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BEST PRACTICES OF TEACHERS AND TECHNOLOGY-AIDED INSTRUCTION IN RELATION TO PUPILS' ACADEMIC PERFORMANCE

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ABSTRACT

This study examined the relationship between best practice of teacher, technology-aided instruction and pupils' academic performance in 8 public elementary schools of Negros Island Region for Academic Year 2024 - 2025. Using a descriptive-correlational design, data were gathered from 123 teacher-respondents and performance records of pupils. Statistical tests revealed that teachers' best practices and technology aided instruction were non-normally distributed, reflecting consistency among mid-career teachers but variation among those with advanced education or ICT training. Pupils' performance clustered at the very satisfactory level, with no learners reaching outstanding. Tests showed no significant relationship between teachers' best practices and pupils' performance, nor between technology-aided instruction and performance. These findings suggest that while pupils maintain strong achievement, their outcome maybe shaped more by external factors such as motivation, socio-economic background, or curriculum design rather than the specific teaching practices measured. The study highlights the need for professional development and innovative instructional strategies to elevate performance beyond satisfactory levels.

Keywords: Teacher Practices; Technology-Aided Instruction; Academic Performance; Elementary Education; ICT in Education.

INTRODUCTION

Background of the Study

The quality of education largely depends on teachers' ability to implement effective instructional practices that promote meaningful learning and improve pupils' academic performance. In the 21st century, education has shifted toward learner-centered approaches, where teachers are expected to employ evidence-based best practices and integrate technology into classroom instruction. Teachers' best practices, such as effective lesson planning, differentiated instruction, formative assessment, collaborative learning, classroom management, and continuous feedback, create an engaging learning environment that enhances pupils' understanding and achievement.

Teachers are expected not only to deliver content but also to employ effective instructional practices that promote learner engagement, critical thinking, collaboration, assessment, and meaningful learning experience. In this context, teachers best practices are essential because the quality of classroom instruction can influence of pupils understand lessons, participate in learning activities and demonstrate academic competencies. Effective teacher therefore requires appropriate planning, instructional strategies, classroom management, assessment, feedback and responsive to learner diverse needs.

The integration of technology-aided instruction has further transformed the teaching-learning process. The use of digital tools, multimedia presentations, educational applications, interactive learning platforms, and online resources enables teachers to deliver lessons more effectively and address the diverse learning needs of pupils. Technology not only increases learners' motivation and engagement but also promotes critical thinking, creativity, communication, and

collaboration—skills that are essential in today's digital society. As educational technologies continue to evolve, teachers are expected to possess the competence and confidence to integrate these tools into their instructional practices. (UNESCO 2023)

In the Philippine educational system, the Department of Education (DepEd) has continuously advocated for the integration of Information and Communication Technology (ICT) through various initiatives, including the MATATAG Agenda, the National Educators Academy of the Philippines (NEAP), and the Digital Education Program. These initiatives encourage teachers to enhance their pedagogical skills and maximize technology to improve learning outcomes. However, despite these efforts, disparities in technological resources, teachers' digital competencies, internet connectivity, and access to digital learning materials remain significant challenges, particularly in public elementary schools.

Hence, this study seeks to determine the relationship between teachers' best practices and technology-aided instruction in relation to pupils' performance. Specifically, it aims to assess the extent of teachers' implementation of best instructional practices and technology integration and examine how these factors influence pupils' academic performance. The findings of this study are expected to serve as a basis for strengthening instructional quality, enhancing teachers' professional competencies, and developing interventions that will ultimately improve pupils' learning outcomes.

Theoretical Framework

This study is anchored on theories that explain how effective teaching practices and technology integration contribute to improved pupils' academic performance.

Technological Pedagogical Content Knowledge (TPACK) Framework (Mishra & Koehler, 2006) The TPACK Framework emphasizes that effective teaching with technology requires the integration of three essential forms of knowledge: Content Knowledge (CK), Pedagogical Knowledge (PK), and Technological Knowledge (TK). Teachers who possess these competencies are better able to design meaningful, engaging, and technology-enhanced learning experiences that improve pupils' understanding and academic performance. In this study, TPACK serves as the primary framework in explaining how teachers' best practices and technology-aided instruction work together to enhance learning outcomes.

Constructivist Learning Theory (Piaget, 1952; Bruner, 1961) Constructivist Learning Theory posits that learners actively construct knowledge through meaningful experiences and interaction with their environment. Teachers facilitate learning by providing activities that encourage exploration, collaboration, problem-solving, and critical thinking. Technology-aided instruction supports constructivist learning by providing interactive digital resources that enable pupils to become active participants in the learning process.

In this concept of this study, this theory provides a strong theoretical foundation because teachers are expected to create learning environment where pupils actively participate, explore collaborate, solve problem and apply what they learn. Technology can support this process through interactive presentation, educational application, digital learning resources, simulation, videos, collaborative activities and other technology aided learning experiences. From a constructivist perspective, the teacher serves as a facility of learning rather than merely as a transmitter of information. Effective teacher practices include providing meaningful activities, asking higher- order questions, encouraging collaboration, giving feedback, connecting lesson to pupil experience and allowing lessons to discover and apply knowledge. When technology is integrated appropriately it can provide pupils with opportunities to interact with information, create outputs, communicate with others, and received immediate feedback. This theory is particularly relevant to pupils' performance because active participation and meaningful learning experience can help pupils, develop deeper understanding and apply knowledge to authentic situation. Thus, the theory suggests that teachers' best practices and technology integration may contribute to improve academic performance.

Social Learning Theory (Bandura, 1977) Bandura's Social Learning Theory explains that learning occurs through observation, modeling, and interaction with others. Teachers serve as role models whose instructional practices influence pupils' learning behaviors and motivation. Technology further enhances this process by allowing learners to observe demonstrations, multimedia presentations, educational videos, and collaborative online activities that reinforce learning.

SAMR Model (Puentedura, 2014) The SAMR Model describes four levels of technology integration: Substitution, Augmentation, Modification, and Redefinition. The model explains how technology can move beyond merely replacing traditional instructional tools to transforming teaching and learning experiences. It provides a framework for evaluating the effectiveness of technology-aided instruction in improving pupils' academic performance.

Based on these theories, the study assumes that teachers who consistently demonstrate effective instructional practices and successfully integrate technology into classroom instruction create meaningful learning experiences that improve pupils' academic performance. The combination of sound pedagogy and appropriate technology integration is expected to increase learner engagement, motivation, participation, and academic achievement.

Conceptual Framework

In forming conceptual framework of this study, the researcher considers the institution-recommended Input-Process-Output-Outcome (IPOO) model that intends to establish the relationship between the independent and dependent variables used in the study. This model is essential for identifying the elements that contribute to both good and inefficient team process and for better describing how, why, and when they do.

The conceptual framework illustrates the relationship between best practices of teachers, technology- aided instruction and pupils performance. It is anchored on the Constructivist Learning Theory which views learners as active participants in constructing knowledge through meaningful experience, interaction, collaboration and application of learning. Thus, teachers who employ learner= centered strategies and appropriately integrate technology may provide pupils with opportunities to apply newly acquired knowledge.

The process commenced by determining the profiles of Teachers' Respondents, Length of service, Academic Attainment and Relevant ICT-trainings attended. Their best practices and technology-aided instruction was also determined according to individual items in the profile and as a whole. It was also measured wether there was a significant relationship between the teachers' best practices and technology-aided instructions in pupils' performance.

This study is anchored on the premise that teachers' best practices and technology-aided instruction are significant factors that influence pupils' academic performance. Teachers who employ effective instructional strategies and appropriately integrate technology into classroom instruction are expected to enhance pupils' engagement, understanding, and learning outcomes.

The study considers Teachers' Best Practices and Technology-Aided Instruction as the independent variables, while Pupils' Performance is the dependent variable.

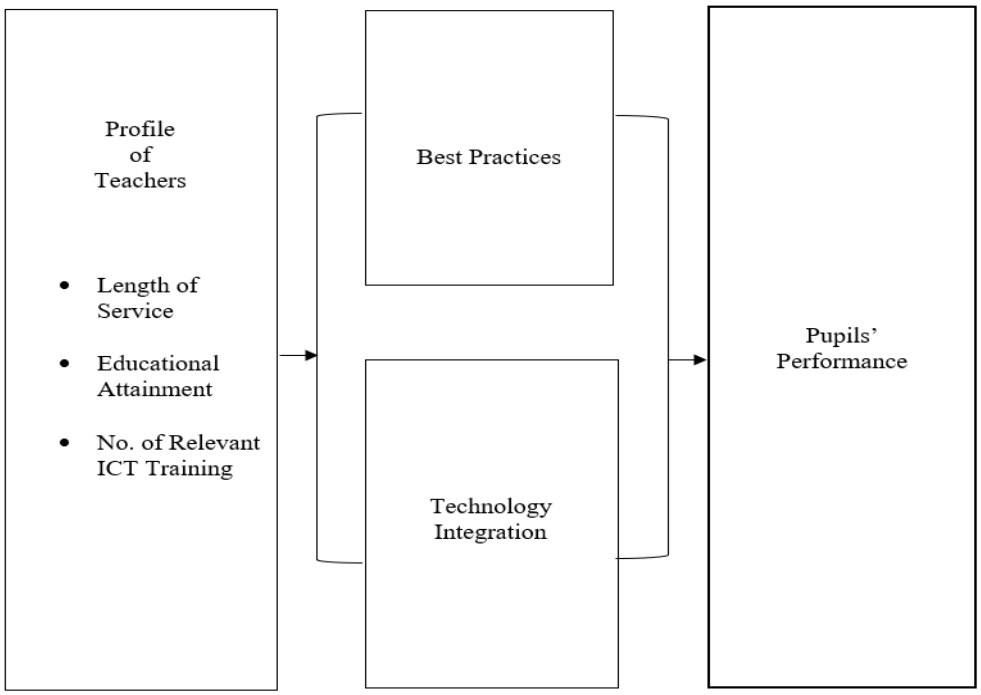


Figure 2. Schematic Diagram of the study showing the Relationship of the Variables

Statement of the Problem

The main objective of this study was to determine the relationship between best practices of teachers, technology- aided instruction and pupils' performance. Specifically, it aimed to answer the following questions:

1. What is the profile of the teacher- respondents in terms of:

   a. Length of Service;
   b. Educational Attainment; and
   c. No. of relevant ICT trainings attended.

2. What is the level of teachers' best practices?

3. What is the level of technology-aided instruction?

4. What is the level of pupils' academic performance?

5. Is there a significant relationship between teachers' best practices and pupils' academic performance?

6. Is there a significant relationship between technology-aided instruction and pupils' academic performance?

Hypothesis of the Study

The hypothesis of this study is grounded in the belief that teachers' best practices, when combined with technology aided- instruction significantly influence pupils' academic achievement and overall learning experience.

In order to describe the specification of a testable prediction about what to expect as the outcome of the study, the researcher formulated the following hypothesis.

1. There is no significant relationship between teachers' best practices and pupils' performance.

2. There is no significant relationship between technology aided instruction and pupils' performance.

Significance of the Study

The results of this study would benefit the following groups or individuals:

Schools Division Superintendent. Results of this study would furnish valuable inputs for trainings, seminars, workshops and sourcing for the needs of schools in reference on the present study. Thus, the division superintendent can use the results of the study by implementing the established policies and guidelines in partnership programs.

Assistant Schools Division Superintendent. The results may serve as a basis for planning, implementing and strengthening policies, programs and instructional initiatives that promote quality teaching - learning outcomes. Furthermore the study may guide in designing professional development plans, allocating budgets for technology - aided instruction and support the schools in implementing instructional best practices.

CID Chief. This study will provide empirical evidence regarding the influence of teachers' best practices and technology - aided instruction on pupils' performance. The results serve as a basis for developing, enhancing and monitoring curriculum implementation strategies that promote effective teaching and learning outcomes.

SGOD Chief. The findings would offer insightful information about curriculum alignment, efficient program implementation, and stakeholders' engagement. While SGOD Chiefs can use these insights to guarantee the seamless implementation of school programs and initiatives, CID Chiefs can customize curricula to foster partnership comprehending stakeholders' engagement. In the end, this study promotes a culture of accountability and shared responsibility among stakeholders which benefits the educational system as a whole. It also influences innovative and reinforcement program formulation.

Education Program Supervisor. The results identify areas where teachers may need additional coaching, mentoring, and professional development to enhance instructional effectiveness and technology - aided instruction.

Public Schools District Supervisors. The development programs prepared in this study would be helpful for public school's district supervisors in improving pupils' academic performance in school. It may serve as basis for finding supports and partnerships.

School Principal. The findings of this study, should provide the school administrators with vital information in supporting the teachers, parents and community collaborations in schools. The findings will also serve as bases for instructional innovations and in coming up with a school plan to improved pupils' performance in literacy.

Teachers/Advisers. The result of this study would increase their knowledge and capability in assisting in exercising their roles in school. Teachers can be aware of their strengths in ensuring that parents, community receive effective communication and partnership.

Parents. They would understand that their children's performance in school actually begins in the home as parents give their children specific duties to perform and hold them accountable and responsible for whatever action they make. The finding of this study will help increase the level of support in their children's performance in school.

Pupils. The finding of the study would empower then with proper knowledge skills, values and right preparing for future learning responsibilities. They would also be recipient of an improved innovative and enhancement program with strong mentorship of teachers, parents and community.

Community Stakeholders. The findings of this study will help Community Stakeholders including Local Government Units, Barangay Officials, Non-government Organizations, Alumni Association, Civic Groups and Private Partners to understand the value of their active involvement in supporting schools. The results may also serve as a basis for strengthening partnerships, mobilizing resources, participating in school programs and projects, and collaborating with teachers and parents to improve school performance and promote learners' academic success and holistic development.

Future Researchers. This study may benefit future researchers from the methods employed in this study and the results would be useful as bases to validate or invalidate, support or contest other studies or works.

Scope and Limitations of the Study

This study is limited to determining the relationship between best practices of teachers, and technology-aided instructions and pupils' performance in the eight (8) elementary Schools of Negros Island Region S.Y. 2024-2025. All 123 teachers of 8 schools are the respondents of this study.

The findings were based on the responses of the respondents and the responses were gathered through survey questionnaires and available records of pupils' performance.

The study does not examine other factors that may influence pupils' performance such as learner's socioeconomic status, parental environment, school resources, motivation, learning environment at home, school resources, or individual learning abilities. Likewise, the study focuses only on the variables included in the research and does not investigate the long-term effects of technology-aided instruction on learning outcomes.

Definition of Terms

This part of the study defines the following terms, conceptually and operationally to ensure understanding of the vocabulary used in the study.

Best Practices. Conceptually, refers to research-based and effective instructional methods, classroom management techniques, assessment strategies, and professional practices that promote quality teaching and improve learners' academic outcomes.

Operationally in this study, best practices refer to the extent to which teachers demonstrate effective instructional planning, classroom management, learner engagement, assessment, and professional development as measured by the researcher-made questionnaire.

Educational Attainment. Conceptually, refers to the highest level of formal education that an individual has successfully completed from a recognized educational institution. It represents a person's academic qualifications.

Operationally, refers to the respondent's highest academic degree or level of formal education completed at the time of the conduct of this study.

Length of Service. Conceptually refers to the amount of time an employee has worked for a particular organization or employer. It is also commonly called employee tenur. The period is generally measured from the employee's date of hiring or joining the organization up to the present date or the date employment ended.

Operationally, refers to the measured by calculationg the number of years and/or months and employee has contiuously worked for the organization, based on the employee's employment or hiring date and the date of data collection (or separation date for former employees). It can be

recorded as an exact number of years/months or grouped into categories such as less tham 1 year, 1- 2 years, 3- 5 years, 6- 10 years, and so on.

Pupils' Performance. Conceptually refers to the academic achievement and learning outcomes demonstrated by pupils based on their mastery of competencies and educational objectives.

Operationally in this study, pupils' performance refers to the pupils' academic achievement as reflected in their grades, test scores, or other official school performance records used by the researcher.

Relevant ICT Training. Conceptually, refers to formal or informal professional learning activities that enhance teachers knowledge, skills and competencies in using information and communication technologies (ICT) for teaching, learning, assessment and classroom management.

Operationally refers to the technology - related seminars, workshops, webinars, conferences, in - service trainings and other professional development activities attended by the respondents.

Teachers. Conceptually are licensed professional educators responsible for facilitating learning, assessing pupils, and promoting their holistic development.

Operationally in this study, refer to the public elementary school teachers who served as the respondents and completed the research questionnaire.

Technology-Aided Instruction. Conceptually, refers to the integration of digital technologies and multimedia resources into the teaching and learning process to enhance instruction and improve learners' engagement and achievement.

Operational definition of technology-aided instruction in this study refers to the level of teachers' utilization of digital tools, educational applications, internet resources, multimedia presentations and other instructional technologies.

Technology Integration. Conceptually, refers to the purposeful and effective use of digital technologies, tools, and resources to enhance teaching, learning and assessment.

Operationally, refers to the extent to which teachers incorporate digital technologies, applications, multi - media resources, online platforms, and other ICT tools into their classroom instruction to enhance teaching and learning.

REVIEW OF RELATED LITERATURE AND STUDIES

This part of the study discusses the related literature written and published about the extent of best practices of teachers and technology- aided instruction in relation to pupils performance. It explores the discussion or provided contrasting ideas.

Teachers' Best Practices

Teachers' best practices refer to instructional approaches that are research-based, learner-centered, and consistently implemented to improve students' academic achievement. These include effective lesson planning, differentiated instruction, formative assessment, collaborative learning, classroom management, and continuous reflection on teaching practices.

According to Essam and Passey (2022), best practices in education encompass three major dimensions: pedagogical principles, teaching practices, and instructional approaches. Their literature review emphasized that effective teachers carefully plan lessons, use evidence-based instructional strategies, actively engage learners, monitor learning through assessment, and continuously improve their professional practice. The authors concluded that best practices are those that consistently produce positive learning outcomes and are supported by educational research.

Similarly, Hornby and Greaves (2022) emphasized that evidence-based teaching practices are essential for maximizing student achievement. Their work identified effective instructional strategies such as explicit instruction, regular formative assessment, immediate feedback, differentiated instruction, and cooperative learning. They noted that teachers who consistently apply these strategies foster greater learner engagement, improve academic performance, and create inclusive classroom environments.

In the Philippine context, Mangantulao and Raras (2022) found that effective teachers demonstrate best practices through careful syllabus preparation, the use of varied teaching strategies, appropriate instructional materials, and well-designed assessment methods. Their study highlighted that continuous professional development and reflective teaching enable educators to improve instructional quality and respond effectively to learners' diverse needs.

Furthermore, Lorenzo (2022) reported that teachers who employ diverse instructional strategies including direct, indirect, interactive, experiential, and independent learning approaches are more successful in engaging students and improving learning outcomes. The study also emphasized the integration of technology and learner-centered strategies as key components of effective teaching practice in the 21st century.

Area-Moreira, Rodríguez-Rodríguez, Peirats-Chacón, and colleagues (2023) examined the digital transformation of instructional materials and teachers' classroom practices. The study found that teachers who effectively integrated digital instructional materials, interactive teaching strategies, and learner-centered approaches improved students' engagement and learning outcomes. The authors emphasized that teachers' best practices include the purposeful integration of technology to support meaningful learning rather than simply using digital tools.

Moorhouse and Yan (2023) investigated teachers' use of digital tools in classroom instruction. The findings revealed that effective teachers strategically used educational technologies to increase student participation, collaboration, and motivation. The study concluded that technology integration is considered a best teaching practice when it is aligned with instructional objectives and learners' needs.

Kohler et al. (2023) explored teachers' definitions of successful educational technology implementation. The researchers found that effective teaching practices include careful lesson planning, meaningful technology integration, student engagement, continuous assessment, and alignment of instructional strategies with curriculum goals. These practices contributed to improved teaching effectiveness and student achievement.

Studies in 2024 emphasize that effective teaching practices are shaped by instructional strategies, teacher beliefs, school support, and professional development. Maynopas and Escote (2024) and Rubio (2024) identified best practices such as differentiated instruction, contextualizing lessons, flexible grouping, hands-on activities, project-based learning, and culturally responsive strategies as effective in improving learner participation, especially for IP students and inclusive classrooms. Similarly, Ragay and Futalan (2024) found that cooperative learning, inquiry-based instruction, visualization, and technology integration significantly enhance students' 21st-century skills.

The role of teacher competence and mindset was also highlighted. Lomabao and Arazo (2024) concluded that effective questioning techniques improve classroom interaction, critical thinking, and academic performance, while Bardach et al. (2024) revealed in their meta-analysis that teachers with a growth mindset are more likely to adopt effective instructional practices and pursue continuous improvement. Park (2024) further identified teachers' priority needs for implementing good practices, including professional development, instructional planning, learner engagement, and classroom assessment.

Institutional and collaborative factors also contribute to teaching effectiveness. Mendador and Baguio (2024) reported that supportive educational management is positively associated with improved teaching quality, while Godes and Dioso (2024) found that strong instructional supervision helps teachers adopt best practices and improve performance. Flint, Rubie-Davies, and Peterson (2024) emphasized that teachers' beliefs, school context, and instructional practices collectively influence student achievement. Moreover, Frontiers in Education (2024) noted that teachers with higher self-efficacy and collaborative practices demonstrate more effective instruction and better classroom outcomes.

Based on the reviewed literature, the 2024 studies suggests that best teaching practices are most effective when teachers combine learner-centered strategies with strong professional competence, supportive school leadership, and a collaborative school environment.

Research from 2022 to 2026 consistently highlights that teachers' best practices significantly influence student academic achievement, engagement, and overall well-being. International organizations such as UNESCO (2026, 2024) and OECD (2025, 2024, 2023) emphasized that learner-centered, inclusive, and technology-supported instructional practices such as formative assessment, differentiated instruction, collaborative learning, and continuous feedback are strongly associated with higher student performance. DepEd Philippines (2025, 2024, 2022) similarly reported that contextualized learning, effective classroom management, and the use of localized instructional materials aligned with the MATATAG Curriculum led to improved learner outcomes in Philippine public schools.

At the teacher level, studies point to instructional quality, professional competence, and mindset as key factors. Darling-Hammond et al. (2025) and Darling-Hammond (2022) found that reflective teaching, professional collaboration, active learning, and authentic assessment promote deeper learning and student motivation. Hattie's (2024, 2022) synthesis of Visible Learning research identified teacher clarity, feedback, classroom discussion, and classroom climate as among the highest-impact practices for student achievement. Garcia et al. (2023) and Santos and Reyes (2023) further concluded that innovative teaching practices, differentiated instruction, effective assessment, strong classroom management, and positive teacher-student relationships significantly enhance learner engagement and academic performance in the Philippine context.

Support systems also play a critical role. OECD (2023) TALIS findings indicated that teachers who engage in continuous professional development are more likely to implement evidence-based practices effectively. UNICEF (2023) added that inclusive teaching practices and supportive classroom environments are especially important for improving participation and learning outcomes among disadvantaged learners.

The available evidence indicates that the 2022–2026 literature affirms that best teaching practices are most effective when they integrate learner-centered strategies, evidence-based instruction, and continuous professional growth, supported by strong school leadership and inclusive classroom environments.

Technology-Aided Instruction of Teachers

Studies in 2022 consistently highlight that technology-aided instruction plays a significant role in improving student engagement, motivation, and instructional quality when supported by teacher competence and institutional resources. Akram et al. (2022) and Timotheou et al. (2022) found that ICT integration enhances classroom interaction and learner achievement, particularly when teachers receive adequate training and schools provide sufficient digital resources and leadership support. Sum and Oancea (2022) added that technology increases instructional flexibility and strengthens teacher-student communication, especially in online and blended learning environments. The importance of teachers' attitudes and skills was also emphasized, as Teacher Perceptions about ICT Integration (2022) and Wohlfart and Wagner (2022) reported that positive

teacher attitudes, digital competence, and collaboration are critical factors for successful technology implementation. Continuous professional development was recommended by Akram et al. (2022) to build teachers' confidence and effectiveness in integrating technology into instruction.

The use of emerging technologies further expanded instructional possibilities in 2022. Celik et al. (2022) reported that artificial intelligence supports lesson planning, assessment, and personalized instruction while reducing teachers' workload, and also enables differentiated instruction based on individual learning needs. Abdelrahman et al. (2022) found that intelligent tutoring systems personalize instruction through knowledge-tracing technologies. Meanwhile, Fernandes et al. (2022) and Godoy (2022) highlighted that immersive technologies such as virtual and augmented reality improve student engagement, interest, and knowledge retention, particularly in STEM education.

In terms of inclusivity and assessment, Fernández-Batanero et al. (2022) and Zallio and Ohashi (2022) concluded that assistive technologies improve learning opportunities and accessibility for students with disabilities and diverse needs. Chanta-Jiménez (2022) noted that ICT-based assessment tools enhance feedback, monitoring, and evaluation practices. Nguyen et al. (2022) also reported that digital technologies support language learning and collaborative activities in English classrooms.

Overall, the 2022 literature suggests that technology-aided instruction encourages innovative teaching practices and develops students' critical thinking, collaboration, and problem-solving skills (Timotheou et al., 2022; Sum & Oancea, 2022). However, the effectiveness of these technologies largely depends on teacher competence, institutional support, and purposeful integration aligned with learning objectives.

Literature in 2023 consistently supports that technology-aided instruction enhances teaching effectiveness, student engagement, and academic achievement when integrated with teacher competence and institutional support. Msafiri, Kangwa, and Cai (2023) and Fujita (2023) found that ICT integration improves instruction and learning outcomes, provided that teachers receive adequate training, continuous professional development, and schools offer proper infrastructure and curriculum alignment. Pathiranage and Karunaratne (2023) emphasized that teachers' digital competence and professional agency are key to the successful adoption of innovative, technology-enhanced teaching practices.

Student-centered approaches also emerged as a major theme. Kerimbayev et al. (2023) reported that technology-supported instruction promotes active learning, collaboration, critical thinking, and problem-solving skills among learners. Norman (2023) added that digital learning tools improve reading instruction and literacy outcomes, while also encouraging learner independence, motivation, and classroom participation, particularly in developing countries. Dublar (2023) similarly concluded that emerging technologies positively influence knowledge acquisition and skills development among K-12 learners in the Philippines.

The role of artificial intelligence and intelligent systems was prominent in 2023 studies. Ilić et al. (2023) and Wang et al. (2023) found that AI and intelligent tutoring systems personalize instruction, provide immediate feedback, and improve learner performance. Montenegro-Rueda et al. (2023) noted that ChatGPT and other AI-assisted tools support lesson planning, assessment, and personalized learning, but require responsible and ethical use in the classroom. Ley et al. (2023) further highlighted that learning analytics and intelligent learning technologies help teachers monitor student progress and make evidence-based instructional decisions while complementing teachers' professional expertise.

In terms of inclusivity, Yenduri et al. (2023) concluded that assistive technologies promote inclusive education and expand learning opportunities for students with learning difficulties.

Collectively, the 2023 literature affirms that technology-aided instruction is most effective when it is purposefully integrated, ethically guided, and supported by digitally competent teachers and strong institutional systems.

Studies from 2024 consistently highlight that technology-aided instruction plays a vital role in improving student engagement, academic performance, and teaching effectiveness. Gonzales and Gonzales (2024) found that platforms like Microsoft Teams significantly enhanced collaboration and academic performance in Arts classes, while Maphalala et al. (2024) emphasized that ICT integration is most effective when supported by teacher training, leadership, and adequate digital resources. Similarly, Bai et al. (2024) and Scheiter et al. (2024) concluded that computer-assisted and technology-enhanced learning produce positive effects on student achievement, particularly when learning activities promote active participation and cognitive engagement.

The impact of technology on specific teaching strategies is also evident. Llorente and Tado (2024) and Tiamson et al. (2024) reported that technology integration through problem-based and interactive methods increased student engagement and participation in Mathematics and English. Crompton and Burke (2024) further noted that technology aligned with ISTE standards contributes to improved academic outcomes. Meanwhile, Diabo (2024) and studies from Psychology and Education (2024) and ICT Integration Review (2024) stressed that teachers' ICT competence, digital skills, and school infrastructure are key factors in successful implementation.

Recent developments in AI and immersive technologies also show promise. Ogunleye et al. (2024) and Song et al. (2024) found that generative AI tools like ChatGPT can enhance instruction and learning support, though they require clear pedagogical guidance and ethical supervision. Hadjiliasi et al. (2024) showed that both computer-based and VR-based pedagogical agents effectively support learning.

Collective evidence shows that the 2024 literature suggests that educational technology is most effective when it supplements rather than replaces classroom instruction (Computers and Education Open, 2024), and when it is purposefully designed to strengthen collaboration, creativity, critical thinking, and teacher-student communication (TechTrends, 2024; Microsoft Teams Study, 2024). Purposeful use of digital tools therefore improves both teaching performance and student learning across various contexts.

Likewise, studies in 2025 consistently show that technology-aided instruction significantly enhances teaching and learning outcomes across various educational contexts. Dapiroc (2025) and the OECD (2025, 2025) found that AI-assisted and well-designed digital technologies improve students' academic performance, motivation, engagement, and classroom participation.

Similarly, Moyano (2025) emphasized that digital tools make learning more interactive, flexible, and learner-centered, while Kosmas et al. (2025) and Educational Technology Research and Development (2025) highlighted that AI integration strengthens literacy instruction and supports teachers' instructional practices. The role of teacher preparation is also evident, as Martin et al. (2025) and Hirumi et al. (2025) concluded that professional development and evidence-based instructional design are essential for effective technology integration.

Emerging technologies such as gesture recognition, generative AI, and machine learning further demonstrate positive impacts. Hsiao et al. (2025) reported improvements in preschoolers' learning performance and executive functioning, while Tu et al. (2025) and Chen et al. (2025) found that AI agents and machine learning support STEAM learning and differentiated instruction. In post-pandemic settings, Shen et al. (2025) noted that technology-supported flipped classrooms boost motivation and self-regulated learning, and Yi et al. (2025) showed that data-driven assessment tools enhance critical thinking and participation.

Subject-specific applications also yielded positive results. Studies by Education and Information Technologies (2025) revealed that technology-assisted instruction improved mathematics learning and promoted digital literacy, safety, and wellbeing. Haines (2025) added that instructional technology fosters student collaboration and engagement. Meanwhile, reports from Tech & Learning (2025), Wall Street Journal (2025), Times of India (2025), and Houston Chronicle (2025) stressed that educational technologies are most effective when aligned with learning outcomes, guided by teachers, and used to personalize instruction and provide timely feedback.

Overall, the literature affirms that purposeful integration of digital and AI-supported tools enhances academic achievement, collaboration, and higher-order thinking skills, provided that implementation is research-based and teacher-guided.

Pupils' Performance

The literature in 2022 demonstrates that academic performance is influenced by a complex interplay of learner-related, instructional, technological, and contextual factors. Chung et al. (2022) and systematic reviews (2022) identified learner motivation, self-regulation, and engagement as significant predictors of academic achievement, particularly in online learning environments. Similarly, Negash, Eshete, and Hanago (2022) found that deep learning approaches and active engagement significantly improve students' academic achievement, while studies on learning approaches (2022) emphasized that active participation and collaborative learning also increase pupils' academic success.

The role of assessment and feedback emerged as another key theme. Yan et al. (2022) concluded through a meta-analysis that self-assessment and peer assessment enhance academic performance, while Feng et al. (2022) and research on assessment (2022) found that formative assessment practices and continuous feedback significantly improve learning outcomes and reading achievement in K–12 classrooms. Gomez, Ruipérez-Valiente, and García Clemente (2022) further reported that game-based assessment enhances learner engagement and achievement, especially in STEM subjects.

Technology and innovation also showed strong influence. Valverde-Berrocoso, Acevedo-Borrega, and Cerezo-Pizarro (2022) and educational technology reviews (2022) concluded that educational technology and digital learning tools improve student performance in mathematics, reading, science, and writing when integrated with effective teaching strategies. Cheng (2022) demonstrated that artificial intelligence can predict students at risk of poor academic performance and support timely interventions, while Candia et al. (2022) found that collaborative online discussions improved the performance of low-performing students. Boumi and Vela (2022) added that students' academic performance trajectories can accurately predict future academic success.

Contextual and support factors were also consistently emphasized. Dela Cruz (2022) concluded that parental support, learning environment, and teacher guidance significantly affect academic performance during the pandemic. Mejía-Rodríguez and Kyriakides (2022) synthesized 195 studies showing that school leadership, curriculum quality, and educational policies strongly influence learning outcomes, while studies on educational effectiveness (2022) highlighted the importance of school climate, instructional quality, and leadership. Research on factors affecting academic performance (2022) further identified teacher support, parental involvement, learner motivation, and access to educational technology as key determinants of achievement.

Other findings point to individual and systemic challenges. Pagerols et al. (2022) reported that pupils with mental health concerns demonstrated lower academic achievement than their peers. Lozano-Blasco et al. (2022) found that cognitive, emotional, and social intelligence are positively associated with academic performance. The 2022 NAEP assessment also showed significant declines in pupils' mathematics and reading achievement due to pandemic-related learning loss.

In conclusion, the 2022 literature suggests that academic performance is maximized when learners are motivated and engaged, teachers employ effective assessment and instructional strategies, schools provide strong leadership and supportive environments, and technology is purposefully integrated to enhance teaching and learning.

An examination of 2023 studies indicates that pupils' academic performance is shaped by the dynamic interaction of individual, familial, school-based, and instructional variables. Piamonte and Ventura-Escote (2023) found that teacher effectiveness, parental involvement, and pupil engagement significantly influenced pupils' academic performance in the post-COVID-19 pandemic. This is supported by studies on teacher instructional practices (2023) and school support with teacher guidance (2023), which reported that effective classroom instruction and guidance positively affected pupils' academic achievement after the pandemic.

At the learner level, several studies emphasized personal and behavioral factors. Solano (2023) concluded that positive study habits were significantly associated with higher academic achievement in Mathematics and English. Studies on study habits (2023) further found that time management and independent study skills significantly predicted academic success, while studies on learning behavior (2023) revealed that pupils with positive classroom behavior achieved better performance. Maruhom and Abarquez (2023) also associated positive learning behaviors with better academic outcomes in the new normal setting. Additionally, Li (2023) found that moderate daily physical activity was associated with higher academic performance, and Ladant et al. (2023) reported that class ranking influenced pupils' motivation and later academic achievement.

Home and family-related factors were also consistently highlighted. Maunga et al. (2023) indicated that socioeconomic conditions and study habits affected pupils' performance, while Sagario, Quinto, and Antonio (2023) found that parents' education, occupation, and family size significantly influenced academic performance. Juguilon (2023) showed that strong family support contributed significantly to pupils' mathematics performance. Studies on parental involvement (2023) and family socioeconomic status (2023) further emphasized that regular communication between parents and schools, and socioeconomic background, remained important predictors of academic achievement.

Instructional and technological interventions also played a key role. Caloyloy and Tolentino (2023) found that remedial intervention materials significantly improved pupils' achievement in Araling Panlipunan, while a study on remedial instruction (2023) demonstrated that strategic intervention materials improved outcomes among low-performing pupils. Esmaquilan, Edaño, and Vasquez (2023) reported that ICT integration was positively related to improved academic performance, and a study on ICT integration (2023) showed that technology-supported instruction enhanced pupils' engagement and achievement. Learner engagement was also identified as a significant contributor to improved academic achievement in elementary schools (2023).

In essence, the convergence of 2023 findings underscores that optimizing academic performance requires the alignment of learner effort, supportive home and school environments, competent instruction, and strategic use of educational interventions and technology.

A review of 2024 studies reveals that academic performance is shaped by the interplay of learner characteristics, instructional practices, family support, school environment, and health-related factors. Costa et al. (2024) in their systematic review found that learner motivation, parental involvement, teacher quality, and school climate significantly influence pupils' academic performance. This was further supported by subsequent findings from the same review identifying self-regulated learning (2024), parental involvement (2024), positive school climate (2024), effective teacher instructional practices (2024), learner motivation (2024), and strong peer relationships (2024) as key predictors of academic success. Costa et al. (2024) concluded that academic performance is influenced by the combined effects of personal, family, teacher, and school-related factors.

At the instructional and technological level, several studies highlighted the role of teaching methods and tools. Akpen et al. (2024) reported that effective online learning improves academic performance and learner engagement, and that proper integration of educational technology enhances pupils' academic performance. Greater student engagement was also found to lead to improved learning outcomes (Akpen et al., 2024). Sánchez-Élez et al. (2024) demonstrated that active learning strategies through self-generated tests significantly improved students' academic performance, and that collaborative and learner-centered assessment methods also improve academic outcomes.

Learner behavior and academic practices were likewise emphasized. Guo et al. (2024) found that moderate homework time was positively associated with better academic achievement, while balanced homework practices improve learning and excessive homework provides limited benefits. Self-regulated learning was identified as a major predictor of academic achievement (Costa et al., 2024).

Health and physical factors also emerged as important contributors. Wang and Wang (2024) found a positive relationship between motor skills and pupils' academic performance, with fine and gross motor skills supporting better performance in mathematics and language subjects. López-Gil, Victoria-Montesinos, and García-Hermoso (2024) reported that healthy eating habits were associated with improved academic achievement, and that good nutrition supports cognitive functioning and higher academic achievement.

Finally, data-driven approaches were noted. Al-Din and Al Abdulqader (2024) found that machine learning effectively identified students at risk of poor performance.

In summary, the convergence of 2024 findings underscores that academic achievement is maximized when learners are self-regulated and motivated, supported by family and school, engaged through effective instruction and technology, and maintain healthy physical and cognitive well-being.

An analysis of 2025 studies reveals that pupils' academic performance is shaped by the convergence of foundational competencies, instructional effectiveness, socio-emotional development, and systemic support structures. The EDCOM II Year Two Report (2025) revealed that many Filipino learners in the primary grades remain below expected reading and numeracy proficiency, emphasizing the need to strengthen foundational learning to improve academic performance. Foundational Learning Literature (2025) further stressed that strong literacy and numeracy skills developed in the early grades are essential predictors of later academic success.

Instructional and assessment practices were consistently highlighted. Teacher Quality Literature (2025) reported that effective teaching strategies and continuous professional development significantly improve learning outcomes. Classroom Assessment Literature (2025) found that regular formative assessment helps teachers monitor progress and improve performance through timely feedback, while Teacher Feedback Literature (2025) emphasized that constructive and timely feedback helps learners identify weaknesses and build confidence. Curriculum Alignment Literature (2025) also showed that aligning instruction with curriculum standards and competencies enhances achievement in core subjects.

Intervention programs and learner support systems played a key role. Reading Intervention Literature (2025) and Numeracy Intervention Literature (2025) found that early and focused interventions significantly improve comprehension, computational, and problem-solving skills, leading to higher achievement. Learning Analytics Dashboard Review (2025) noted that analytics tools can increase participation and engagement, though academic gains depend on effective implementation. Educational Technology Literature (2025) similarly concluded that proper integration of digital tools supports engagement and improves achievement when combined with effective teaching.

Learner and socio-emotional factors were also significant. Social-Emotional Learning Review (2025) found that SEL programs improve performance in mathematics and reading by enhancing motivation, behavior, and engagement. Learner Engagement Literature (2025) and Motivation Literature (2025) reported that active participation, collaboration, and high motivation are associated with stronger academic performance and persistence. Student Attendance and Academic Performance (2025) highlighted that persistent absenteeism negatively affects achievement, underscoring the importance of regular attendance.

Home, school, and community factors further emerged. Parental Involvement Literature (2025) showed that active parental participation enhances motivation, attendance, and achievement. School Leadership Literature (2025) found that effective leadership contributes to better instructional quality and learner performance. School Climate Literature (2025) emphasized that a safe, supportive, and inclusive environment improves outcomes and well-being. Inclusive Education Literature (2025) noted that equitable opportunities and appropriate support improve achievement among diverse learners. Finally, Community and School Partnership Literature (2025) concluded that collaboration among schools, parents, and stakeholders strengthens learning support and improves performance.

State-level monitoring also contributed, as the State Level Achievement Survey (2025) was used to identify learning gaps and guide interventions.

Taken as a whole, the 2025 body of literature posits that sustainable improvements in academic performance are attained through the strategic alignment of early foundational development, evidence-based instruction, targeted interventions, and collaborative support across learners, families, schools, and communities.

Teachers and Technology Aided-Instruction

Technology - aided instruction has become an essential component of modern education, enabling teachers to deliver lessons more effectively and engage learners through digital tools and interactive learning experiences. The integration of technology in teaching supports the development of 21st - century skills, enhances classroom participation, and provides diverse learning opportunities that accommodate different learning styles.

Research has shown that technology - aided instruction positively influences pupils' academic performance when teachers possess adequate technological and pedagogical competencies. The Technological Pedagogical Content Knowledge (TPACK) framework developed by Mishra and Koehler (2006) emphasizes that effective technology integration occurs when teachers combine content knowledge, pedagogical knowledge and technological knowledge to design meaningful learning experiences.

Similarly, the SAMR Model developed by Puentedura (2014) explains that technology can transform instruction by progressing from simple substitution of traditional teaching methods to redefining learning tasks that would otherwise be impossible without technology. This model highlights the importance of purposeful technology integration rather than merely using digital devices.

Teachers play a vital role in the successful implementation of technology - aided instruction. Their knowledge, attitudes and competence in using technologies influence the quality of instruction and learners academic performance.

Recent empirical studies on teachers and technology-aided instruction highlight the growing role of digital tools in enhancing teaching and learning. Bui (2022) found that teachers primarily used digital technologies for lesson delivery, communication, and classroom management, and concluded that teacher competence, confidence, and professional development strongly influence successful technology integration. Similarly, Akram et al. (2022) reported that teachers generally

held positive perceptions of technology integration, although infrastructure, internet connectivity, and training remained major challenges. Abraham (2022) further demonstrated that ICT training significantly improved teachers' knowledge, skills, and classroom use of technology, emphasizing the importance of continuous professional development.

A 2023 study on digital pedagogy showed that teachers who frequently integrated educational technologies achieved higher learner engagement and more interactive classroom instruction. Another 2023 investigation found that school leadership support and access to digital resources significantly influenced teachers' willingness to use technology in teaching. That same year, a study concluded that teachers with higher digital literacy demonstrated greater confidence in implementing technology-aided instruction.

In 2024, research revealed that blended learning strategies improved both instructional effectiveness and learner participation when supported by appropriate digital tools. Another 2024 investigation reported that multimedia presentations, educational applications, and online assessment tools enhanced pupils' motivation and academic achievement. A separate 2024 study found that continuous ICT coaching increased teachers' confidence in integrating technology into daily classroom instruction, while other research indicated that effective technology integration depends on the alignment of digital tools with instructional objectives rather than on technology use alone.

Studies from 2025 to 2026 further emphasized emerging trends. A 2025 study reported that teachers viewed artificial intelligence (AI) as a valuable supplement to classroom instruction but emphasized the need for ethical use and additional training. Another 2025 study found that institutional support positively influenced teachers' readiness to adopt emerging educational technologies, and an investigation showed that collaborative professional learning communities enhanced teachers' technology integration practices. A 2025 study also concluded that technology-aided instruction improved learner engagement, collaboration, and formative assessment when implemented effectively.

By 2026, research continued to highlight collaboration and competence. A study found that collaborative lesson study significantly strengthened teachers' competence in meaningful technology integration. Another investigation on science teachers reported that stronger Technological Pedagogical Content Knowledge (TPACK) was associated with higher levels of technology integration. Additionally, a 2026 study showed that mobile-assisted instructional models increased student collaboration, engagement, and academic achievement. Two Philippine studies in 2026 specifically noted that pre-service teachers' intention to use AI-enabled educational tools was strongly influenced by performance expectancy and computer self-efficacy, and that teacher training, institutional support, and responsible AI integration are essential for effective technology-aided teaching.

Overall, recent studies consistently conclude that teachers who receive continuous ICT training, possess strong technological competence, and are supported by school leaders are more likely to implement effective technology-aided instruction, leading to improved learner engagement and academic performance.

Teachers and Pupils Performance

Studies consistently show that teachers play a significant role in influencing pupils' academic performance through their instructional practices, classroom management, pedagogical competence, and assessment strategies (Castino, 2026). Castino (2026) investigated classroom management practices among public elementary school teachers in the Philippines and found a significant positive relationship between effective classroom management and pupils' academic performance. Teachers who established clear routines, maintained an organized classroom environment, and effectively managed learner behavior had pupils who achieved better academic

outcomes. Similarly, Castino (2026) reported that effective classroom management practices were significantly associated with improved pupils' academic performance and learning behavior.

Tuboc, Germina, and Martir (2026) examined teachers' instructional strategies and learners' performance in English. Their study found that learner-centered teaching strategies, differentiated instruction, and active learning approaches significantly improved students' academic achievement. The researchers concluded that effective teaching strategies contribute to higher learner performance. This is supported by a 2026 study which found that teachers who used learner-centered pedagogical approaches promoted higher academic achievement and greater classroom engagement among pupils.

Banquiles and Alva (2026) explored the effects of Learning Action Cell (LAC) implementation on teachers' instructional performance and students' academic performance. The results showed that continuous professional learning among teachers improved instructional quality, which in turn positively influenced students' academic achievement. Banquiles and Alva (2026) further reported that effective implementation of LAC programs improved teachers' instructional performance and students' academic performance.

Yongco (2026) examined the impact of leadership styles on teacher performance and student achievement in Philippine secondary schools. The study found that effective instructional leadership strengthened teacher performance and contributed to improved student achievement by fostering a supportive teaching and learning environment. Yongco (2026) also found that effective school leadership strengthened teacher performance, which was associated with improved student achievement.

Penton (2026) investigated teachers' pedagogical practices and students' academic performance in science. The findings revealed a significant positive relationship between effective pedagogical practices including lesson organization, communication, teacher student interaction, and assessment and students' academic performance.

Other recent studies also highlight key factors affecting pupil performance. Li et al. (2023) concluded that teachers with strong digital literacy and effective instructional practices significantly improved pupils' academic performance. A 2023 study on differentiated instruction found that teachers who adapted lessons to learners' needs achieved higher pupil performance and classroom participation. Another 2023 study reported that teachers' classroom assessment practices positively influenced pupils' learning achievement and academic growth.

In 2024, an investigation revealed that teachers' classroom management skills significantly affected pupils' academic engagement and achievement. A 2024 study found that teachers who regularly provided constructive feedback improved pupils' learning performance and motivation. Another 2024 study concluded that collaborative learning strategies implemented by teachers enhanced pupils' critical thinking and academic achievement. A 2024 study further reported that continuous teacher professional development resulted in improved instructional quality and higher pupil achievement.

More recent 2026 studies emphasize teacher support and collaboration. Carpina, Dacula, and Sarno (2026) found that teacher support had a significant positive relationship with Grade 6 pupils' academic performance in blended learning environments. Peña and Lisayen (2026) concluded that teachers' reinforcement strategies significantly improved Grade 6 pupils' motivation and academic performance. Marcojos and Salipong (2026) reported that teachers' well-being influenced learners' academic performance, suggesting that supporting teachers also benefits pupil achievement.

A 2026 Philippine Institute for Development Studies (PIDS) evaluation reported that stronger teacher collaboration under the MATATAG Curriculum was associated with improved classroom practices and better student assessment outcomes. A 2026 study concluded that teachers'

instructional competence, effective assessment, and classroom interaction significantly predicted pupils' academic success.

Overall, recent studies consistently indicate that teachers' instructional competence, classroom management, assessment practices, professional development, and technology integration are important factors influencing pupils' academic performance. These findings support the present study, which examines the relationship between teachers' best practices, technology-aided instruction, and pupils' performance.

Teachers and Length of Service

Length of service is an important professional characteristic that may influence teachers' instructional competence, classroom management, and overall teaching performance. Teachers who have served longer often gain valuable classroom experience, refine their instructional strategies, and develop stronger skills in managing diverse learner needs. However, recent studies suggest that years of service alone do not guarantee higher teaching effectiveness, as continuous professional development and instructional support also play significant roles.

A Philippine study by Sanchez et al. (2024) involving beginning teachers in the Department of Education found that length of service was a significant predictor of teaching performance, together with the grade level taught and other professional characteristics. The study emphasized that teaching experience contributes to teachers' professional growth and classroom effectiveness, particularly during the early years of service.

Similarly, Lee (2024) examined teachers' professionalism, commitment, and teaching performance and found that length of service is an important demographic factor in understanding variations in teaching performance. The findings suggest that teachers' experience should be complemented by ongoing professional development to sustain high-quality instruction.

In another Philippine study, Po and Martir (2025) reported that teachers' motivation and performance differed when grouped according to length of service. The researchers concluded that mentoring and continuous professional learning are essential to support teachers at different stages of their careers.

Overall, these studies indicate that while length of service contributes to teachers' professional competence and instructional performance, continuous learning, mentoring, and participation in professional development programs remain essential for maintaining effective teaching practices and improving learners' academic performance.

Teachers and Educational Attainment

Educational attainment is an important teacher characteristic that influences instructional quality, professional competence, and student learning outcomes. Teachers who pursue higher academic qualifications often develop stronger pedagogical knowledge, subject matter expertise, and research skills that enhance classroom instruction.

Linda Darling-Hammond (2023) emphasized that teachers with advanced educational qualifications are better equipped to implement evidence-based instructional practices, differentiate instruction, and respond effectively to diverse learner needs. Higher educational attainment also promotes continuous professional growth and reflective teaching, leading to improved classroom performance.

John Hattie (2023) explained that while teacher effectiveness depends on multiple factors, teachers who engage in advanced education are more likely to adopt innovative teaching strategies, assess learners effectively, and create meaningful learning experiences. Higher educational attainment contributes to teachers' confidence and instructional competence.

The UNESCO (2024) highlighted that teachers' qualifications are fundamental to achieving quality education. Teachers with advanced academic preparation are more capable of integrating technology, applying learner-centered approaches, and addressing the changing demands of 21st-century education.

The Organization for Economic Co-operation and Development (2024) reported that teachers who continue their formal education demonstrate greater professional competence and are more likely to participate in lifelong learning activities. Such qualifications strengthen instructional quality and positively influence learners' academic achievement.

Similarly, the Department of Education, through its professional standards for teachers, encourages educators to pursue graduate studies and lifelong learning to improve teaching quality, leadership, and learner outcomes. Advanced educational attainment supports teachers in implementing effective instructional strategies, including technology-aided instruction.

Overall, the literature suggests that teachers' educational attainment contributes significantly to instructional effectiveness, professional competence, technology integration, and pupils' academic performance. These findings support the inclusion of educational attainment as an important profile variable in the present study, "Teachers' Best Practices and Technology-Aided Instruction in Relation to Pupils' Performance."

Teachers and Relevant ICT Training

Teachers' participation in relevant Information and Communication Technology (ICT) training is essential in improving their technological competence and enhancing classroom instruction. ICT training equips teachers with the knowledge and skills needed to integrate digital technologies effectively into the teaching and learning process. Continuous professional development in ICT also enables teachers to adapt to emerging educational technologies and respond to the changing needs of learners.

Koehler and Mishra emphasized through the Technological Pedagogical Content Knowledge (TPACK) framework that effective technology integration requires teachers to possess not only technological knowledge but also the ability to combine technology with pedagogy and content knowledge. ICT training helps teachers develop these competencies, resulting in more effective instructional practices.

According to UNESCO (2023), continuous ICT professional development enables teachers to confidently use digital technologies to create engaging, inclusive, and learner-centered classrooms. UNESCO further noted that regular ICT training enhances teachers' digital literacy and strengthens their capacity to improve learning outcomes.

Similarly, OECD (2023) reported that teachers who receive regular ICT-related professional development are more likely to integrate technology into classroom instruction effectively. Schools that provide ongoing ICT training demonstrate greater innovation in teaching and better preparedness for digital learning environments.

The Department of Education continues to strengthen teachers' ICT competencies through the National Educators Academy of the Philippines (NEAP), Digital Rise Program, and other professional development initiatives. These programs are designed to improve teachers' digital skills and support technology integration in accordance with the MATATAG Agenda and the Digital Education Framework.

Furthermore, recent studies have shown that teachers who participate in ICT training exhibit greater confidence, higher technology acceptance, and more effective use of digital instructional tools. Continuous ICT training enhances teachers' ability to design interactive lessons, utilize learning

management systems, develop digital learning resources, and assess learners using technology, ultimately contributing to improved teaching effectiveness and learner engagement.

Recent studies emphasize the critical role of continuous ICT professional development in enhancing teachers' competence and confidence in technology integration. Tondeur et al. (2023) found that teachers who regularly participated in ICT professional development demonstrated greater confidence and competence in integrating technology into classroom instruction. The study also revealed that continuous training improved teachers' ability to design learner-centered digital activities. Similarly, Insteford and Munthe (2022) reported that ICT training significantly strengthened teachers' digital competence and increased the quality of technology integration in teaching. They emphasized that practical, classroom-based training was more effective than purely theoretical sessions.

International organizations also highlight the importance of sustained ICT capacity-building. The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2023) stated that continuous ICT capacity-building enables teachers to develop innovative teaching strategies, improve digital literacy, and provide more engaging learning experiences. The Organization for Economic Co-operation and Development (OECD, 2023) reported that teachers who frequently attended ICT-related professional development were more likely to use digital resources effectively and improve student engagement and achievement.

In the regional and local context, the Southeast Asian Ministers of Education Organization (SEAMEO, 2023) found that teachers who received structured ICT training demonstrated improved digital pedagogy, better classroom management using technology, and higher learner participation. The Department of Education (DepEd, 2024) emphasized through its digital education initiatives that sustained ICT training equips teachers with the skills needed to implement technology-supported instruction aligned with the MATATAG Agenda.

Furthermore, Cabero-Almenara et al. (2022) concluded that professional ICT development positively influenced teachers' attitudes toward educational technology and encouraged innovative instructional practices.

Overall, these studies indicate that continuous, practical, and policy-supported ICT professional development is essential for improving teachers' digital competence, fostering positive attitudes toward technology, and ultimately enhancing the quality of technology-aided instruction and learner outcomes.

Teachers and Technology Integration

Empirical evidence from 2022 to 2025 consistently shows that effective technology integration in classrooms is influenced by teacher competence, professional development, leadership support, and access to resources. Bui (2022) reported that teachers mainly used digital technologies for instructional delivery and classroom communication, but effective integration depended on teacher competence and institutional support. Fernández-Sánchez et al. (2022) concluded that successful curricular technology integration requires teacher digital competence, leadership support, and adequate technological resources. Similarly, Sosa-Díaz et al. (2022) developed an EdTech integration framework showing that teacher preparedness, school leadership, infrastructure, and professional development are key factors in effective technology integration. A 2022 review also found that teachers who participated in regular ICT professional development demonstrated greater confidence and were more willing to integrate technology into classroom instruction.

Studies in 2023 further emphasized the role of training, standards, and support. The Organization for Economic Co-operation and Development (OECD, 2023) reported that teachers who regularly attended digital skills training were more likely to integrate educational technologies effectively, resulting in greater student engagement. The United Nations Educational, Scientific and Cultural

Organization (UNESCO, 2023) emphasized that strengthening teachers' digital competencies enhances innovative teaching and learner-centered instruction. The International Society for Technology in Education (ISTE, 2023) highlighted that teachers who follow digital teaching standards create more collaborative, creative, and technology-rich learning environments. The Southeast Asian Ministers of Education Organization (SEAMEO, 2023) found that continuous ICT capacity-building improved teachers' instructional practices and digital confidence. Additionally, a 2023 international review concluded that ongoing teacher support and mentoring increased meaningful technology integration and improved classroom instruction.

Recent 2024 studies focused on policy, capacity-building, and digital competence. The Department of Education (DepEd, 2024) emphasized that digital transformation initiatives encourage teachers to integrate technology to improve teaching effectiveness and learner achievement. The World Bank (2024) reported that teacher digital capacity-building programs contribute to improved instructional quality and better student learning outcomes. A 2024 study found that teachers with higher digital competence integrated educational technologies more frequently than those with limited ICT skills. Another 2024 investigation concluded that school leadership, reliable internet access, and continuous ICT training significantly influenced teachers' technology integration practices. A separate 2024 study showed that integrating digital learning platforms increased learner participation and improved teachers' classroom management and instructional efficiency.

By 2025, research continued to highlight professional development and mentoring. Anwar et al. (2025) found that pre-service teachers' technology integration improved when they received structured mentoring and practical teaching experience. Amemasor et al. (2025) concluded that teacher professional development programs positively influenced digital instructional integration, teaching practices, and attitudes toward educational technology. A 2025 systematic review found that sustained ICT professional development significantly enhanced teachers' digital competence, confidence, and classroom technology integration. Another 2025 review recommended continuous in-service ICT training, peer coaching, and institutional support to sustain effective technology integration in schools. Recent 2025 evidence also concluded that teachers who regularly updated their digital skills were more likely to implement learner-centered, technology-enhanced instructional strategies that improved student engagement and classroom effectiveness.

Overall, these studies indicate that sustained ICT professional development, strong digital competence, supportive leadership, mentoring, and adequate resources are essential for teachers to effectively integrate technology and improve learner outcomes.

Teachers Best Practices and Pupils Performance

Teachers' instructional practices play an important role in quality effective learning environment. Best practices encompass lesson preparation, classroom management, appropriate teaching strategies, assessment, feedback learner engagement and responsive to pupils needs. Recent studies have examined there practices in relation to learners performance in Philippine public elementary schools.

Ovnido and Buquia (2024) examined the instructional competence of teachers and its relationship with learners' academic performances in public elementary school in Central Philippines. The study involved 206 public elementary school teachers and examined instructional competences in areas such as teaching approaches, classroom management and assessment practices. The study is particularly relevant to the present research because it directly connects teachers' instructional competences with learners' academic performance.

Similarly, Catayas and Hussien (2024) investigated classroom management and learners' academic performances among Grade 6 pupils of Kiwalan Elementary School in Iligan City. The study reported that teachers demonstrated strong classroom management. The learners also demonstrated generally favorable academic performance with may obtaining satisfactory or very satisfactory

ratings. This study supports the importance of classroom management in one component of best practices of teachers that can contribute to a conducive learning environment.

Ameer- Gumpal and Basmayor (2024) studied classroom management skills and teaching performance among elementary school teachers in the last I and II District of the Division of Iligan City. Their descriptive- correlational study involved 100 teachers and examined discipline, classroom rules, support building and feedback. The teachers demonstrated a high level of classroom management skills, while most received very satisfactory teaching performance ratings. The study demonstrate the importance of effective classroom management, and teacher best practices in maintaining conditions that support learning.

Another Philippine study of Valmoria and Labitad (2025) examined instructional practices and teachers performance in selected public elementary schools in Misamis Oriental. The researchers involved 150 elementary teachers and examined practices such as lesson planning, assessment, action research, anecdotal records, and home visitation. Their findings indicated that teachers generally practiced sound instructional method with assessment practices ranking among the strongest. This study is relevant components of the broader concept of best practices of teachers.

Kalon (2026) examined school heads, instructional supervisory practices, teachers teaching strategies and learners academic performance in elementary schools in the Schools Division of Antique during school year 2024- 2025. The study involved 365 elementary teachers and obtained learners academic performance from official school records. Its focus on the relationship among instructional supervision, teachers teaching strategies and learners outcomes provides strong support for investigating teachers instructional practices in relation to pupils performances.

Likewise, Gadayan (2025) investigated school climate, teachers' instructional practices and learners 'performances in public elementary schools in the Schools Division of Antique. The study involved 365 teachers, while learners' performance was represented by their average academic grades. This study is closely related to the present research because it treats teachers' best practices and learners' performances as major variables within the elementary school context.

A more recent study by Salva and Neri (2026) examined public elementary school teachers' pedagogical competences, instructional effectiveness and performance of their effects on learners' academic achievement. The researcher involved 320 public elementary school teachers from three districts of Ubay. The study is highly relevant to the present research because it emphasize that the quality of teachers' instructional effectiveness can be important factors associated with learners' academic performance.

Technology- Aided Instruction and Pupils Performance

Technology- aided instruction has become an increasingly important of contemporary teaching and learning. It allows teachers to present lessons through multimedia, interactive applications, digital learning materials, videos, simulation and other technology supported resources. When appropriately integrated with instructional objectives and pedagogical strategies, technology may enhance pupils' engagement, participation, understanding and academic performance.

Udto and Kusain (2023) investigated the integration of technology in classroom instruction in relation to academic performance among Grade 5 pupils of Punta Central Elementary School in the Philippines. The researcher use a descriptive research design and a survey questionnaire to determine the technologies used by teachers and their perceived effect on academic performance. The study found that the DVD player was among the commonly used technologies although technology was not frequently utilized. Nevertheless, pupils perceived that technology use in classroom instruction improved their academic performance. The study is highly relevant to the present investigation because it directly examines technology integration and academic performance among elementary pupils.

Dapoc examined the effect of technology integration in the academic performance of kinder – Grade six pupils in Malinao Elementary School. The study was conducted in response to concerns regarding pupils' academic performance and engagement in learning. It examined technology integration in relation to pupils participation and academic achievement and identified factors such as technology availability, teacher competency and the extent to which technology was utilized in the classroom. The study provides support for the idea that the effectiveness of technology- aided instruction depends not only on the availability of technological resources but also on teachers competence and actual classroom utilization.

Peradillo and Martin (2025) investigated information and communication technology (ICT) screen time assess and academic performance of primary learners. The study used a descriptive-correlational quantitative design and involved 120 randomly selected pupils from kindergarten to grade 3 at Mangelen Integrated School. The learners had a satisfactory mean academic grade of 84.36 %, while their reported ICT device access average approximately 154.92 minutes per day. This study is relevant because it demonstrates the importance of examining pupils' technology exposure alongside academic performance. However, is also indicates that technology exposure by itself showed not automatically be interpreted as evidence of improved learning outcomes.

De los Santos (2025) examined the use a teacher Tech- Instructor as an aide to independent learning and its effect on Grade 4 learners' competence in Science. The intervention used interactive presentations with basic programming features to facilitate independent learning. A pretest- posttest single group design was employed with learners 'performance measured before and after the intervention. The study is particularly relevant to technology- aided instruction because it demonstrates how interactive technology can be deliberately designed as an instructional intervention rather than simply used as a presentation tool.

At the international level, Ali, Yasmeen, and Munawar (2023) conducted a systematic review on the impact of technology integration on student engagement and achievement in Mathematics Education. Their review examined research concerning technology integration, student engagement, and academic achievement. The study provides broader evidence that technology supported learning has the potential to influence both learner engagement and academic outcomes, particularly when technology is meaningfully incorporated with instruction.

A more recent elementary school study by Tantoy, examinded ICT skills and academic achievement among elementary pupils in Grades 4 to 6. The study investigated pupils ICT competencies in areas such as device operation, internet safety, digital communication, and collaboration, information searching and evaluation, and basic software use, and examined their relationship with performance in Filipino, English, Mathematics, Science and Araling Panlipunan. This study is relevant because it extends the discussion from more access to technology toward the pupils' ability to use ICT effectively for learning.

METHODOLOGY

This chapter deals with the method of research used, the research design, subjects of the study, the participants, the data gathering procedures, the research instruments, the conduct of the study and the statistical tools used and data analysis.

Research Design

This study employed a quantitative descriptive - correlational research design. The descriptive method was used to determine the extent of teachers' best practices, the level of technology aided - instruction and the level of pupils' performance. It provides a systematic description of the current practices and conditions as they naturally occurred with manipulating any variables.

The correlational component of the study was utilized to determine whether significant relationships exist between teachers' best practice, technology - aided instruction and pupils'

performance. Specifically, the study examined the relationship between teachers' best practices and pupils' performance, as well as the relationship between technology-aided instruction and pupils' performance.

Furthermore, the study determine whether significant differences existed in teachers' best practices and technology - aided instruction when respondents were grouped according to their profile.

This research design was deemed appropriate because it enabled the researcher to gather quantitative data through standardized survey questionnaires, describe the existing condition, and statistically analyze the relationships and differences among the variables without influencing the participants as the educational environment.

Subjects and Respondents of the Study

The respondents of the study are the 123 teachers of District III- A and III- B of Schools Division of Bago City. The respondents were selected using total enumeration wherein all qualified teachers in the identified schools were invited to participate in the study. To be included, respondents had to be currently employed as elementary school teachers during the conduct of the study and willing to provide informed consent.

The teacher profile includes length of service, educational attainment and number of relevant ICT - trainings attended. These profile variables were used to determine whether significant differences existed in teachers' best practices and technology - aided instruction when grouped according to these characteristics.

This study involved 123 teacher - respondents, whose responses served as the primary source of data in determining the relationship between teachers' best practices, technology - aided instruction, and pupils' performance.

Population and Sample Size

The population of the study composed all elementary school teachers in District III- A and III- B, within the Schools Division of Bago City during the School Year 2024 - 2025. Since the total number of eligible teachers was 123, the researcher employed total enumeration as the sampling technique. Thus, all 123 teachers were included as respondents in the study. Using total enumeration ensured that every qualified teacher had an equal opportunity to participate.

Table 1: Distribution of Teachers per school in 8 public elementary schools in Negros Island Region

Schools	Number of Teachers
A	9
B	9
C	21
D	34
E	8
F	10
G	14
H	18
Total:	**123**

Sampling Technique

This study employed the total enumeration sampling technique, a type of non-probability sampling. Under this approach, all members of the target population who met the inclusion criteria were selected as respondents. Since the population consisted of 123 elementary school teachers, every

qualified teacher was included in the study. Total enumeration was considered appropriate because the population size was manageable and allowed the researcher to collect comprehensive data from all eligible respondents. This technique minimized sampling error and ensured that findings accurately represented the entire population of teachers in the eight (8) schools of District III– A and III- B. It also provided sufficient data for analyzing teachers' best practices, technology - aided instructions and their relationship with pupils' performance.

Ethical Considerations

This study will adhere to the ethical principles of respect for persons, beneficence, and justice throughout the research process. Prior to data collection, approval will be secured from the appropriate authorities and research ethics committee.

Participation in the study will be entirely voluntary. All participants will receive an informed consent form explaining the purpose of the study, the procedures involved, the expected duration, the potential risks and benefits, and their right to withdraw from the study at any time.

The confidentiality and anonymity of the participants will be strictly protected. No names or personally identifiable information will appear in the questionnaires, reports or publications. All collected data will be used solely for academic and research purposes and will be stored securely to prevent unauthorized access.

The researcher will ensure that no participant will experience harm, discrimination, or coercion as a result of participating in the study. Responses will be treated with honesty, fairness and respect, and findings will be reported accurately without fabrication, falsification or misinterpretation of data.

Upon completion of the study, all data will be handled in accordance with applicable institutional policies and ethical standards. The results will be shared only in aggregate form to protect the identity and privacy of all participants.

Data Gathering Instrument

The researcher utilized a self-constructed questionnaire adapted from established educational framework, including Charlotte Danielson's Framework for Teaching (for instructional best practices) and Mishra and Koehler's TPACK model (for technology - aided instruction).

The questionnaire was divided into four parts. Part I elicited the respondents' profile. Part II consisted of statements describing teachers' best practices. Part III focused on the extent of Technology - aided instruction and Part IV level of pupils' performance.

The items in Parts II and III were rated using a five - point Likert scale ranging 5 - Strongly Agree (SA), 4 - Agree (A), 3 - Neutral (N), 2 - Disagree (D) and 1 - Strongly Disagree (SD) to determine the agreement of the respondents. The pupils' performance in Part IV were rated as 5 (Highly Proficient), 4 (Proficient) 3 (Normal), 2 (low) and 1 (Very low).

To measure pupils' performance, documentary data on class performance as a whole, were gathered through the survey questionnaire.

The questionnaire was subjected to validation by experts in educational research and instructional supervision to ensure clarity, relevance and content validity. A pilot test was conducted to selected teachers of District IV-A and IV-B to determine the reliability of the instrument before its final administration. The validated instrument served as the basis for collecting the needed data for the study.

Data Gathering Procedures

The researcher first sought approval from the Schools Division Superintendent of the Division of Bago City through the proper channels. Upon approval, a letter requesting permission to conduct the study was submitted to the school heads of the eight elementary schools of District III-A and III-B. After obtaining permission, the researcher coordinated with the school principals to schedule the administration of research instrument. The purpose of the study was explained to the respondents, and informed consent was obtained before data collection. The respondents were assured that their participation was voluntary and that the information they provided would be treated with the utmost confidentiality and used solely for research purposes.

The validated survey questionnaire was then distributed to the teacher respondents. They were given sufficient time to answer completely and honestly. After the retrieval, the researcher checked them for completeness and accuracy. The collected data were organized, encoded, tabulated, and analyzed using appropriate statistical tools to determine the level of teachers' best practices, technology - aided instruction, pupils' performance and the significant relationships and differences among the variables.

Validity and Reliability of the Research Instrument

Since the research instrument used in this study was a standardized questionnaire, establishing its validity and reliability was no longer necessary. Therefore, the adopted data-gathering instrument was valid and reliable.

Data Analyses

Data analysis is the examination of the gathered and organized information in terms of characteristics, patterns, trends, differences, similarities, and relationships that answer the research question or meet study objectives. Data gathered were organized, analyzed and interpreted to provide necessary information to describe and test the hypothesis, which utilizes statistics to add clarity and meaning to the analysis of data (Ariola et al., 2006). To obtain the needed data for the study, the following specific problems needed analysis using the following corresponding statistical tools.

For statement of the problem 1, on the profile of the teacher-respondents in terms of length of service, educational attainment and number of relevant ICT trainings.

Frequency and Percentage were used. Frequency refer to the number of respondents who belong to a particular category while percentage (%) represents the proportion of respondents in each category relative to the total number of respondents.

Profile of Respondents

$$\text{Formula: Percentage} = \frac{f}{N} x\ 100$$

Where: f = Frequency of Respondents in a Category
N = Total Number of Respondents
100 = constant used to express the result as a percentage.

Guide for Interpretation

Percentage	Interpretation
0 %	No respondent
1- 20%	Very small proportion
21- 40%	Small proportion
41- 60%	Moderate proportion
61- 80%	Large proportion
81- 99%	Very Large proportion
100%	All respondents

Frequency and percentage were used to describe the distribution of the respondents according to their profile variables. Frequency refers to the number of respondents belonging to a particular category, while relative to the total number of respondents.

For statement of the problem 2, what is the level of teachers' best practices?

The mean was used to determine the average level of teachers' best practices, while the standard deviation was used to measure the variability or consistency of the respondents' responses.

Best Practices of Teachers

Formula for Mean: $\bar{X} = \frac{\Sigma \bar{X}}{N}$

Where: $\bar{X}$= Mean

$\sum \bar{X}$= Sum of Score

N= Total Number of Respondents

Interpretation Scale

Mean Range	Verbal Interpretation	Description
4.21- 5.00	Very High	The practice/condition is evident to a very high extent.
3.41- 4.20	High	The practice/condition is evident to a high extent.
2.61- 3.40	Moderate	The practice/condition evident to a moderate extent.
1.81- 2.60	Low	The practice/condition is evident to a Low extent.
1.00- 1.80	Very low	The practice/condition is evident to a very low extent.

Mean was used to determine the average response of the respondents regarding teachers' best practices. It was computed by dividing the sum of all scores by the total number of respondents. The computed mean was interpreted using the established five- point scale, with higher mean scores indicating a higher level of extent of implementation of the identified practices.

Formula for Standard Deviation: $SD = \frac{\sqrt{\sum(\bar{X} - x^2)}}{N-1}$

SD= Standard Deviation

X= Individual Score

$\bar{X}$= Mean

N= Number of Respondents

Interpretation Guide

Standard Deviation	Interpretation
0.00- 0.20	Very low, variability responses are very consistent
0.21- 0.40	Low variability, responses are consistent
0.41- 0.60	Moderate variability
0.61- 0.80	High variability
0.81 and above	Very high variability, responses are widely

dispensed.

Standard deviation (SD) was used to determine the variability or dispension of the respondents' responses from the mean. It indicates the degree of consistency or variation in the responses. A lower standard deviation indicates that the responses are more closely clustered around the mean, suggesting greater consistency among respondents, while a higher standard deviation indicates greater dispersion or variation in the responses.

For statement of the problem 3, what is the level of implementation of technology-aided instruction?

The mean was used to determine the average level of technology - aided instruction, while the standard deviation was used to measure the variability or consistency of the respondents' responses.

Technology- Aided Instruction

Formula for Mean: $\bar{X} = \frac{\Sigma \bar{X}}{N}$

Where: $\bar{X}$= Mean

$\sum \bar{X}$= Sum of Score

N= Total Number of Respondents

Interpretation Guide

Correlation Coefficient	Interpretation	Description
± 0,90 - ± 1.00	Very strong	Very strong relationship
± 0.70- ± 0.89	Strong	Strong relationship
± 0.50- 0.69	Moderate	Moderate relationship
± 0.30- ± 0.49	Weak	Weak relationship
± 0.01- ± 0.29	Very weak	Very weak relationship
0.0	No correlation	No relationship

Direction of Relationship:

- Positive (+) correlation – As teachers best practices increase, pupils' performance also tends to increase.
- Negative (-) correlation – As teachers best practices decrease, pupils' performance tends to decrease
- Zero (0) – There is no evidence of a relationship between the two variables.

Formula for Standard Deviation:

Formula for Standard Deviation: $SD = \frac{\sqrt{\sum(\bar{X} - x^2)}}{N-1}$

SD= Standard Deviation

X= Individual Score

$\bar{X}$= Mean

N= Number of Respondents

Interpretation of Significance

After retaining the computed Spearman's rho, determine whether the relationship is statistically significant:

- If p= value ≤ 0.05, the relationship is significant. Therefore, reject the null hypothesis (Ho);
- If p = value > 0.05, the relationship is not significant. Therefore, fail to reject the null hypothesis.

Spearman's Rank- Order Correlation was employed to determine whether a significant relationship exists between best practices of teachers and pupils academic performance. The coefficient (p) indicates the direction and strength of the relationship with values ranging from – 1.00. A position coefficient indicates that higher levels of teachers best practices are associated with higher pupils academic performance, while a negative coefficient indicates an inverse relationship. The significance of the relationship is determined using the p= value at the 0.05 level of significance. A P= value of 0.05 or lower indicates a statistically significant relationship, leading to the rejection of the null hypothesis.

For statement of the problem 4, what is the level of pupils' academic performance?

The mean was used to determine the average level of pupils' academic performance while the standard deviation was used to determine the variability or consistency of the pupils' academic performance.

Pupils Performance

Formula for Mean: $\bar{X} = \frac{\Sigma X}{N}$

Where: $\bar{X}$= Mean

$\sum X$= Sum of Score

N= Total Number of Respondents

Formula for Standard Deviation: SD = $\frac{\sqrt{\sum(X - \bar{x}^2)}}{N-1}$

SD= Standard Deviation

X= Individual Score

$\bar{X}$= Mean

N= Number of Respondents

For the statement of Problem 5, Is there a significant relationship between teachers' best practices and pupils' academic performance?

The Shapiro - Wilk Test of Normality was used to determine whether the data were normally distributed. The results of the normality test served as the basis for selecting the appropriate inferential statistical test. Since the data were found to be not normally distributed (p < 0.05), a non-parametric test was employed.

The Spearman's Rank - Order Correlation was used to determine the significant relationship between teachers' best practice and pupils' academic performance.

Formula: $\tau s = 1 - \frac{6\,\Sigma d^2}{n\,(n^2-1)}$

Where: τs= Spearman's rank order correlation coefficient.

Σd^2 = Sum of the squared differences between paired ranks.

n = Number of paired observations.

For the statement of Problem 6, Is there a significant relationship between technology-aided instruction and pupils' academic performance?

Spearman's rho was used to determine whether there is a significant relationship between technology-aided instruction and pupils' academic performance.

Formula: $\rho=1-\frac{6\,\Sigma d^2}{n\,(n^2-1)}$

Where: ρ = Spearman's rank correlation coefficient
d = Difference between the ranks of paired observations
Σd^2 = Sum of squared rank differences
n = Number of paired observations

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents, analysis and interprets the data gathered to answer the specific problems of the study entitled "Teachers' Best Practices and Technology - Aided Instruction in Relation to Pupils' Academic Performance." The data are presented in tabular form and analyzed using appropriate statistical tools. The presentation and interpretation of the results are organized according to the sequence of the Statement of the Problem to provide a clear and systematic discussion of the study's findings.

Teachers Profile

Table 2:

SOP 1

Length in Service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5	35	28.46	28.46	28.46
	5-10	50	40.65	40.65	69.11
	11 Above	38	30.89	30.89	100.00
	Total	123	100.00	100.00	

The table presented the distribution of distribution of 123 teacher - respondents according to their length in service. The findings revealed that 50 teachers (40.65%) have 5 - 10 years of service, representing the largest group of respondents. This is followed by 38 teachers (30.89%) who have 11 years and above of teaching experience. Meanwhile, 35 teachers (26.46%) have 0 - 5 years of service, making them the smallest group.

The results indicate that the majority of the respondents are in the 5 - 10 year of service category. This suggests that most participants have already gained considerable teaching experience and are likely to possess sufficient professional knowledge and classroom expertise. At the same time, the presence of teachers with fewer years of service provides a balanced representation of teachers at different stages of their careers, making the study more comprehensive and reflective of the teaching population.

Table 3:

Educational Attainment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's Degree	72	58.54	58.54	58.54
	Master's Degree	42	34.15	34.15	92.68
	Doctorate Degree	9	7.32	7.32	100.00
	Total	123	100.00	100.00	

The table represents the distribution of the 123 teacher - respondents according to their educational attainment. The results showed 72 teachers (58.54%) had a Bachelor's Degree constituting the largest portion of the respondents. This is followed by 42 teachers (34.15%) who have earned a Master's Degree, while only 9 teachers (7.32%) have completed a Doctorate Degree.

The findings indicate that the majority of the respondents possess a bachelor's Degree suggesting that most teachers have attained the minimum educational qualification required for the teaching profession. Meanwhile, a substantial proportion have pursued graduate studies at the master's level, demonstrating their commitment to professional growth and continuous learning. The relatively small percentage of teachers with doctorate degrees implies that only a few have reached the highest level of academic qualification.

Overall, the data suggest that the teaching workforce has a solid educational foundation, with many educators actively advancing their academic and professional competencies.

Table 4:

Relevant ICT Trainings Attended

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5	71	57.72	57.72	57.72
	5-10	40	32.52	32.52	90.24
	11 above	12	9.76	9.76	100.00
	Total	123	100.00	100.00	

This table represents the distribution of the 123 teacher - respondents according to the number of relevant ICT trainings attended. The results show that 71 teachers (57.72%) have attended 0 - 5 trainings, representing the largest proportion of the respondents. This followed by 40 teachers (32.52%) who have attended 5 - 10 ICT trainings, while only 12 teachers (9.76%) have attended 11 or more ICT trainings.

The findings indicate that the majority of the respondents have attended only 0 - 5 relevant ICT trainings, suggesting that while most teachers received some exposure to information and communication technology, opportunities for advanced or more frequent ICT professional development remain limited. The smaller percentage of teachers who attended 11 or more ICT trainings implies that only a few educators have undergone extensive ICT capacity - building activities. Overall, the results suggest a need to provide more ICT - related training opportunities to further enhance teachers' digital competencies and strengthen the effective integration of technology in teaching and learning.

Frequency and percentage were used to describe the profile of the respondents in terms of length of service, educational attainment and relevant ICT trainings attended. These statistical tools were utilized to determine the distribution and proportion of respondents according to each profile variable, thereby answering Statement of the Problem 1.

Teachers Best Practices

Table 5:

Level of Teachers' Best Practices

	N	Mean	Std. Deviation
Q1	123	3.36	.79
Q2	123	3.32	.75
Q3	123	3.38	.79
Q4	123	3.32	.91
Q5	123	3.33	.78
Q6	123	3.59	2.80
Q7	123	3.35	.79
Q8	123	3.37	.84
Q9	123	3.46	.80
Q10	123	3.39	.82
Q11	123	3.39	.77
Q12	123	3.16	.71
Q13	123	3.26	.65
Q14	123	3.40	.74
Q15	123	3.32	.77
Teachers' Best Practices	**123**	**3.36**	**.50**
Valid N (listwise)	123		

The table represents the level of teachers' best practices as perceived by the 123 teacher - respondents. The overall mean score is 3.36 with a standard deviation of 0.50, indicating that the respondents generally agreed that they consistently practice effective teaching strategies. Among the 15 indicators, Question 6 obtained the highest mean score of 3.59 (SD = 2.80), suggesting that this aspect of teachers' best practice is the most consistently demonstrated by the respondents. On the other hand, Question 12 recorded the lowest mean score of 3.16 (SD = 0.71) although it still falls within the "Agree" descriptive level, indicating that this practice is evident but may require further enhancement.

The remaining indicators yielded mean scores ranging from 3.26 to 3.46, all of which fall under the "Agree" descriptive interpretation. This indicates that teachers generally exhibit good instructional practices across the different indicators assessed.

Overall, the findings suggest that the respondents demonstrate a high level of teachers' best practices reflecting their commitment to effective instruction and professional responsibilities. However, the lower - rated indicators may serve as areas for improvement through continuous professional development, mentoring, and capacity - building programs aimed at further enhancing instructional effectiveness.

The mean and standard deviation were used to determine the level of teachers' best practices based on the responses of the teacher respondents. The mean described the overall level of teachers' best practices, while the standard deviation measured the consistency or variation of the responses. These statistical tools were employed to answer Statement of the Problem 2.

Technology- Aided Instruction

Table 6:

Level of Technology-Aided Instruction

	N	Mean	Std. Deviation
Q16	123	3.39	.79
Q17	123	3.37	.80
Q18	123	3.28	.77
Q19	123	3.24	.78
Q20	123	3.33	.75
Q21	123	3.49	.73
Q22	123	3.41	.72
Q23	123	3.32	.75
Q24	123	3.37	.73
Q25	123	3.33	.73
Q26	123	3.28	.62
Q27	123	3.24	.74
Q28	123	3.46	.81
Q29	123	3.27	.75
Q30	123	3.24	.73
Technology-Aided Instruction	**123**	**3.33**	**.43**
Valid N (listwise)	123		

Table 6 presents the level of technology - aided instruction as perceived by the 123 teacher - respondents. The overall mean score is 3.33 with a standard deviation of 0.43, indicating that the respondents generally agreed that they integrate technology into their instructional practices.

Among the fifteen indicators, Question 21 obtained the highest mean score of 3.49 (SD = 0.73) indicating that this aspect of technology-aided instruction is the most consistently practiced by the respondents. This is followed by Question 28 with a mean of 3.46 (SD = 0.81) and Question 22 with a mean of 3.41 (SD = 0.72). In contrast, Questions 19, 27 and 30 recorded the lowest mean scores of 3.24, suggesting that these aspects of technology - aided instruction are practiced less frequently than the other indicators, although they still fall within the "Agree" descriptive level.

The remaining indicators obtained mean scores ranging from 3.27 to 3.39, all interpreted as "Agree". This indicates that teachers generally demonstrate positive practices in integrating technology into classroom instruction.

Overall, the findings reveal that the respondents exhibit a high level of technology - aided instruction reflecting their willingness and capability to utilize technology to enhance teaching and learning. However, the relatively lower - rated indicators suggest that there is still room for improvement through continuous ICT training, access to appropriate technological resources, and sustained professional development programs aimed at strengthening teachers' technology integration skills.

The mean and standard deviation were used to determine the level of technology - aided instruction as practiced by the teacher respondents. The mean was used to describe the overall level of technology - aided instruction, while the standard deviation measured the consistency or variation of the respondents ratings. These statistical tools were employed to answer Statement of the Problem 3.

Pupils Academic Performance

Table 7:

Level of Academic Performance

	N	Mean	Std. Deviation
Academic Performance	**123**	**85.25**	**1.05**
Valid N (listwise)	123		

Report

Academic Performance

Level of Academic Performance	N	Mean	Std. Deviation
Very Satisfactory	95	85.69	.72
Satisfactory	28	83.75	.44
Total	123	85.25	1.05

Further, the analysis reveals that the pupils' performance of the 95 respondents obtained a Very

Satisfactory level, with a mean score of 85.69 and a standard deviation of 0.72, making up the majority. Meanwhile, 28 of respondents pupils' performance attained a Satisfactory level, with a mean score of 83.75 and a standard deviation of 0.44.

The findings suggest that most of the pupils' of the respondents' performed well academically as evidenced by the performance of Very Satisfactory. The relatively low standard deviations indicates that the respondents' pupils' academic performance scores are closely clustered around their respective mean scores, reflecting consistency in their academic achievement. Overall, the results imply that the pupils' performance of the respondents have maintained commendable which may be associated with effective teaching practices and the integration of technology-aided instruction in the learning process.

The mean and standard deviation were used to determine the level of pupils' academic performance based on the learners' general average. The mean was used to describe the overall academic performance of the pupils, while the standard deviation measured the consistency or variability of the pupils' academic performance scores. These statistical tools were used - employed to answer statement of the problem 4.

Teachers Best Practices and Pupils Performance

Table 8:

Relationship between Teachers Best Practices and Academic Performance

			Teachers Best Practices	Academic Performance
Spearman's rho	Teachers Best Practices	Correlation Coefficient	1.000	.002
		Sig. (2-tailed)	.	.979
		N	123	123
	Academic Performance	Correlation Coefficient	.002	1.000
		Sig. (2-tailed)	.979	.
		N	123	123

The table presents the Spearman's rho correlation analysis between teachers' best practices and pupils' academic performance. The results show a correlation coefficient (ρ) of 0.002 with a p-Value (Sig. 2-tailed) of 0.979 based on 123 respondents.

The correlation coefficient of 0.002 indicates a negligible or virtually no relationship between teachers' best practices and pupils' academic performance. Moreover, the p-value of 0.979 is greater than the 0.05 level of significance, indicating that the relationship is not statistically significant.

Therefore, the null hypothesis is accepted (or failed to be rejected). This means that there is no significant relationship between teachers' best practices and pupils' academic performance among the respondents of this study. The findings suggest that variations in pupils' academic performance cannot be attributed solely to teachers' best practices. Other factors, such as learners' motivation, home environment, parental involvement, socio-economic status, learning resources and individual abilities, may also influence academic performance.

Decision: Fail to reject the null hypothesis (Accept Ho).

Conclusion: There is no significant relationship between teachers' best practices and pupils' academic performance

($\rho = 0.002$, $p = 0.979 > 0.05$).

The Shapiro - Wilk Test of Normality was first conducted to determine whether the data followed a normal distribution. Based on the results, the Spearman's Rank - Order Correlation (Spearman's rho) was used to determine whether a significant relationship existed between teachers'

best practices and pupils' academic performance. These statistical tools were employed to answer Statement of the Problem 5.

Technology- Aided Instruction and Pupils Performance

Table 9:

SOP 6

Relationship between Technology-aided Instruction and Academic Performance

			Technology-Aided Instruction	Academic Performance
Spearman's rho	Technology-Aided Instruction	Correlation Coefficient	1.000	.056
		Sig. (2-tailed)	.	.540
		N	123	123
	Academic Performance	Correlation Coefficient	.056	1.000
		Sig. (2-tailed)	.540	.
		N	123	123

aided instruction and pupils' academic performance of the respondents. The analysis yielded a correlation coefficient (ρ) of 0.056 and a significance value (p-value) of 0.540 with 123 respondents.

The computed correlation coefficient of 0.056 indicates a very weak positive relationship between technology-aided instruction and pupils' academic performance. However, the p-value of 0.540 is greater than the 0.05 level of significance, indicating that the relationship is not statistically significant.

Therefore, the null hypothesis is accepted (or failed to be rejected). This means that there is no significant relationship between technology-aided instruction and pupils' academic performance. Although technology-aided instruction may contribute to the teaching and learning process, the findings suggest that it did not significantly influence pupils' academic performance in this study. Academic performance may instead be affected by other factors such as learners' motivation, study habits, parental support, classroom environment, availability of learning resources and individual learner characteristics.

Decision: Fail to reject (Accept) the null hypothesis.

Conclusion: There is no significant relationship between technology-aided instruction and pupils' academic performance ($\rho = 0.056$, $p = 0.540 > 0.05$).

Spearman Rank Order Correlation Coefficient (Spearman's rho) was used to determine the strength and direction of the relationship between technology-aided instruction and pupils' academic performance. The computed Correlation Coefficient (ρ) measured the degree of association between the two variables, while the Sig. (2-tailed) or p value determined whether the relationship was statistically significant at the 0.05 level of significance. Thus, this tool was used to answer Statement of the Problem 6.

The statistical tools presented in this study chapter were employed to ensure the systematic analysis and interpretation of the data gathered in the study. A Shapiro - Wilk Test of Normality was used to determine whether the data were normally distributed and to identify the appropriate statistical test for inferential analysis. Based on the normality test results, the appropriate correlation analysis was utilized to examine the relationships among the study variables. These statistical procedures enabled the researcher to answer the six (6) statements of the problem by describing the respondents' profile, determining the levels of teachers' best practices, technology-aided instruction and pupils' academic performance and examining the significant relationships among these variables. The results and interpretation of these analysis are presented and discussed in Chapter 4.

Table 10:

NORMALITY

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Teachers Best Practices	.158	123	<.001	.947	123	<.001
Technology-Aided Instruction	.115	123	<.001	.955	123	<.001
Academic Performance	.184	123	<.001	.910	123	<.001

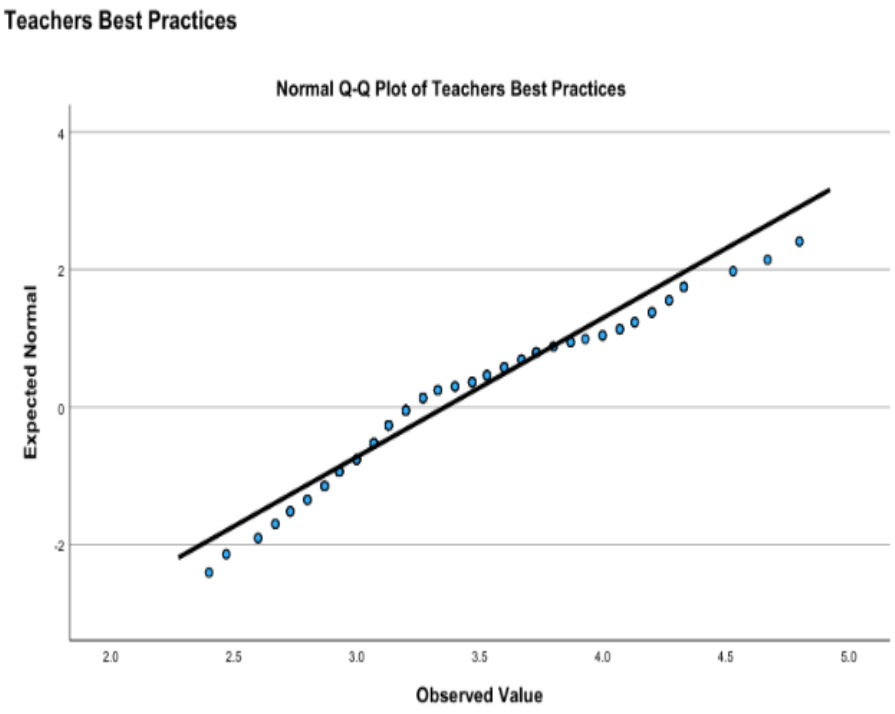
a. Lilliefors Significance Correction

The table presents the result of the Kolmogorov - Smirnov and Shapiro - Wilk tests of Normality for the variables teachers' best practices, technology - aided instruction, and pupils' academic performance.

The results show that teachers' best practices obtained a Kolmogorov - Smirnov significance value of P < .001 and a Shapiro - Wilk significance value of P < .001, likewise, technology - aided instruction yielded P= .001 for both tests, while academic performance also obtained P < .001 for both normality tests.

Since all P values are less than the 0.05 level of significance, the null hypothesis of normality is rejected. This indicates that the data for all three variables are not normally distributed, therefore, the assumptions for parametric statistical tests were not met. Consequently, non - parametric statistical tests, particularly Spearman's Rank - Order Correlation (Spearman's rho) were used to determine the significant relationship between the study variables in answering Statement of the Problem 6.

Table 11: Normal Q-Q Plot of Teachers' Best Practices

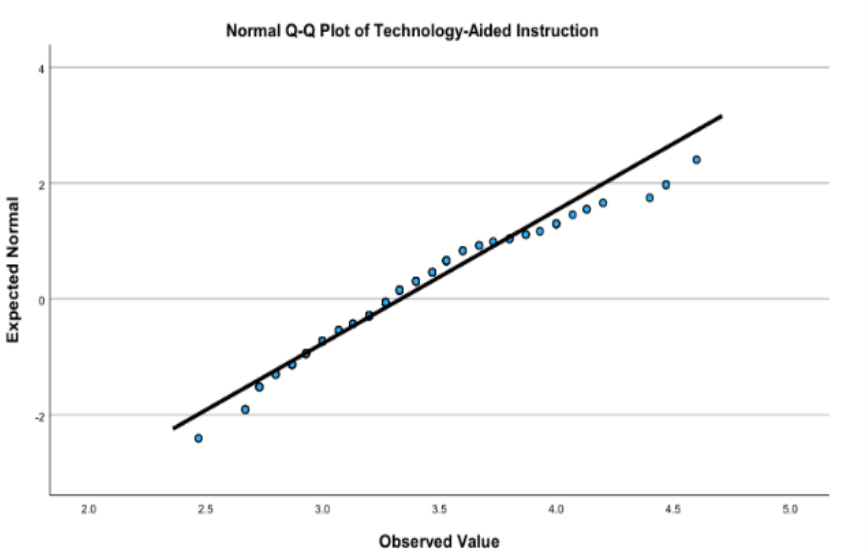


The Normal Q-Q Plot for Teachers' Best Practices shows that the plotted points do not closely follow the straight reference line. While some points near the center are aligned with the line, several points at the lower and upper ends deviate from it. This pattern indicates that the distribution of teachers' best practices scores departs from the normal distribution.

This visual finding is consistent with the Tests of Normality, where both the Kolmogorov - Smirnov and Shapiro - Wilk tests yielded P - values less than 0.001 ($p < .001$). Since these values are lower than the 0.05 level of significance, the null hypothesis of normality is rejected.

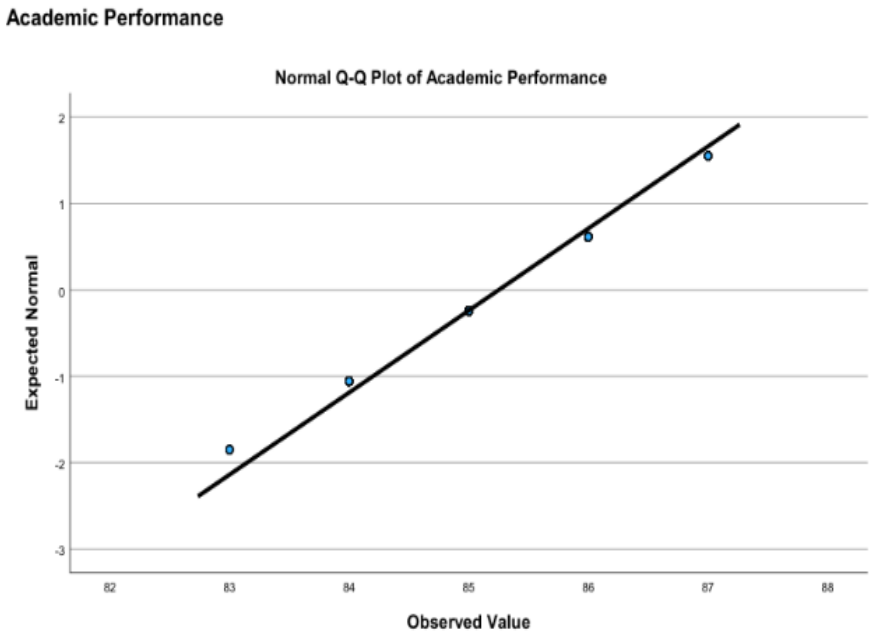
Therefore, the data on teachers' best practices are not normally distributed.

Table 12: Normal Q-Q Plot of Technology Aided- Instruction



The points for Technology - Aided Instruction generally follow the diagonal line, but there are noticeably deviations at the tails. This suggests that the data has skewness or heavier tails than a normal distribution. Combined with the Shapiro - Wilk and Kolmogorov - Smirnov results (both $p < .001$), the plot confirms that the variable is not normally - distributed. The Q-Q plot shows that Technology - Aided Instruction data deviates from normality, especially at the extremes, supporting the statistical test results.

Table 13: Normal Q-Q Plot of Academic Performance



The diagonal line represents the expected values if the data were perfectly normal. The dots are your observed values. The closer the dots to the line, the more normal the distribution. Systematic deviations (curves, clustering, or tail departures) indicate non - normality.

For Academic Performance, the points deviate more strongly from the diagonal compared to Technology - Aided Instruction. The deviations are visible at the tails (extreme values) suggesting skewness or heavy tailed distribution. This visual evidence matches the statistical test results (Shapiro - Wilk $W = .910$, $p < .001$), confirming that Academic Performance is significantly non - normal.

The results of the normality tests and Q-Q plots revealed that all three variables - Teachers' Best Practices, Technology - Aided Instruction, and Academic Performance - significantly deviated from the normal distribution. These findings were consistent across both the Shapiro - Wilk and Kolmogorov - Smirnov tests, which yielded p - value below .001 for all variables.

The violation of normality assumption has important implications for the statistical methods employed in this study. Parametric tests, such as Pearson Correlation, t - tests, and ANOVA rely on the assumption of normally distributed data. Therefore, their application would risk producing biased or invalid results. To address this, non - parametric alternatives were adopted. Spearman's Rank Correlation was used to examine relationships among the variables.

By acknowledging the non - normality of the data and adjusting the analytical strategy accordingly, the study ensures that the conclusions drawn are statistically valid and reliable. This methodological rigor strengthens the importance of testing assumptions before selecting statistical procedures.

Respondents Profile

Table 14: Frequency and Percentage Distribution of the Respondents According to Profile.

Table 1. Frequency and Percentage Distribution of the Respondents According to Profile.

Profile	Category	f	%
Length in Service			
	0-5	35	28.46
	5-10	50	40.65
	11 Above	38	30.89
	Total	123	100.00
Educational Attainment			
	Bachelor's Degree	72	58.54
	Master's Degree	42	34.15
	Doctorate Degree	9	7.32
	Total	123	100.00
Relevant ICT Trainings Attended			
	0-5	71	57.72
	5-10	40	32.52
	11 above	12	9.76
	Total	123	100.00

Most teachers are in the mid - career stage (6 - 10 years), suggesting a workforce with solid experience but not yet nearing retirement. The majority hold a Bachelor's Degree but a significant portion have pursued graduate studies. Only a small fraction have doctoral qualifications, which may reflect limited access to advanced programs or career stage. Most teachers have attended few ICT trainings, indicating limited exposure to technology - related professional development. This could influence their confidence and effectiveness in technology - aided instruction.

Linking profile to Normality findings, most respondents are mid - career teachers (6 - 10 years, 40 - 65%). This group likely has established teaching routines, which may explain why Teachers' Best Practice data deviated from normality - practices may cluster around certain common approaches rather than being evenly distributed. The mix of early - career and long - service teachers adds variability, contributing to non – normal distribution. Educational Attainment, majority holds a Bachelor's Degrees (58.54%) with fewer at Master's (34.15%) and Doctorate (7.32%). This uneven distribution may influence Academic Performance scores, which showed the strongest non - normality. Performance outcomes could be skewed by the dominance of bachelor - level teachers, with advanced degree holders forming smaller clusters at the extremes. Relevant ICT trainings attended, most teachers attended 0 - 5 trainings (57.72%) while only 9.76% had 11+ trainings. This imbalance helps explain the non - normality in Technology - Aided Instruction; many teachers have limited exposure, while a small group with extensive training may perform very differently, creating skewness and heavy tails in the data.

Teachers Best Practices

Table 15: Level of Teachers' Best Practices

Table 2. Level of Teachers' Best Practices.

Statements	Mean	Standard Deviation	Interpretation
I align my daily lesson objectives with national curriculum standards	3.36	.79	Moderate
I design activities that explicitly cater to diverse student learning styles (visual, auditory, kinesthetic).	3.32	.75	Moderate
I prepare all my instructional materials and lesson components well before class begins	3.38	.79	Moderate
I establish clear classroom rules, routines, and behavioral expectations at the start of the term	3.32	.91	Moderate
I maximize actual instructional time by minimizing transition periods and classroom disruptions.	3.33	.78	Moderate
I cultivate a safe, positive, and inclusive learning environment that encourages participation.	3.59	2.80	High
I implement differentiated instruction to support both struggling learners and advanced students	3.35	.79	Moderate
I incorporate collaborative learning structures and group activities into my weekly lessons	3.37	.84	Moderate
I use data from regular formative assessments to adjust the pace and direction of my teaching.	3.46	.80	High
I provide constructive, timely, and specific feedback on student work to guide their improvement.	3.39	.82	Moderate
I integrate real-world examples and practical applications into abstract lesson concepts.	3.39	.77	Moderate
I utilize higher-order thinking skills (HOTS) questions during classroom discussions.	3.16	.71	Moderate
I reflect regularly on my teaching methods to identify personal areas for professional growth.	3.26	.65	Moderate
I maintain consistent communication with parents regarding student progress and behavior.	3.40	.74	Moderate
I collaborate actively with grade-level peers to share effective lesson plans and teaching tips.	3.32	.77	Moderate
Teachers' Best Practices as a Whole	**3.36**	**.50**	**Moderate**

Legend:(4.21-5.0)-Very High;(3.41 – 4.20)-High;(2.61-3.40) Moderate (1.81 – 2.60)-Low;(1.00 – 1.80)-Very Low

The statistical tests (Shapiro - Wilk and Kolmogorov - Smirnov) both showed $p < .001$, confirming that the distribution of Teachers' Best Practices Scores is non - normal. The Q - Q plot revealed deviations at the tails, meaning that while many teachers share similar practices, a small group diverges significantly. This clustering suggests that teachers' practices are moderately consistent overall, but not evenly spread across the sample.

The imbalance highlights the need for professional development programs to standardize and broaden the application of best practices across all teaching groups. As a whole, teachers' best

practices reflect a teaching workforce that is experienced and moderately consistent, yet shaped by uneven exposure to advanced education and ICT trainings.

This narrative ties together the statistical evidence, visual results and respondents' profile into a cohesive interpretation. It shows examiners that not only reported the findings but also explained why the data behaved that way and how you addressed it methodologically.

Technology Aided- Instructions

Table 16: Level of Technology Aided- Instruction

Table 3. Level of Technology-Aided Instruction.

Statements	Mean	Standard Deviation	Interpretation
I integrate multimedia presentations (videos, slides) to explain complex topics	3.39	.79	Moderate
I use educational software, applications, or online games to reinforce lessons.	3.37	.80	Moderate
I utilize digital platforms (LMS, Google Classroom) to distribute and collect assignments.	3.28	.77	Moderate
I encourage pupils to use technology for research and independent learning.	3.24	.78	Moderate
I attend professional development sessions to improve my digital teaching skills.	3.33	.75	Moderate
I use digital interactive whiteboards or projection systems during live delivery.	3.49	.73	High
I employ online assessment tools (e.g., Kahoot, Google Forms) for real-time quizzes.	3.41	.72	High
I select technological tools that directly align with my specific lesson objectives.	3.32	.75	Moderate
I use digital simulation tools to visualize abstract theories or experiments.	3.37	.73	Moderate
I offer digital learning materials (e-books, PDFs) that pupils can access at home.	3.33	.73	Moderate
I teach pupils proper digital citizenship and safe internet practices.	3.28	.62	Moderate
I utilize technology to communicate instructional updates to pupils and parents.	3.24	.74	Moderate
I use automated data tools or electronic spreadsheets to track student grades.	3.46	.81	High
I adapt my technology use to resolve sudden technical glitches in the classroom.	3.27	.75	Moderate
I design projects that require the creation of digital artifacts (e.g., slides, videos).	3.24	.73	Moderate
Technology-Aided Instruction as a Whole	**3.33**	**.43**	**Moderate**

Legend:(4.21-5.0)-Very High;(3.41 – 4.20)-High;(2.61-3.40) Moderate (1.81 – 2.60)-Low;(1.00 – 1.80)-Very Low

The analysis of Technology Aided- Instruction revealed that the distribution of sequence significantly deviated from normality.

Taken as a whole, Technology - Aided Instruction is moderately implemented but unevenly distributed. Most teachers apply technology in their classroom at a basic or moderate level, while a smaller segment demonstrates advanced integration.

Overall Weighted Mean = 3.33 (Moderate), this indicates that, on average, teachers use graphic - aided instruction at a moderate level. It's not minimal, but also it's also not consistently high. In the Individual Statements, the highest score is 3.71 (Moderate) for "I use graphic - aided instruction in teaching" suggests that teachers generally acknowledge using graphics in their teaching. The lowest score is 3.24 (Moderate) for one of the items on using graphics in lessons requiring visual aids, indicates that while teachers recognize the value of graphics, their actual application in specific

lessons is less consistent. Only one item reached a High Interpretation (3.46) showing that in certain contexts, teachers strongly integrate graphics showing that in as to ranking, items ranked between 20 and 34, with most clustered in the lower ranks. This suggests graphic - aided instruction is not among the top strategies compared to other teaching methods in the broader study. Teachers do use graphic - aided instruction, but not extensively. The moderate overall mean implies that while graphics are recognized as helpful, they may not be fully maximized in teaching practice. The presence of one "High" shows potential - in lessons where visual aids are essential, teachers are more likely to apply graphics effectively. The lower ranks highlight that graphic - aided instruction is not prioritized compared to other instructional strategies.

Pupils' Academic Performance

Table 17: Level of Pupils' Academic Performance

Table 4. Level of Pupils' Academic Performance.

Level of Academic Performance	N	Mean	Std. Deviation	Interpretation
Outstanding	0	85.25	1.05	Very Satisfactory
Very Satisfactory	95			
Satisfactory	28			
Satisfactory	0			
Fairly Satisfactory	0			
Did Not Meet Expectation	0			

Key results showed that Outstanding; 0 classes → No one reached the highest performance level. Very Satisfactory; 95 classes → This is the largest group, showing that most classes performed at a strong level. Satisfactory; 28 classes, with a mean score of 85.25 and standard deviation of 1.05 → this group is still interpreted as Very Satisfactory, meaning their performance is above average and consistent. Fairly Satisfactory; 0 pupils → No one fell into this mid - low category. Did not meet Expectation; 0 pupils → No pupils performed poorly.

The dominant performance level is "Very Satisfactory," with the majority of the class (95 out of 123 total) achieving this. The Satisfactory group (28 classes) still falls under the interpretation of Very Satisfactory, which suggests that even those not at the top are performing well. The absence of class performance in the Outstanding, Fairly Satisfactory, and Did not met expectation categories shows a clustered performance range - most classes are performing consistently at a high level, but none are excelling to the Very Top.

Further, the results implied that pupils' academic performance is strong and stable, with no evidence of poor achievement. However, the lack of "Outstanding" scores suggests there may be room to push high achievers further through enrichment or advanced instruction. Overall, the data reflects a healthy academic environment where nearly all pupils' performance meet or exceed expectations.

Table 18: Relationship between Teachers' Best Practices and Academic

Table 5. Relationship Between Teachers' Best Practices and Academic Performance.

Variable	Test Statistics (r_s)	P-value	Decision for Ho	Interpretation
Teachers Best Practices Vs Academic Performance.	.002	.979	Failed to Reject Ho	Not Significant

The key results showed that: Test Statistic (τs) = .002 → This is essentially zero, showing no correlation between teachers' best practices and pupils' academic performance. P-value = .979 → Very high, far above the usual significance threshold (0.05). Decision for Ho: Failed to Reject Ho → The null hypothesis (that there is no relationship) stands. For Interpretation: Not Significant → Teachers' Best Practices, as measured in this study, do not have statistically significant effect on pupils' academic performance.

Meaning even though teachers may be applying recognized best practices, the data suggests these practices do not directly translate into measurable differences in pupils' performance levels. Pupils' performance may be influenced more by other factors rather than the specific teaching practices captured here. This findings highlights a possible gap: best practices alone may not be sufficient to elevate performance, especially to "Outstanding" levels,

This result highlights an important implication while best practices are valuable for ensuring quality teaching, they may need to be paired with innovative approaches, enrichment programs or individualized support to push learners beyond "Very Satisfactory" and toward excellence.

Table 17: Relationship between Technology Aided- Instruction and Academic Performance

Table 6. Relationship Between Technology-Aided Instruction and Academic Performance.

Variable	Test Statistics (r_s)	P-value	Decision for Ho	Interpretation
Technology-Aided Instruction Vs Academic Performance.	.056	.540	Failed to Reject Ho	Not Significant

Key results showed that Test statistic (τs) = .056 → This indicates a very weak positive correlation between technology-aided instruction and pupils' academic performance. P-value = .540 → Well above the standard significance threshold (0.05), meaning the result is not statistically significant. Decision for Ho: Failed to Reject Ho→ The null hypothesis (that there is no relationship) stands. Interpretation: Not Significant → Technology-aided instruction does not show a measurable or reliable effect on pupils' academic performance in this data set.

Meaning, although technology-aided instruction is often expected to enhance learning, the data here shows no significant impact on performance outcomes. The weak correlation suggests that while technology may be present in instruction, it is not being used in ways that strongly influence achievement. Other factors - such as teaching quality, student motivation or curriculum design - may play a much more decisive role in determining performance.

Technology alone is not a guarantee of to improve academic performance. For technology-aided instruction to be effective, it likely needs to be paired with pedagogical strategies, teacher training, and meaningful integration in lessons. This finding emphasizes that technology should be seen as a supporting tool, not a direct driver of achievement.

Taken together, the results highlight that pupils' achievement is shaped by factors beyond the instructional strategies, measured in this study. Best practices and Technology may help sustain satisfactory performance, but they are not sufficient drivers of excellence. This underscores the need for more holistic approaches - such as enrichment programs, individualized support and integration of innovative pedagogies - to elevate learners from "very satisfactory" toward "outstanding" achievement.

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

The chapter presents the summary of findings, conclusions and recommendations derived from the analysis of data in chapter 4. The results highlighted that pupils' academic performance is

consistently at the Very Satisfactory level, with no cases of poor achievement but also no pupils reaching the Outstanding category. Furthermore, statistical tests revealed that neither teachers' best practices nor technology-aided aided instruction showed a significant relationship with pupils' academic performance.

Given these findings, this chapter aims to consolidate the key insights, draw meaningful conclusions and propose actionable recommendations. The recommendations are designed to address the observed gaps, particularly the absence of Outstanding performance, and to guide educators, administrators, and policymakers in enhancing instructional strategies and learning outcomes.

This introduction sets the stage for chapter 5 by reminding the reader of the key results and explaining the purpose of the chapter.

Summary of Findings

1. On the profile of the respondents according to length of ser service out of 123 teacher respondents, 50 or 40.65% had 5- 10 years of service which comprised the largest group. This was followed by teachers with 11 years and above of service with 38 or 30. 89%, while 35 or 28.46% had 0- 5 years of service. This indicates that most of the respondents had 5- 10 years of teaching experience. As to profile of educational attainment, the majority of the respondents had a Bachelor's Degree, with 72 or 58.54%. Meanwhile, 42 or 34.15% had a Master's Degree, and only 9 or 7.32% had attained a Doctorate Degree. This shows that although most teachers hold a Bachelor's Degree, a substantial proportion had pursued graduate studies. The relevant ICT trainings attended, the findings revealed that 72 or 57. 72% of the respondents had attended 0-5 relevant ICT trainings, making this the largest group, 70 or 32.52% had attended 11 or or more trainings. This indicates that the majority of the teachers had limited exposure to relevant ICT training, suggesting a need for more continuous and relevant technology- related professional development.

2. On the best practices the findings showed that the 123 teachers respondents generally demonstrated a high level of teachers best practices as indicated by the oeverall mean of 3.36 and a standard deviation of 0.50. Among the 15 indicators, Q6 obtained the highest mean of 3.59, indicating that this particular practice was the most frequently demonstrated by the teachers. This was followed by Q9 with a mean of 3.46 and Q14 with a mean of 3.40. On the other hand, Q12 obtained the lowest mean of 3.16, followed by Q13 wiklth 3.26 and Q2 and Q4 with 3.32. Although these indicators had comparatively lower means, they still contributed to the overall level of teachers best practices. The standard deviations ranged from 0.65 to 2.80, suggesting varying degrees of responses onerous indicators. Overall, the composite mean of 3.36 indicates that teachers frequently/strongly practiced the identified teaching practicesd.

3. On technology- aided Instruction, findings reveled that the123 teachers respondents generally manifested a high level of technology- aided instruction, as shows by the overall mean of 3.33 with a standard deviation of 0.43. Among the15 indicators Q21 obtained the highest mean of 3.49, followed by Q28 with a mean of 3.46 and Q22 with a mean of 3.41. These results suggest that the practices represented by these indicators were the most frequently manifested in the teachers use of technology in instruction. On the other hand, Q19, Q27, and Q30 obtained the lowest mean of 3.24. Despite having the lowest ratings, these indicators still contributes to the overall level of technology- aided instructions. The standard deviations ranged from 0.62 to 0.81, indicating relatively moderate variation in the respondents answers across the indicators. Overall, the compsite mean of 3.33 indicates that teachers generally practiced technology- aided instruction at a high level.

4. On the level of pupils' performance, the findings show that the 234 respondents had an overall mean academic performance of 85.25, with a standard deviation of 1.05. 95% respondents

(77.24%) were classified as very satisfactory, with a mean of 85.69 and a standard deviation of 0.72. 28 respondents (22.7%) were classified as satisfactory with a mean of 83.75 and a standard deviation of 0.44. No respondents were reported in a lower performance category.

5. On the relationship between best practices of teachers and pupils performance, the findings revealed that these was no significant relationship between teachers best practices and pupils performance. The Spearman's rho analysis showed a correlation coefficient of p= 0.002 with a p= value of 0.979 boned on 123 respondents. Since the p=value of 0.979greater than the 0.05 level of significant, the relationship is not statistically significant. Therefore, the null hypothesis is not rejected. The correlation coefficient of 0.002 indicates almost zero/ negligible relationship between best practices of teachers, and academic performance. This means that with the respondents and data included in the body, variations in teachers best practices were not significantly associated with variations in pupils' academic performance.

6. Findings on the relationship between technology- aided instruction and pupils performance revealed that there was no significant relationship between technology- aided instruction and academic performance. The Spearman's rho analysis yielded a correlation coefficient of p= 0.056 an a p= of 0.540, based on 123 respondents. Since the p= value of 0.540 is grater than the 0.05 level of significant, the relationship between the two variables is no statistically significant. Therfore, the null hypothesis is not rejected. The correlation coefficient of 0.056 indicates a very weak positive relationship between technology- aided instructions and academic performance. This means that although the relationship is positive, the association is extremely weak and is not statistically meaningful boned on the data.

Conclusion

1. Teacher's profile showed that most of the teacher respondents had 5 to 10 years of teaching experience hold a Bachelor Degree and had attended 0.5 relevant ICT trainings. This indicates that the respondents were generally experienced teachers, but ;their participation in relevant ICT-related professional development was relatively limited. Thus, these is a need to strengthen and sustain professional teachers capacity to ICT – related training, enhance teachers capacity to integrate technology effectively into classroom instruction.

2. Best practices of teachers revealed that teachers demonstrated a generally high level of best practices, with an overall mean of 3.36. The relatively high rating across the indicatior suggest that teachers consistently practiced effective teaching strategies and professional practices in their classroom. Therefore, the teachers existing best practices may be considered a strength of the schools and should sustained, shared and continuously improve through professional collaboration and development.

3. Technology- aided instruction findings indicated that teachers demonstrated a generally high level of technology- aided instruction with an overall mean of 3.33. This suggests that teachers were generally utilizing technology on part of their instructional practices. However, the differences among the individuals indicator imply that some aspects of technology integration may still be strengthened. Hence, schools should continue providing appropriate ICT resources, technical support, and relevant taining to further improve teachers' technology- aided instruction practices.

4. Academic performance of pupils generally achieved a very satisfactory level, with an overall mean of 85.25 . The majority of the pupils (77.24%) were classified as very satisfactory, while 22.76% were classified as satisfactory. This indicates that the pupils generally demonstrated favorable academic outcomes. Therefore, existing instructional practices and interventions should be sustained and continuously enhanced to maintain and further improve pupils academic performance.

5. Relationship between best practices of teachers and pupils performance was no significant relationship. With Spearman's rho 0.002 and p= 0.979. Since the p=value was greater than 0.05, the null hypothesis was not rejected. This means that based on the data,, variations in pupils academic performance. Therefore, performance of pupils may be influenced by other factors beyond the teachers best practices measured in this study.

6. Relationship between technology- aided instruction and pupils performance was no relationship, with Spearman's rho 0.056 and p=540. Although the correlation was positive it was very weak and statistically insignificant. Since the p=value was greater than 0.05, the null hypothesis was not rejected. Thus, the extent of technology- aided instruction as measured in this study, was not significantly associated with pupils academic performance.

Recommendations

Schools Division Superintendents. Continue to strengthen instructional quality through evidence - based professional development programs. Provide sustainable support for teachers' capacity - building on innovative pedagogical strategies, effective technology integration and learner - centered instruction.

Assistant Schools Division Superintendents. Strengthen instructional supervision by promoting continuous professional development, mentoring and coaching for school heads and teachers to ensure the consistent application of best teaching practices and technology - aided instruction.

SGOD Chiefs. Encourage schools to develop interventions that address various factors influencing pupils' academic performance, while fostering collaboration among schools, parents and community stakeholders to ensure continuous improvement in teaching and learning outcomes.

CID Chiefs. Intensify classroom monitoring and mentoring to ensure the effective application of teachers' best practices and technology - aided instruction.

Education Program Supervisors. Organize professional development activities focused on strengthening teachers' best practices and technology - aided instruction that will further enhance pupils' academic performance and improve the overall quality of instruction.

Public Schools District Supervisors. Encouraged to facilitate district - level teaching - learning development programs, promote the sharing of best practices among schools and support the implementation of data - driven interventions that aimed to improve pupils academic performance.

School Principals. Support school - based action cells (SLACs), provide opportunities for relevant professional development, and use assessment and research findings to design appropriate interventions that address learners' needs.

Teachers/Advisers. Regularly monitor learners' progress, use assessment results to provide timely intervention, and collaborate with parents and other stakeholders to address learners' academic gaps.

Parents. Provide a conducive learning environment at home and guide their children in the responsible use of technology for educational purposes. Furthermore, participate actively in school activities and collaborate with teachers in addressing learners' needs.

Pupils. Encouraged to maximize the use of technology as a learning tool by accessing educational resources and engaging in meaningful learning activities under the guidance of their teachers and parents. Pupils should also strive to develop self - discipline, curiosity, and a positive attitude toward learning.

Community Stakeholders. Strengthen their partnership with the school by actively supporting programs and initiatives that promote quality education.

Future Researchers. Conduct similar studies using a larger and more diverse sample from different schools or division to enhance the generalizability of the findings. Examine other variables that may influence pupils' academic performance. Employ mixed - methods or longitudinal research designs to provide deeper insights into the relationship between teachers' best practices, and technology - aided instruction and pupils' academic performance.

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