research design involving 300 Junior High School students. Data were analyzed using Average Weighted Value (AWV), Standard Deviation (SD), and Spearman rank-order correlation (Spearman rho). Findings revealed that the methods utilized in developing students' critical thinking skills were generally Highly Practiced, with an overall AWV of 3.28 and SD of 0.48. Among the four indicators, panel discussion obtained the highest AWV of 3.32, followed by analyzing situations (3.31), both interpreted as Highly Practiced, while asking questions and interpretation of data obtained the lowest AWV of 3.24, both interpreted as Practiced. Regarding academic performance based on DepEd Order No. 8, s. 2015, the majority of the respondents, 227 (75.7%), obtained Outstanding ratings, while 73 (24.3%) achieved Very Satisfactory ratings, with an overall AWV of 4.76, interpreted as Outstanding. Furthermore, a significant low negative correlation was established between the perceived level of methods utilized in developing students' critical thinking skills and their academic performance (rho = −0.134, p = 0.021). The findings indicate that although critical-thinking methods were highly practiced and students demonstrated outstanding academic performance, greater perceived utilization of these methods did not necessarily correspond to higher academic achievement. The study concludes that the relationship between critical-thinking methods and academic performance is statistically significant but weak and inverse, suggesting that other learning-related factors could contribute to students' academic achievement. It is recommended that school administrators and teachers strengthen questioning techniques and data interpretation activities while ensuring that critical-thinking strategies are appropriately aligned with students' learning needs and academic readiness.

KEYWORDS: critical thinking skills, academic performance, asking questions, analyzing situations, interpretation of data, panel discussion, junior high school students, Dapitan City, Philippines

INTRODUCTION

Critical thinking skills are essential competencies that enable Junior High School students to examine information carefully, identify relevant evidence, question assumptions, compare alternative explanations, solve problems, and arrive at logical and well-supported conclusions. In the Philippine educational setting, the development of these skills is particularly important because learners are expected to move beyond memorization toward analysis, evaluation, reasoning, and application of knowledge to authentic situations. Similarly, Wale and Bishaw (2020) found that inquiry-based learning enhanced students' critical thinking skills by actively engaging learners in questioning, investigating information, analyzing evidence, and developing well-supported conclusions. Their findings showed that inquiry-based activities strengthened essential critical thinking abilities, particularly interpretation, analysis, evaluation, inference, explanation, and self-regulation. They emphasized that providing learners with opportunities to investigate problems, examine information, and communicate their findings can promote deeper thinking and more active participation in the learning process. Lansangan and Orleans (2024), in their study involving 300 Filipino junior high school students, found that learners demonstrated strengths in being open to different ideas and recognizing the importance of gathering evidence, but showed weaknesses in planning, organizing information, and developing strategies for addressing problems. They emphasized the need to explicitly incorporate critical thinking processes into curriculum content, performance standards, and classroom activities.

Junior high school students' academic performance refers to the extent to which learners attain the knowledge, skills, competencies, and learning standards prescribed in the basic education curriculum, as reflected in their official grades and assessment results. In the Philippine educational setting, academic performance is evaluated through classroom assessment guided by the Department of Education. DepEd Order No. 15, s. 2026, which provides the revised guidelines on classroom assessment and grading for the K to 12 Basic Education Program, emphasizes the use of written or oral works, product or performance tasks, and examinations in determining learners' achievement and requires assessments to

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measure not only knowledge recall but also higher-order thinking skills such as analysis, application, evaluation, and problem solving (Department of Education, 2026). This policy builds on the principles established in DepEd Order No. 8, s. 2015, which viewed assessment as an integral part of teaching and learning and used learners' grades as evidence of their progress toward curriculum standards (Department of Education, 2015). Philippine studies also indicate that academic performance may be influenced by learners' study behaviors, learning preferences, engagement, and instructional experiences. Dimacangun and Guillena (2023) highlighted the importance of purposeful learning behaviors among Filipino junior high school students, while Luna et al. (2024) found that individualized learning preferences were significantly associated with students' academic performance. Thus, junior high school academic performance may be understood as a measurable representation of students' mastery of expected competencies, demonstrated through their classroom participation, assessment outputs, performance tasks, examinations, and official grades under the assessment standards prescribed by the Department of Education.

The development of critical thinking skills is closely associated with students' academic performance because learners who are able to analyze information, evaluate evidence, solve problems, draw logical conclusions, and justify their answers are better prepared to accomplish complex academic tasks. In the Philippine context, Reyes (2017) found that the integration of inquiry-based, problem-solving, and collaborative teaching strategies enhanced the critical thinking skills of junior high school students and was accompanied by improved knowledge and performance in Chemistry, indicating that instructional activities designed to strengthen critical thinking can also support academic achievement. Similarly, Santisteban and Futalan (2024) reported a significant relationship between students' thinking skills in dealing with real-life situations and their academic performance in Mathematics and Science, suggesting that students who effectively employ problem-solving, decision-making, and analytical thinking skills tend to demonstrate better achievement in these subjects. Supporting this relationship among Filipino secondary learners, Farillon (2022) found significant positive correlations between critical thinking skills and performance in Science across different senior high school strands, with several correlations reported as strong. These findings suggest that developing critical thinking among junior high school students through questioning, inquiry, problem solving, analysis, collaborative learning, and other higher-order learning activities may contribute to stronger academic performance because such skills enable learners to understand concepts more deeply, apply knowledge to unfamiliar situations, and provide reasoned responses to academic problems.

Despite the growing emphasis on critical thinking as an essential 21st-century skill, there remains limited empirical evidence on how the development of critical thinking skills is associated with the academic performance of junior high school students in the local context of Dapitan City. Previous studies have commonly examined critical thinking through specific instructional approaches, subject areas, or higher-order thinking activities, while fewer studies have focused on the overall methods used to develop critical thinking skills and their relationship with students' general academic performance. Moreover, there is a scarcity of localized research involving junior high school learners at Dapitan City National High School, particularly studies that examine how strategies such as questioning, problem solving, inquiry-based activities, collaborative discussions, data interpretation, and real-life application may contribute to students' academic achievement. This lack of context-specific evidence creates a research gap that the present study seeks to address by determining the extent of critical thinking skill development and its relationship with the academic performance of junior high school students at Dapitan City National High School, Schools Division of Dapitan City.

LITERATURE

Critical Thinking Skills

Methods utilized in developing students' critical thinking skills commonly emphasize questioning and inquiry-based learning. Teachers can use open-ended, probing, and higher-order questions to encourage students to explain their answers, examine assumptions, connect ideas, and justify conclusions using relevant evidence. Tawfik et al. (2020) explained that purposeful questioning in inquiry-based instruction activates prior knowledge, stimulates curiosity, and guides learners in investigating problems rather than simply receiving information from the teacher. Similarly, Wale and Bishaw (2020) stated that inquiry-based learning allows students to seek, collect, analyze, synthesize, and evaluate information, which strengthens essential critical thinking abilities such as interpretation, inference, explanation, and self-regulation. These methods create an active classroom environment in which students become responsible for examining information and constructing well-supported answers.

Asking Questions

Asking questions is an important instructional method for developing students' critical thinking skills because it encourages learners to examine information, clarify ideas, identify assumptions, and explain the reasons behind their answers. Tawfik et al. (2020) explained that meaningful question-asking supports knowledge construction and problem-solving by guiding learners from simple questions involving verification and definition toward deeper questions involving interpretation, causes, consequences, procedures, and judgment. Salmon and Barrera (2021) similarly emphasized that the quality of teachers' questions can either promote or restrict students' curiosity and thinking. Open-ended and intentional questions provide opportunities for students to connect prior knowledge with new information, express their understanding, and explore alternative explanations rather than merely recall memorized facts.

Analyzing Situations

Analyzing situations is an instructional method that develops students' critical thinking skills by requiring them to examine the important elements of a problem, identify its causes and consequences, compare different perspectives, and determine appropriate solutions. Tapung et al. (2018) explained that using actual social problems in classroom instruction enables junior high school students to connect academic concepts with community conditions, assess the factors contributing to an issue, and propose reasonable actions. Glazewski and Ertmer (2020) likewise emphasized that complex problem-solving activities provide learners with opportunities to investigate ill-structured situations, evaluate available information, and make decisions despite uncertainty. When teachers present realistic and age-appropriate scenarios, students become active participants who must explain their reasoning instead of depending only on memorized information.

Interpretation Of Data

Interpretation of data is an essential method for developing students' critical thinking skills because it requires learners to understand information, identify patterns, compare values, establish relationships, and formulate conclusions based on evidence. Kurnia et al. (2024) explained

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that statistical literacy involves interpreting, communicating, evaluating, and making decisions from information presented through tables, graphs, and numerical reports. Leighton et al. (2021) added that students must learn to process information critically in data-rich environments because personal beliefs, cognitive biases, and unreliable sources can affect how they understand evidence. Classroom activities that require students to explain what data mean, relate findings to a given context, and evaluate the reasonableness of conclusions can strengthen their analytical judgment and evidence-based reasoning.

Panel Discussion

Panel discussion is a structured instructional method in which selected students present and exchange their perspectives on a particular issue, question, or problem before their classmates. This method develops critical thinking by requiring panel members to research the topic, organize relevant information, explain their positions, and respond to questions or opposing views. Davies and Esling (2020) explained that structured group discussions provide students with greater opportunities to express their voices, pool their knowledge, and understand how the opinions of others contribute to their interpretation of a topic. Liang and Fung (2020) similarly found that exploratory classroom talk encouraged students to engage in explicit reasoning and use dialogue as a means of exercising critical thinking. In a panel discussion, students move beyond recalling information because they must listen carefully, compare viewpoints, evaluate arguments, and present conclusions supported by evidence.

Academic Performance

DepEd Order No. 8, s. 2015 established the earlier policy framework for classroom assessment, describing assessment as an integral part of curriculum implementation and providing guidelines on formative and summative assessment and the computation of learners' grades. DepEd Order No. 15, s. 2026 subsequently introduced revised and harmonized guidelines on classroom assessment, grading, and awards and recognition, reflecting changes in the implementation of the K to 12 and MATATAG curriculum. Thus, DO 15, s. 2026 may be viewed as an updated policy framework that builds on and modifies the earlier provisions of DO 8, s. 2015, particularly in areas such as assessment components, grading weights, examinations, and recognition of learners. Provisions of earlier issuances that are inconsistent with the revised guidelines are modified or superseded accordingly. For a study conducted in SY 2026–2027, it is better to cite DepEd Order No. 15, s. 2026 as the current primary basis for academic performance, while DepEd Order No. 8, s. 2015 may still be discussed as the earlier policy foundation from which the revised assessment system developed.

CONCEPTUAL FRAMEWORK

The conceptual framework is illustrated in Figure 1. Part I highlights the independent variable, methods utilized in the development of students' critical thinking skills which is measured through the key indicators, namely: asking questions; analyzing situations; interpretation of data; and panel discussion. Part III presents the dependent variable, academic performance based on DepEd Order No. 8, s. 2015.

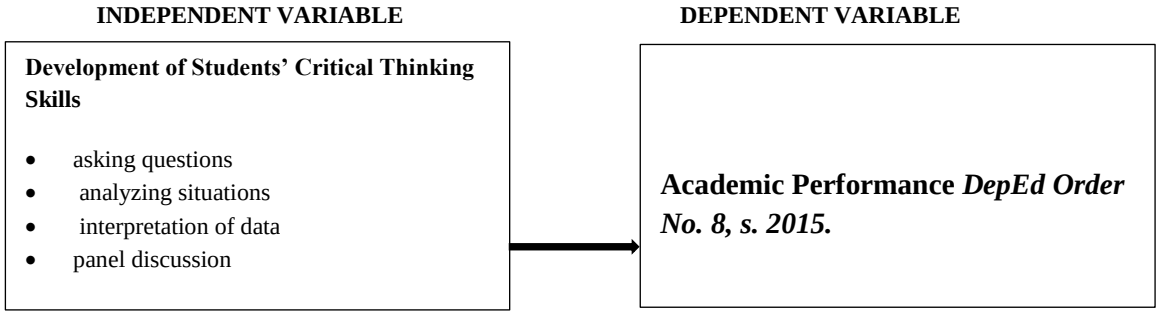


Figure 1. Conceptual Framework of the Study

Statement of the Problem

This study aimed to determine the methods utilized in developing critical thinking skills and academic performance among junior high school students in Dapitan City National High School, during the school year 2025-2026.

Specifically, it sought to answer the following questions:

1. What is the respondents' perceived level of students' critical thinking skills in terms of:
   1.1 asking questions;
   1.2 analyzing situations;
   1.3 interpretation of data; and
   1.4 panel discussion?
2. What is the respondents' level of academic performance based on DepEd Order No. 8, s. 2015?
3. Is there a significant relationship between the respondents' perceived level of students' critical thinking skills and level of academic performance based on DepEd Order No. 8, s. 2015?

RESEARCH METHODOLOGY

Method Used

The study utilized survey and descriptive-correlational research methods. The researcher utilized the survey method to collect data on the students' critical thinking skills and academic performance. Saunders et al. (2019) explain that questionnaires are standardized data-collection instruments that allow researchers to present consistent questions and response options to many respondents. This uniformity supports efficient data collection, systematic quantitative analysis, and meaningful comparison of participants' responses. Likewise, Ruel (2018) explains that survey

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research involves developing research questions, selecting an appropriate sample, asking respondents standardized questions, and analyzing their responses. This method enables researchers to gather and compare substantial amounts of information from a selected population in a systematic and efficient manner. Creswell and Guetterman (2019) define correlational research as the systematic investigation of relationships among two or more variables, conducted without any experimental manipulation of those variables. Correlational research is a non-experimental approach in which a researcher quantifies variables and assesses the statistical relationship between the students' critical thinking skills and academic performance.

Respondents of the Study

The respondents of this study were three hundred (300) Junior High School students of Dapitan City National High School, Schools Division of Dapitan City, Zamboanga del Norte, during the School Year 2026–2027. These respondents were selected from a total population of one thousand three hundred sixty-four (1,364) officially enrolled Junior High School students. The sample size was determined using the Raosoft sample size calculator to establish an appropriate and statistically adequate number of respondents from the total population. Based on the computation, the required sample size was three hundred (300) respondents, who were included in the study.

Research Instrument

The questionnaire used in the study consisted of three parts: Part I: Demographic Profile consists of: sex, age, family or guardian monthly income, educational attainment of parents, grade level, livelihood of parents such as mother and father. Part II: Methods Utilized in the Development of Students' Critical Thinking Skills Scale adopted from Guevarra et al. (2017), with four indicators, namely: asking questions; analyzing situations; interpretation of data; and panel discussion. Part III: Academic Performance based on ***DepEd Order No. 8, s. 2015***.

Scoring Procedure

Students' Critical Thinking Skills

Scale	Range of Values	Description	Interpretation
4	3.26–4.00	Always	Highly Practiced
3	2.51–3.25	Often	Practiced
2	1.76–2.50	Sometimes	Moderately Practiced
1	1.00–1.75	Never	Not Practiced

Academic Performance

DepEd Order No. 8, s. 2015.

Scale	Range of Values	Grade Range	Description
5	4.21–5.00	90–100	Outstanding
4	3.41–4.20	85–89	Very Satisfactory
3	2.61–3.40	80–84	Satisfactory
2	1.81–2.60	75–79	Fairly Satisfactory
1	1.00–1.80	Below 75	Did Not Meet Expectations

Ethical Consideration

Approval was obtained from the Research and Ethics Committee of the Department of Education before data collection. Institutional permission and respondents' informed consent were secured before participation. The questionnaire used clear language to support informed, voluntary participation. Respondents' identities were kept anonymous, and the information collected was treated as confidential. Only essential research data were retained for academic and future research purposes.

Statistical Treatment of the Data

Presented below are the statistical tools utilized in the treatment and analysis of the data gathered.

Weighted Mean. This is used to quantify the respondents' ratings on the Students' Critical Thinking Skills and students academic performance.

Standard Deviation. This was used to determine the homogeneity and heterogeneity of the respondents' scores. A lower standard deviation indicates greater homogeneity or consistency among the respondents' scores, while a higher standard deviation indicates greater heterogeneity or variability. The interpretation of standard deviation depends on the measurement scale and the distribution of the data (Aiken & Susane, 2001; Refugio et al., 2019).

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Spearman Rank-Order Correlation Coefficient (Spearman rho). This is used to determine the correlation between the Students' Critical Thinking Skills and students academic performance. The following guide in interpreting the correlation value proposed by Cohen et al. (2014) was utilized in this study:

Value	Size	Interpretation
±0.50 to ±1.00	Large	High positive/negative correlation
±0.30 to ±.49	Medium	Moderate positive/negative correlation
±0.10 to ±0.29	Small	Low positive/negative correlation
±0.01 to ±0.09	Negligible	Slight positive/negative correlation
	0.0	**No correlation**

DATA PRESENTATION AND ANALYSIS

The data are presented following the statement of the problems of the current study. The study aimed to answer the following questions:

1. What is the respondents' perceived level of students' critical thinking skills in terms of:

1.1 asking questions;

1.2 analyzing situations;

1.3 interpretation of data; and

1.4 panel discussion?

Table 1: The Respondents' Perceived level of Students' Critical Thinking Skills.

Statements	AWV	SD	Description	Interpretation
A. Asking Questions	3.24	0.57	Often	Practiced
B. Analyzing Situations	3.31	0.57	Always	Highly Practiced
C. Interpretation of Data	3.24	0.57	Often	Practiced
D. Panel Discussion	3.32	0.54	Always	Highly Practiced
Overall	**3.28**	**0.48**	**Always**	**Highly Practiced**

AWV-Average Weighted Value, SD-Standard Deviation

Table 1 presents the summary of the respondents' perceived level of students' critical thinking skills. The overall average weighted value of 3.28 with an SD of 0.48 was described as "Always" and interpreted as "Highly Practiced." Among the four methods, panel discussion obtained the highest AWV of 3.32 (SD = 0.54), followed closely by analyzing situations with an AWV of 3.31 (SD = 0.57); both were interpreted as "Highly Practiced." Meanwhile, asking questions and interpretation of data both obtained the lowest AWV of 3.24 (SD = 0.57) and were described as "Often" and interpreted as "Practiced."This means that, in general, the methods intended to develop students' critical thinking skills were highly practiced, with greater emphasis on panel discussions and analyzing situations. The findings indicate that students were frequently exposed to activities involving the exchange of viewpoints, discussion of issues, examination of situations, and collaborative reasoning. This implies that the instructional practices employed provide substantial opportunities for students to engage in analysis, evaluation, reasoning, and expression of ideas. However, the comparatively lower ratings for asking questions and interpretation of data suggest that these areas could be further strengthened through more consistent use of higher-order questioning and data-based learning activities.

This result is reinforced by Wang et al. (2026), whose scoping review of experimental studies in K–12 schools emphasized that critical thinking can be cultivated through instructional approaches that actively engage students in thinking and reasoning. Similarly, the literature reviewed in the present study explains that purposeful questioning and inquiry-based activities enable students to analyze, synthesize, evaluate, interpret, infer, explain, and regulate their thinking. Moreover, the synthesis of the literature indicates that higher-order questioning, analysis of real-life situations, interpretation of data, and collaborative discussions encourage students to evaluate evidence, explain their reasoning, consider alternative viewpoints, and formulate logical conclusions. Thus, the literature corresponds with the overall finding that varied and learner-centered instructional methods are important in providing opportunities for students to exercise critical thinking.

2. What is the respondents' level of academic performance based on DepEd Order No. 8, s. 2015?

Table 2: Respondents' Perceived level of Students' Academic Performance Based on DepEd Order No. 8, s. 2015.

Scale	Range of Values	Grade Range	Description	F	Percent	AWV	Description
5	4.21–5.00	90–100	Outstanding	227	75.7%	**4.76**	**Outstanding**
4	3.41–4.20	85–89	Very Satisfactory	73	24.3%		
3	2.61–3.40	80–84	Satisfactory	0	0%		
2	1.81–2.60	75–79	Fairly Satisfactory	0	0%		
1	1.00–1.80	Below 75	Did Not Meet Expectations	0	0%		
			Total	**300**	**100%**		

F=Frequency, AWV=Average Weighted Value

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Table 2 presents the respondents' level of academic performance based on DepEd Order No. 8, s. 2015. The finding reveals that 227 or 75.7 percent of the 300 respondents obtained grades ranging from 90–100, classified as Outstanding, while 73 or 24.3 percent obtained grades ranging from 85–89, classified as Very Satisfactory. Notably, none of the respondents belonged to the Satisfactory, Fairly Satisfactory, or Did Not Meet Expectations categories. The computed average weighted value of 4.76 was likewise described as Outstanding. This means that the respondents generally demonstrated a very high level of academic performance, with approximately three out of every four students achieving an Outstanding rating and the remaining students attaining a Very Satisfactory rating. This implies that the respondents were performing successfully in their academic requirements and demonstrated strong achievement of the expected learning competencies. Nevertheless, the results should be interpreted as evidence of academic achievement and should not, by themselves, be attributed to the critical-thinking methods assessed in the study until the relationship between the two variables is statistically tested.

This finding is consistent with Santisteban and Futalan (2024), who examined students' thinking skills and academic performance in core subjects. Their study found that students demonstrated a Very Satisfactory level of academic performance in Mathematics and Science and an Outstanding level in English. Their findings provide a relevant Philippine comparison showing that secondary students can demonstrate high levels of academic achievement across core learning areas. The present manuscript also cites their study as evidence that students' thinking skills in dealing with real-life situations are significantly associated with academic performance in Mathematics and Science.

This finding is also supported by Dimacangun and Guillena (2023), who emphasized the importance of academic performance as an indicator of students' achievement in the learning process. Their findings showed that students generally demonstrated favorable academic performance, reflecting their capacity to meet expected learning outcomes. This supports the present finding that the respondents demonstrated strong academic achievement, as evidenced by the predominance of students classified as Outstanding and Very Satisfactory.

3. Is there a significant relationship between the respondents' perceived level of methods utilized in the development of students' critical thinking skills and level of academic performance based on DepEd Order No. 8, s. 2015?

Table 3: Test of relationship between perceived level of Students' Critical Thinking Skills and Academic Performance

Variables Correlated	rho value	p-value @ 0.05	Interpretation
Students' Critical Thinking Skills *and* Academic Performance	-0.134	0.021	Small/Low Negative Correlation –Significant

**Correlation is significant at the 0.05 level*

Table 3 presents the test of relationship between the perceived level of methods utilized in the development of students' critical thinking skills and their academic performance. The salient finding reveals a Spearman rho value of −0.134 with a p-value of 0.021. The rho value indicates a small/low negative correlation, while the p-value is lower than the 0.05 level of significance. Therefore, a statistically significant relationship exists between the two variables. Consequently, the null hypothesis stating that there is no significant relationship between the methods utilized in developing students' critical thinking skills and academic performance is rejected. This means that the methods utilized in developing students' critical thinking skills are significantly associated with academic performance; however, the relationship is weak and inverse. In statistical terms, higher perceived utilization of the critical-thinking methods tends to correspond with slightly lower academic-performance scores, or vice versa. Nevertheless, because the correlation coefficient is only −0.134, the association is very small and should not be interpreted as indicating a substantial difference in students' academic achievement. This implies that although the methods used to develop critical thinking and academic performance are statistically related, the strength and negative direction of the relationship suggest that academic performance is likely associated with many other factors beyond the critical-thinking methods examined in the study. Moreover, the significant correlation does not establish causation; therefore, it cannot be concluded that greater use of critical-thinking methods causes lower academic performance. The unexpected negative direction may warrant further investigation into factors such as the manner of strategy implementation, assessment practices, learning difficulty, students' readiness, and other educational conditions.

The current finding contradicts Santisteban and Futalan (2024), who reported a significant positive relationship between students' thinking skills in dealing with real-life situations and their academic performance in Mathematics and Science. Their findings indicated that stronger problem-solving, decision-making, and analytical-thinking skills were associated with better academic achievement. Similarly, the present result differs from Farillon (2022), who found significant positive correlations between critical-thinking skills and Science performance among Filipino senior high school students, with several of the relationships reported as strong. Thus, while the present study establishes a statistically significant relationship, its small negative correlation differs from previous Philippine findings that generally associate stronger critical-thinking skills with better academic performance.

DISCUSSION

The findings of the study revealed that the methods utilized in developing critical thinking skills among Junior High School students at Dapitan City National High School were generally highly practiced, particularly panel discussions and analyzing situations, indicating that students were frequently exposed to instructional activities that encouraged the exchange of ideas, examination of situations, collaborative reasoning, and critical analysis. However, asking questions and interpretation of data were comparatively less practiced, suggesting the need to strengthen instructional strategies that promote inquiry, evidence-based reasoning, and analytical thinking. Regarding academic performance, the findings revealed that the majority of the respondents demonstrated outstanding academic achievement, while the remaining students attained very satisfactory performance, reflecting their ability to meet the expected learning competencies and academic requirements. Furthermore, the study established a statistically significant but low negative correlation between the methods utilized in developing students' critical thinking skills and their academic performance. This means that greater perceived utilization of critical-thinking methods tended to correspond with slightly lower academic

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performance, although the relationship was weak. This implies that the frequent application of critical-thinking strategies does not necessarily correspond to higher academic achievement and that students' performance could be influenced by other instructional, personal, and learning-related factors. The findings further emphasize the importance of strengthening questioning techniques, data interpretation, and other learner-centered activities while ensuring that instructional strategies are appropriately aligned with students' learning needs, academic readiness, and assessment practices to support the development of critical thinking skills and academic performance.

CONCLUSION

Based on the findings of the study, it is concluded that the methods utilized in developing students' critical thinking skills were highly practiced, particularly panel discussions and analyzing situations, reflecting the emphasis on collaborative learning, analytical reasoning, and active classroom participation. However, asking questions and interpretation of data require further strengthening to promote more comprehensive critical-thinking development. The students also demonstrated outstanding academic performance, indicating their successful attainment of the expected learning competencies. Furthermore, the significant but low negative correlation between the methods utilized in developing critical thinking skills and academic performance suggests that greater utilization of these methods does not necessarily correspond to higher academic achievement. This means that although critical-thinking strategies are widely practiced, their relationship with academic performance is weak and influenced by other possible learning-related factors. This implies that effective academic achievement requires not only the application of critical-thinking strategies but also their appropriate implementation, alignment with learning objectives, and consideration of students' individual learning needs. The findings further establish that the relationship between critical-thinking methods and academic performance is correlational rather than causal.

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Ethical review statement: the research is submitted to the ethical review committee and approved for the conduct of the study. It does not involve human-sensitive issues.
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