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Teachers' Instructional Practices and Their Influence on the Academic Performance in Science of the Junior High School Students at Dapitan City National High School

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ABSTRACT: This study examined the relationship between science teachers' instructional practices and the academic performance of junior high school students in Science at Dapitan City National High School during the school year 2026–2027. It employed a quantitative descriptive-correlational research design involving 300 students from Grades 8, 9, and 10. Data were analyzed using the weighted mean, standard deviation, and Spearman's rank-order correlation coefficient (Spearman's rho). Results showed that students perceived their science teachers' instructional practices to be implemented to a very high extent across instructional planning, delivery, and assessment. Students' academic performance in Science was generally classified as Outstanding. A weak positive and statistically significant relationship was found between teachers' instructional practices and students' academic performance, leading to the rejection of the null hypothesis. These findings indicate that stronger instructional practices are associated with higher academic performance; however, the weak relationship suggests that other factors may also be associated with students' Science achievement. The study recommends that science teachers sustain their instructional planning, delivery, and assessment practices while strengthening areas with comparatively lower ratings. Department of Education officials may support these efforts through continuing professional development focused on effective Science instruction. Future researchers may examine learner, teacher, family, and school factors to better understand variations in students' Science achievement.

KEYWORDS: academic performance, instructional assessment, instructional practices, Junior High School, Science education, Dapitan City, Philippines.

INTRODUCTION

Teachers' instructional practices refer to the strategies and procedures teachers use in planning, delivering, and assessing instruction to promote meaningful learning and academic achievement. In the Philippine context, Bibon (2022) found that Science teachers' instructional practices involved differentiated planning, inquiry and spiral approaches in lesson delivery, and product-focused and differentiated assessment, with instructional delivery showing a strong relationship with learners' Science achievement. Similarly, the foreign study of Cairns and Areepattamannil (2022) found that teacher-directed Science practices, particularly clear explanations of scientific concepts and their applications, were positively associated with students' Science achievement. These findings emphasize that effective instructional practices require coherent planning, purposeful lesson delivery, and appropriate assessment strategies that address learners' needs and facilitate their understanding and achievement in Science.

Academic performance in Science reflects junior high school students' understanding of scientific concepts, mastery of science process skills, and ability to apply scientific knowledge in solving practical and real-life problems. Francisco and Celon (2020) found that teachers' instructional practices, particularly those involving planning, teaching, and assessment, were associated with students' academic performance across different learning areas, including Science, emphasizing the importance of effective instructional management in supporting students' learning outcomes. Similarly, Liou (2021) found that Science instructional practices were associated with students' achievement, with teacher-directed instructional practices demonstrating a significant positive effect on Science achievement. These findings indicate that students' academic performance may be associated with the quality and appropriateness of teachers' lesson planning, instructional delivery, learning activities, classroom management, assessment methods, and instructional support. In the Philippine basic education context, DepEd Order No. 21, s. 2019 emphasizes learner-centered and appropriate pedagogical approaches, while DepEd Order No. 8, s. 2015 recognizes classroom assessment as an integral component of teaching and learning. Likewise, DepEd Order No. 55, s. 2016 underscores the importance of assessing learning outcomes to provide information that can guide instructional decisions and improve educational delivery.

Teachers' instructional practices are closely related to students' academic performance because the ways teachers explain lessons, organize classroom activities, connect scientific concepts to real-life situations, and assess learning can influence students' understanding and achievement. Cairns (2019) found that specific inquiry-based practices, particularly contextualizing science lessons and applying scientific ideas,

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had significant positive relationships with students' science achievement, although the effectiveness of some practices depended on how frequently they were used. Similarly, Cairns and Areepattamannil (2022) reported that explicit teacher-directed practices were positively associated with science achievement, with teachers' explanations of scientific ideas showing a particularly strong relationship with students' scientific literacy scores.

Although previous studies have established that teachers' instructional practices can influence students' academic achievement, limited local evidence is available on how these practices specifically affect the academic performance in Science of junior high school students at Dapitan City National High School. Many existing studies have focused on general teaching strategies, student-centered approaches, inquiry-based learning, and science achievement in other schools or educational settings, leaving uncertainty about whether similar patterns apply to the school's particular learners, teachers, resources, and classroom conditions. Moreover, few studies have simultaneously assessed the extent of teachers' instructional practices and examined their relationship with students' actual academic performance in Science within this local context. This gap highlights the need for the present study to generate school-based evidence that may identify effective instructional practices, reveal areas requiring improvement, and support the development of appropriate interventions to enhance science teaching and student achievement.

LITERATURE

Teachers' Instructional Practices

Teachers' instructional practices refer to the planned methods, strategies, activities, and assessment procedures used to facilitate students' acquisition of knowledge and skills. Effective instruction begins with careful planning that aligns learning objectives, lesson content, teaching strategies, learning resources, and assessment activities. Lonergan et al. (2019) explained that well-designed inquiry-based Science instruction should consider the dimension, level, and context of inquiry to ensure that classroom activities are appropriate for learners and consistent with the intended outcomes. Similarly, Mesci et al. (2020) emphasized the importance of preparing structured lesson plans based on the 5E instructional model because systematic preparation helps teachers organize inquiry activities and translate their knowledge of scientific inquiry into classroom practice. These perspectives indicate that instructional planning provides teachers with a clear direction for presenting lessons, managing learning activities, and addressing students' diverse educational needs.

Planning

Planning is a fundamental component of teachers' instructional practices because it provides a systematic guide for organizing learning objectives, subject content, teaching strategies, instructional resources, classroom activities, and assessment methods. Großmann and Krüger (2024) explained that high-quality Science lesson plans reflect teachers' ability to connect their content knowledge, pedagogical knowledge, and pedagogical content knowledge when selecting appropriate topics, activities, media, and assessment tasks. Juhler (2018) also emphasized that teachers must formulate observable learning objectives during the planning stage to establish a clear connection between instruction and the assessment of students' understanding. Careful instructional planning helps ensure that every part of a Science lesson contributes to the intended learning competencies and academic outcomes.

Delivery

Delivery is a major component of teachers' instructional practices because it involves the actual presentation and facilitation of planned learning experiences. It includes explaining scientific concepts, demonstrating processes, asking questions, providing examples, using instructional materials, managing classroom activities, and responding to students' learning difficulties. Cairns and Areepattamannil (2022) found that explicit teacher-directed practices, particularly the clear explanation of scientific ideas and their applications, were positively associated with students' science achievement. Izquierdo-Acebes and Taber (2024) also emphasized that Science teachers must employ appropriate explanations, representations, prompts, and classroom interactions to support students in constructing scientifically acceptable explanations. These findings show that effective delivery requires teachers to communicate content clearly while providing students with opportunities to analyze ideas and express their understanding.

Assessment

Assessment is an essential component of teachers' instructional practices because it provides information about students' prior knowledge, conceptual understanding, scientific skills, learning progress, and achievement. It includes formative activities conducted during instruction and summative measures administered after completing a lesson, unit, or grading period. Alt (2018) found that secondary Science teachers frequently used final examinations and quizzes, while formative assessment was more common among teachers who employed collaborative and student-centered classroom practices. Similarly, Vlachou (2018) observed that middle school Science teachers used assessment for both formative and summative purposes, although summative assessment remained dominant and assessment evidence was not always used to improve subsequent instruction. These findings highlight the importance of balancing written examinations with classroom questioning, observation, practical activities, performance tasks, and other assessment methods that provide a more comprehensive picture of students' learning.

Students' Academic Performance

Students' academic performance refers to the extent to which learners demonstrate the knowledge, skills, values, and competencies expected in a particular learning area. In Science, academic performance reflects students' understanding of scientific concepts, application of scientific processes, interpretation of evidence, problem-solving ability, and completion of required learning tasks. The Department of Education (2026) emphasizes that classroom assessment should generate accurate evidence of what learners know, understand, and can perform, rather than merely serve as a procedure for assigning grades. Alt (2018) likewise explained that students' achievement is assessed through formative and summative tasks that capture their conceptual understanding, classroom participation, and accomplishment of learning objectives. Academic grades can serve as meaningful indicators of performance when assessment activities are properly aligned with the competencies and standards prescribed in the Science curriculum.

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CONCEPTUAL FRAMEWORK

The conceptual framework of the study is presented in Figure 1. Part I presents the independent variable, teachers' instructional practices, which is assessed through three indicators: planning, delivery, and assessment. Part II shows the dependent variable, students' academic performance in Science, which is measured using their actual grades obtained from the class adviser. The framework illustrates how teachers' instructional practices would influence the academic performance of junior high school students.

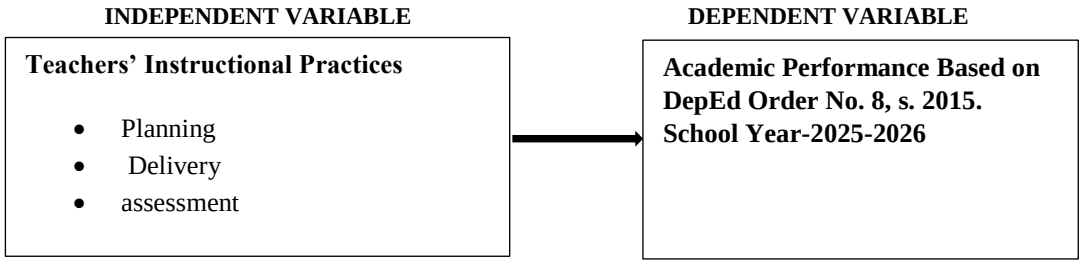


Figure 1. Conceptual Framework of the Study

Statement of the Problem

This study aimed to determine the instructional practices of science teachers and the academic performance of Junior High School Students in Science at Dapitan City National High School during the school year 2026-2027.

Specifically, it sought to answer the following questions:

1. What is the respondents' perceived level of instructional practices of Junior High School science teachers in terms of:
1.1 planning;
1.2 delivery; and
1.3 assessment?
2. What is the respondents' level of academic performance?
3. Is there a significant relationship between the respondents' perceived level of instructional practices of Junior High School science teachers and level of students' academic performance?

Hypotheses

1. There is no significant relationship between the respondents' perceived level of instructional practices of Junior High School science teachers and level of students' academic performance.

RESEARCH METHODOLOGY

Method Used

The study employed a quantitative descriptive-correlational research design, using a survey questionnaire to assess science teachers' instructional practices. The descriptive component determined the extent of instructional practices in terms of instructional planning, delivery, and assessment and described students' academic performance in Science. The correlational component examined the strength and direction of the relationship between these variables.

The survey questionnaire facilitated standardized data collection by presenting respondents with the same questions and predetermined response options, enabling systematic measurement and comparison across participants (Creswell & Creswell, 2018). Consistent with the nonexperimental nature of correlational research, the variables were measured without manipulation (Jhangiani et al., 2019). This design was appropriate for examining the association between teachers' instructional practices and students' academic performance.

Research Instrument

The questionnaire used in the study consisted of two parts: Part I: Teachers' Instructional Practices Scale adopted from Delosa, J. G., & Biol Jr, I. M. (2026). with three indicators, namely: planning, delivery, and assessment. Part II: Students' academic performance.

Teachers' Instructional Practices

Scale	Range of Mean	Description	Interpretation
5	4.21–5.00	Strongly Agree	Very High Extent
4	3.41–4.20	Agree	High Extent
3	2.61–3.40	Moderately Agree	Moderate Extent
2	1.81–2.60	Disagree	Low Extent
1	1.00–1.80	Strongly Disagree	Very Low Extent

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Students' Academic Performance **Based on** ***DepEd Order No. 8, s. 2015.***

Scale	Range of Value	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 instructional practices and students academic performance.

Standard Deviation. This is used to determine the homogeneity and heterogeneity of the respondents' score, where SD ≤ 3 is homogenous and SD > 3 is heterogeneous Aiken & Susane (2001); Refugio et al. (2019).

Spearman Rank-Order Correlation Coefficient (Spearman rho). This is used to determine the correlation between instructional practices 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
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 instructional practices of Junior High School science teachers in terms of:

1.1 planning;

1.2 delivery; and

1.3 assessment?

Table 1: Respondents' Perceived level of Instructional Practices of Science Teachers

Statements	AWV	SD	Description	Interpretation
1. Instructional Planning	4.24	0.54	Strongly Agree	Very High Extent
2. Instructional Delivery	4.25	0.57	Strongly Agree	Very High Extent
3. Instructional Assessment	4.34	0.54	Strongly Agree	Very High Extent
Overall	**4.28**	**0.51**	**Strongly Agree**	**Very High Extent**

AWV-Average Weighted Value, SD-Standard Deviation

Table 1 presents the summary of the respondents' perceived level of instructional practices of Science teachers. The findings reveal an overall average weighted value (AWV) of 4.28 with a standard deviation (SD) of 0.51, described as Strongly Agree and interpreted as Very High Extent. Among the three indicators, instructional assessment obtained the highest AWV of 4.34 (SD = 0.54), followed by instructional delivery with an AWV of 4.25 (SD = 0.57), while instructional planning obtained the lowest AWV of 4.24 (SD = 0.54). Despite the differences in their average weighted values, all three dimensions are described as Strongly Agree and interpreted as Very High Extent.This means that the Science teachers demonstrate a very high extent of instructional practices across planning, delivery, and assessment, with instructional assessment emerging as the strongest dimension. The findings indicate that the teachers are particularly strong in assessing students' learning while also maintaining very high levels of lesson preparation and instructional delivery. This implies that the Science teachers generally employ comprehensive instructional practices covering the major stages of the teaching-learning process, from preparing lessons and delivering instruction to assessing students' learning. The slightly higher rating for instructional assessment suggests that teachers place considerable emphasis on determining

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learners' understanding and performance. However, since instructional planning obtained the comparatively lowest rating, continued professional development may further strengthen teachers' ability to design differentiated, contextualized, and learner-responsive Science instruction.

The current finding is consistent with Cairns and Areepattamannil (2022), who found that effective instructional practices, particularly clear teacher explanations and meaningful applications of scientific concepts, were positively associated with students' Science achievement. The present finding is further corroborated by Heindl (2019), who reported positive effects of inquiry-based Science instruction on student achievement, particularly when teachers and students were adequately prepared for its implementation. Moreover, the finding aligns with Westbroek et al. (2020), who emphasized the integration of assessment with instruction, explaining that assessment information enables teachers to adapt learning activities and instructional support to students' levels of understanding. Collectively, these studies reinforce the importance of integrating effective planning, delivery, and assessment to provide meaningful Science instruction and promote students' learning outcomes.

2. What is the respondents' level of academic performance?

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

Scale	Range of Values	Grade Range	Description	F	Percent	AWV	Interpretation
5	4.21–5.00	90–100	Outstanding	245	81.7%	**4.82**	**Outstanding**
4	3.41–4.20	85–89	Very Satisfactory	55	18.3%		
3	2.61–3.40	80–84	Satisfactory	0	0.0%		
2	1.81–2.60	75–79	Fairly Satisfactory	0	0.0%		
1	1.00–1.80	Below 75	Did Not Meet Expectations	0	0.0%		
Overall				**300**	**100.0%**		

Note. *F = frequency; AWV = average weighted value.*

Table 2 presents the respondents' level of academic performance based on DepEd Order No. 8, s. 2015. The findings reveal an overall average weighted value (AWV) of 4.82, described as Outstanding. Specifically, 245 or 81.7% of the 300 respondents obtained grades ranging from 90–100, classified as Outstanding, while 55 or 18.3% obtained grades ranging from 85–89, classified as Very Satisfactory. Notably, none of the respondents obtained grades within the Satisfactory (80–84), Fairly Satisfactory (75–79), or Did Not Meet Expectations (below 75) categories. Thus, the salient finding indicates that more than four-fifths of the respondents demonstrated Outstanding academic performance. This means that the Junior High School students generally demonstrate a high level of mastery of the knowledge, skills, and competencies expected in their Science subject, as reflected by the predominance of grades within the Outstanding category. The absence of students in the Satisfactory and lower performance categories further indicates that all respondents attained at least a Very Satisfactory level of academic performance. This implies that the students are generally achieving the expected Science learning competencies at a favorable level. Their strong academic performance may reflect the combined contribution of effective classroom instruction, appropriate assessment practices, students' learning efforts, and other school and home factors. However, the findings should not be interpreted as evidence that instructional practices alone caused the students' high performance, since the study uses a correlational design.

The current finding is consistent with Dizon et al. (2023), who reported favorable Science achievement among Filipino students, with substantial proportions obtaining Very Satisfactory and Outstanding ratings despite differences in their socioeconomic backgrounds. The present finding is further reinforced by Cairns and Areepattamannil (2022), who found that effective instructional explanations and teacher-directed Science practices were positively associated with students' Science achievement. Moreover, the finding concurs with Karaman (2021), who reported that formative assessment had an overall positive effect on student learning, particularly when feedback enabled learners to recognize errors and improve their work. These studies reinforce the importance of appropriate instruction and assessment in supporting favorable academic outcomes in Science.

3. Is there a significant relationship between the respondents' perceived level of instructional practices of Junior High School science teachers and level of students' academic performance?

Table 3: Test of relationship between perceived level of instructional practices and Students Academic performance

Variables Correlated	rho-value	p-value	Interpretation
Instructional Practices of Junior High School Science Teachers and Level of Students' Academic Performance	0.218	0.001	Low Positive Correlation, Significant

**Correlation is significant at the 0.05 level*

Table 3 presents the test of relationship between the instructional practices of Junior High School Science teachers and the students' academic performance. The analysis yielded a Spearman rho-value of 0.218 with a p-value of .001, interpreted as a low positive and significant correlation. Since the p-value of .001 is lower than the .05 level of significance, the null hypothesis is rejected. Thus, there is a statistically significant relationship between Science teachers' instructional practices and students' academic performance, although the strength of the relationship is low. This means that higher levels of perceived instructional practices of Science teachers tend to be associated with higher levels of students' academic performance. Specifically, improvements in instructional planning, instructional delivery, and instructional assessment tend to correspond with better academic outcomes among students. However, the rho-value of 0.218 indicates only a low positive relationship, suggesting that instructional practices are related to academic performance but that other student, family, teacher, and school-related factors may

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also contribute to variations in achievement. Moreover, the correlation does not establish a cause-and-effect relationship. This implies that strengthening Science teachers' instructional practices may be relevant to supporting students' academic performance, particularly through well-planned lessons, effective instructional delivery, and appropriate assessment strategies. However, because the relationship is low, efforts to improve students' Science performance should not focus exclusively on teachers' instructional practices but should also consider other factors affecting student learning.

The current finding is corroborated by Francisco and Celon (2020), who found that teachers' instructional practices, including planning, teaching, and assessment, were associated with students' academic performance across learning areas, including Science. The present finding is also reinforced by Cairns and Areepattamannil (2022), who reported that teacher-directed instructional practices, particularly clear explanations and the practical application of scientific concepts, were positively associated with students' Science achievement. Furthermore, the finding concurs with Tabiolo and Rogayan (2019), who found that the implementation of an appropriate cooperative learning strategy significantly improved Grade 9 students' Science achievement. These studies reinforce the present result that effective instructional practices are positively associated with students' academic outcomes, while the low magnitude of the present correlation indicates that instructional practices represent only one of several factors related to Science achievement.

DISCUSSION

The findings indicate that students perceived their Science teachers' instructional practices to be implemented to a very high extent across planning, delivery, and assessment, while their academic performance was generally classified as Outstanding. The weak positive and statistically significant relationship suggests that stronger perceived instructional practices were associated with higher Science achievement, although the low positive relationship indicates that other factors may also be associated with students' performance. These results support sustaining effective instructional practices while strengthening areas with comparatively lower ratings through continuing professional development focused on Science instruction. However, the correlational design does not establish that instructional practices caused students' academic outcomes. Further research examining learner, teacher, family, and school factors may provide a more comprehensive understanding of variations in Science achievement.

CONCLUSION

The study concludes that Science teachers' instructional practices in planning, delivery, and assessment were perceived by students to be implemented to a very high extent, while students' academic performance was generally Outstanding. A weak positive and statistically significant relationship was found between perceived instructional practices and academic performance, leading to the rejection of the null hypothesis. Stronger perceived instructional practices were associated with higher Science achievement; however, the findings do not establish causality. The low positive relationship suggests that instructional practices should be considered alongside other possible factors associated with students' academic performance.

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