Studies in Interdisciplinary Horizons
https://sih-journal.com | eISSN: 3082-5792
Volume 2 Issue No. 3 | 2026
Received: March 10, 2026 | Accepted: June 30, 2026 | Published: August 30, 2026

Article

Exploring Teachers' Classroom Instructional Strategies in Science 3: Experiences and Practices in Public Elementary Schools of Burgos District, Schools Division of Isabela

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Abstract

Science education plays a vital role in developing learners' scientific literacy, critical thinking, problem-solving skills, and environmental awareness. In the Philippine basic education system, the MATATAG Curriculum emphasizes learner-centered, inquiry-based, and contextualized Science instruction that promotes active learning and meaningful understanding. This qualitative phenomenological study explored the lived experiences of Science 3 teachers regarding their classroom instructional strategies in public elementary schools in Burgos District, Schools Division of Isabela. Specifically, the study examined teachers' instructional practices, classroom experiences, challenges, adaptive strategies, and recommendations for improving Science instruction. Twelve (12) Science 3 teachers were purposively selected as participants. Data were gathered through semi-structured interviews and analyzed using Braun and Clarke's (2006) thematic analysis. The findings revealed that teachers commonly employed inquiry-based learning, experiential activities, contextualized instruction, collaborative learning, differentiated teaching, and formative assessment to improve learner engagement and conceptual understanding. Despite challenges such as inadequate instructional materials, limited Science equipment, diverse learner abilities, and time constraints, teachers demonstrated creativity by utilizing localized resources and learner-centered teaching approaches. The study concludes that effective Science instruction requires continuous professional development, strengthened instructional support, adequate learning resources, and collaborative partnerships among teachers, school leaders, parents, and community stakeholders. The findings provide valuable insights for strengthening Science education in public elementary schools.

Keywords: *Science education, Science 3, instructional strategies, inquiry-based learning, elementary education, phenomenology, MATATAG Curriculum, Philippines*

1. Introduction

Science education is an essential component of elementary education because it equips learners with the knowledge, skills, and attitudes needed to understand the natural world and make informed decisions in everyday life. Scientific literacy has become increasingly important in the twenty-first century as learners are expected to think critically, solve problems, evaluate evidence, and apply scientific knowledge to real-life situations (OECD, 2023). Consequently, elementary Science instruction should provide meaningful learning experiences that encourage inquiry, exploration, experimentation, and collaboration.

In the Philippines, the Department of Education (DepEd) promotes learner-centered and competency-based Science instruction through the MATATAG Curriculum. The curriculum emphasizes inquiry-based learning, contextualization, and experiential activities that enable learners to actively construct scientific knowledge rather than simply memorize facts (DepEd, 2023). Science 3 is particularly important because it develops learners' foundational understanding of living things, matter, force, weather, Earth, and the environment while cultivating curiosity and scientific thinking.

Teachers play a significant role in translating curriculum goals into meaningful classroom experiences. Their instructional strategies influence learners' engagement, motivation, conceptual understanding, and attitudes toward Science. Effective Science teachers employ inquiry-based learning, contextualized instruction, cooperative learning, differentiated teaching, demonstrations, experiments, and formative assessment to facilitate meaningful learning. These learner-centered strategies encourage pupils to observe, investigate, analyze, and explain scientific phenomena through authentic experiences.

Inquiry-based learning is widely recognized as an effective approach to Science education because it develops learners' curiosity, critical thinking, and problem-solving skills. Through questioning, investigation, experimentation, and reflection, learners actively construct scientific understanding instead of passively receiving information (Bybee, 2013). Likewise, experiential learning enables pupils to connect classroom concepts with real-life situations through hands-on activities such as simple experiments, nature walks, classroom demonstrations, gardening, and environmental observations (Kolb, 2015).

Contextualized instruction further strengthens Science learning by relating lessons to learners' daily experiences, local environment, and community resources. Using familiar examples makes scientific concepts more relevant, meaningful, and easier to understand. Such instructional approaches increase learner participation while fostering appreciation for Science and environmental stewardship (Gay, 2018).

Despite these effective instructional approaches, Science teachers continue to encounter numerous challenges in public elementary schools. Limited laboratory facilities, inadequate instructional materials, overcrowded classrooms, diverse learner abilities, insufficient instructional time, and increasing administrative responsibilities often affect classroom

instruction. These challenges require teachers to become creative, flexible, and innovative in developing localized instructional materials and adapting teaching strategies according to available resources and learners' needs.

Public elementary schools in Burgos District, Schools Division of Isabela, share these instructional realities. Science teachers continuously strive to provide quality instruction despite contextual limitations by maximizing community resources, utilizing improvised instructional materials, and implementing learner-centered strategies aligned with the MATATAG Curriculum. Their classroom experiences provide valuable insights into effective Science teaching and curriculum implementation.

Although previous studies have examined Science achievement and inquiry-based learning, limited qualitative research has explored the lived experiences of Science 3 teachers regarding their classroom instructional strategies in Philippine public elementary schools. Understanding these experiences is essential for improving instructional practices, strengthening teacher professional development, enhancing curriculum implementation, and informing educational policies.

Therefore, this study explored the lived experiences of Science 3 teachers regarding their classroom instructional strategies in public elementary schools in Burgos District, Schools Division of Isabela. Specifically, it examined the instructional strategies employed by teachers, their classroom experiences, challenges encountered, adaptive practices, and recommendations for strengthening Science instruction. The findings are expected to contribute to improving elementary Science education by providing evidence-based insights that support teachers, school administrators, curriculum developers, and policymakers in promoting meaningful, learner-centered, and inquiry-driven Science instruction.

Although previous studies have examined inquiry-based learning and Science achievement, limited qualitative research has explored the lived experiences of Science 3 teachers regarding their classroom instructional strategies in Philippine public elementary schools. Moreover, studies focusing on Burgos District, Schools Division of Isabela remain scarce. This study addresses this gap by exploring teachers' experiences, instructional practices, challenges, and adaptive strategies in implementing Science instruction.

Review of Related Literature

Classroom Instructional Strategies in Science

Effective instructional strategies are essential in promoting meaningful Science learning. Learner-centered approaches such as inquiry-based learning, experiential learning, collaborative learning, and contextualized instruction encourage learners to actively construct scientific knowledge through observation, experimentation, and problem-solving rather than memorization (Bybee, 2013; Hattie, 2023). The MATATAG Curriculum likewise

emphasizes inquiry, contextualization, and active learner participation in Science instruction (DepEd, 2023).

Inquiry-Based and Experiential Learning

Inquiry-based learning develops learners' scientific thinking by allowing them to ask questions, conduct investigations, analyze evidence, and communicate findings (National Research Council, 2000). Experiential learning complements this approach by providing authentic learning experiences through experiments, demonstrations, nature walks, and hands-on activities, enabling learners to relate scientific concepts to real-life situations (Kolb, 2015).

Contextualized Science Teaching

Contextualized instruction makes Science meaningful by connecting lessons with learners' daily experiences, local environment, and community resources. Using familiar examples enhances learner engagement, conceptual understanding, and appreciation of Science while making lessons more relevant to everyday life (Gay, 2018; DepEd, 2023).

Teachers' Experiences in Science Instruction

Teachers significantly influence the effectiveness of Science education through the instructional strategies they employ. Effective Science teachers utilize questioning, demonstrations, cooperative learning, differentiated instruction, and formative assessment to address learners' diverse needs (Tomlinson, 2017). However, teachers often encounter challenges such as inadequate instructional materials, limited laboratory equipment, large class sizes, and time constraints, requiring creativity and instructional flexibility (OECD, 2023; UNESCO, 2021).

Theoretical Framework

This study is anchored on Dewey's Experiential Learning Theory (1938), which emphasizes learning through meaningful experiences. It is also grounded in Bruner's Constructivist Theory (1966), which explains that learners construct knowledge through discovery and inquiry, and Vygotsky's Social Constructivist Theory (1978), which highlights the importance of teacher guidance and collaborative learning. These theories support the use of inquiry-based, experiential, and learner-centered instructional strategies in Science education.

Conceptual Framework

The study assumes that teachers' instructional strategies are influenced by teacher competence, instructional resources, learner characteristics, classroom environment, and curriculum implementation. These factors shape teachers' classroom practices and

ultimately influence learners' scientific literacy, critical thinking, conceptual understanding, and engagement in Science learning.

Statement of the Problem

This study explored the lived experiences of Science 3 teachers regarding their classroom instructional strategies in public elementary schools in Burgos District, Schools Division of Isabela.

Specifically, it sought to answer the following questions:

1. What classroom instructional strategies do Science 3 teachers employ?
2. What learner-centered practices facilitate Science learning?
3. What benefits do teachers perceive from these instructional strategies?
4. What challenges do teachers encounter during Science instruction?
5. What adaptive strategies do teachers employ to address these challenges?
6. What recommendations do teachers propose to strengthen Science instruction?

Significance of the Study

The findings of the study are expected to benefit **Science teachers** by providing evidence-based instructional practices for improving classroom instruction. **School administrators** may use the results to strengthen instructional supervision and teacher professional development. **Curriculum developers** may utilize the findings in enhancing Science curriculum implementation under the MATATAG Curriculum. **Teacher education institutions** may integrate the findings into teacher preparation programs, while **future researchers** may use the study as a reference for further investigations on elementary Science instruction.

2. Research Methodology

Research Design

This study employed a **qualitative phenomenological research design** to explore the lived experiences of Science 3 teachers regarding their classroom instructional strategies in public elementary schools in Burgos District, Schools Division of Isabela. Phenomenology was appropriate because it focuses on understanding participants' experiences and the meanings they attach to a particular phenomenon (Creswell & Poth, 2018). The study explored teachers' instructional practices, classroom experiences, challenges, and adaptive strategies in implementing Science instruction.

Research Locale

The study was conducted in selected **public elementary schools in Burgos District, Schools Division of Isabela**. These schools implement the MATATAG Curriculum and provide Science instruction to Grade 3 learners from diverse socioeconomic backgrounds. The district was selected because it offers a suitable context for examining teachers' instructional practices in rural public elementary schools.

Participants of the Study

The participants consisted of **twelve (12) Science 3 teachers** selected through **purposive sampling** (Merriam & Tisdell, 2016). Participants met the following criteria:

- currently teaching Science 3;
- have at least two years of teaching experience;
- actively implementing the MATATAG Curriculum; and
- voluntarily agreed to participate in the study.

Their varied teaching experiences provided diverse perspectives on classroom instructional strategies.

Research Instrument

Data were gathered using a **researcher-developed semi-structured interview guide** validated by three experts in Science Education, Curriculum and Instruction, and Qualitative Research. The interview focused on teachers' instructional strategies, classroom experiences, learner engagement, implementation challenges, adaptive practices, and recommendations for improving Science instruction. Probing questions were used to obtain richer descriptions of participants' experiences (Braun & Clarke, 2006).

Data Gathering Procedure

Approval to conduct the study was secured from the Schools Division Superintendent, the Public Schools District Supervisor, and the participating school heads. After obtaining permission, informed consent was secured from all participants.

Individual face-to-face interviews lasting 45–60 minutes were conducted and audio-recorded with participants' permission. Field notes were also taken to capture significant observations. The recorded interviews were transcribed verbatim and reviewed for accuracy before analysis.

Data Analysis

The data were analyzed using **Braun and Clarke's (2006) Six-Phase Thematic Analysis**, which involved:

1. Familiarization with the data;
2. Initial coding;
3. Searching for themes;
4. Reviewing themes;
5. Defining and naming themes; and
6. Writing the narrative report.

Themes were developed by identifying recurring patterns across participants' responses and were supported by representative verbatim quotations and relevant literature.

Trustworthiness of the Study

The study ensured rigor using **Lincoln and Guba's (1985)** criteria of trustworthiness.

Credibility was established through member checking and transcript verification.

Transferability was achieved by providing detailed descriptions of the participants and research context.

Dependability was ensured through an audit trail documting the research process.

Confirmability was strengthened through researcher reflexivity and peer debriefing to minimize bias.

Ethical Considerations

The study adhered to ethical principles of **informed consent, voluntary participation, confidentiality, anonymity, beneficence, and data privacy**. Participants were informed of the purpose of the study and their right to withdraw at any time. Pseudonyms were used to protect participants' identities, and all research data were treated with strict confidentiality and used solely for academic purposes.

3. Findings and Discussion

The thematic analysis of the interview data generated **four major themes** that describe the lived experiences of Science 3 teachers regarding their classroom instructional strategies in public elementary schools in Burgos District, Schools Division of Isabela. The findings demonstrate that teachers employ learner-centered, inquiry-based, and contextualized instructional approaches to promote meaningful Science learning despite challenges in classroom instruction. These themes are supported by participants' narratives, interpreted using relevant educational theories, and discussed alongside related literature.

Theme 1. Inquiry-Based Instruction Promotes Active Learning and Scientific Thinking

A dominant theme that emerged from the participants' responses was the consistent use of **inquiry-based instruction** to encourage learners to become active participants in Science learning. Rather than simply explaining concepts, teachers allowed learners to observe, ask questions, conduct simple investigations, and formulate conclusions based on evidence. Participants emphasized that inquiry-based activities increased learners' curiosity and enabled them to understand scientific concepts more meaningfully.

Participant 2 shared:

"I encourage my pupils to ask questions first before giving the answer. They become more interested when they discover the concepts themselves."

Similarly, Participant 7 stated:

"Simple investigations and classroom experiments make Science enjoyable because children learn through experience."

Participant 11 added:

"When learners investigate, they become confident in explaining their observations because they have seen the results themselves."

These responses indicate that inquiry-based learning encourages learners to become active investigators rather than passive recipients of knowledge. Teachers observed that learners demonstrated greater participation, improved critical thinking, and stronger conceptual understanding when engaged in hands-on inquiry activities.

The findings support Bruner's Constructivist Theory, which emphasizes that learners construct knowledge through active discovery and exploration (Bruner, 1966). Likewise, Bybee (2013) explained that inquiry-based Science instruction develops learners' scientific reasoning, problem-solving abilities, and conceptual understanding by engaging them in authentic scientific investigations.

Theme 2. Contextualized and Experiential Teaching Makes Science Relevant

The second theme revealed that teachers consistently utilized **contextualized and experiential instructional strategies** to connect Science lessons with learners' everyday experiences. Participants explained that relating lessons to the local environment and community enabled learners to understand scientific concepts more easily and appreciate their practical applications.

Participant 4 explained:

"I relate our lessons to farming, plants, animals, and weather because these are familiar to our pupils."

Participant 8 shared:

"Instead of only reading from the book, we go outside and observe plants, insects, and the surroundings."

Participant 10 remarked:

"Children remember the lesson better when they experience it themselves rather than just listening to discussions."

Teachers described conducting outdoor observations, simple experiments, nature walks, and demonstrations using locally available materials. Such activities enabled learners to connect classroom learning with real-life situations, making Science more meaningful and engaging.

These findings affirm Dewey's Experiential Learning Theory, which states that meaningful learning occurs through direct experiences followed by reflection (Dewey, 1938). Similarly, Kolb (2015) emphasized that experiential learning enhances understanding because learners actively interact with their environment and construct knowledge from authentic experiences. Furthermore, Gay (2018) noted that contextualized instruction improves learner engagement by connecting classroom learning with learners' cultural and community experiences.

Theme 3. Differentiated Instruction Enhances Learner Participation and Understanding

Another important theme that emerged from the interviews was teachers' implementation of differentiated **instructional strategies** to accommodate the diverse learning needs of Grade 3 learners. Participants recognized that pupils vary in terms of academic readiness, learning pace, interests, and prior knowledge. Consequently, teachers modified classroom activities, grouped learners strategically, and provided additional guidance to ensure that all learners actively participated in Science lessons.

Participant 5 shared:

"Some pupils learn quickly, while others need repeated demonstrations, so I adjust my teaching according to their needs."

Participant 9 explained:

"I group pupils during activities so they can help one another and learn together."

Participant 12 stated:

"I provide additional activities for struggling learners and enrichment tasks for fast learners."

Teachers also emphasized the importance of continuous formative assessment through questioning, observation, classroom activities, and performance tasks to monitor learners' understanding and provide immediate feedback.

These findings indicate that differentiated instruction creates inclusive learning environments where every learner is given opportunities to succeed. The results support **Tomlinson's (2017)** Differentiated Instruction Theory, which advocates modifying instructional content, learning activities, and assessment according to learners' readiness, interests, and learning profiles. Likewise, **Vygotsky (1978)** explained that appropriate teacher scaffolding enables learners to achieve higher levels of understanding within their Zone of Proximal Development.

Theme 4. Teacher Creativity and Adaptability Overcome Instructional Challenges

The final theme highlighted teachers' creativity and adaptability in addressing the challenges encountered during Science instruction. Participants consistently reported limited laboratory equipment, inadequate instructional materials, large class sizes, and insufficient instructional time. Despite these challenges, teachers remained committed to delivering meaningful Science lessons by improvising instructional materials, utilizing locally available resources, and modifying instructional strategies according to classroom conditions.

Participant 1 explained:

"We improvise Science materials using recyclable and local resources because our school has limited laboratory equipment."

Participant 6 shared:

"Even without complete materials, we make sure learners still experience experiments using simple objects found in the community."

Participant 3 added:

"Challenges motivate us to become more creative because we want our pupils to enjoy learning Science."

Teachers also described collaborating with colleagues through Learning Action Cell (LAC) sessions to exchange lesson plans, instructional materials, and best teaching practices. This collaborative culture strengthened instructional innovation and improved classroom practices despite limited resources.

The findings demonstrate that teachers' resilience and instructional creativity significantly contribute to effective Science education in resource-constrained schools. These findings support Schön's Reflective Practice Theory (1983), which explains that effective teachers continuously reflect on their classroom experiences and adapt instructional strategies according to learners' needs. The results are likewise consistent with UNESCO (2021), which emphasized that teacher innovation and contextualized instruction are critical factors in improving educational quality, particularly in rural and underserved schools.

Synthesis of the Findings

The four themes collectively reveal that effective Science 3 instruction is characterized by inquiry-based learning, contextualized and experiential teaching, differentiated instruction, and teacher creativity. These instructional strategies enable learners to actively participate in scientific investigations, relate scientific concepts to real-life experiences, collaborate with peers, and develop critical thinking and problem-solving skills. Despite instructional challenges, teachers demonstrated resilience, innovation, and commitment in providing meaningful Science learning experiences. These findings underscore the importance of continuous professional development, adequate instructional resources, and institutional support in strengthening Science education in public elementary schools.

4. Conclusion

This phenomenological study explored the lived experiences of Science 3 teachers regarding their classroom instructional strategies in public elementary schools of Burgos District, Schools Division of Isabela. The findings revealed that teachers employ a variety of learner-centered instructional approaches, particularly inquiry-based learning, contextualized and experiential teaching, differentiated instruction, and creative use of available resources to facilitate meaningful Science learning. These strategies enabled learners to actively participate in classroom activities, develop scientific thinking, enhance conceptual understanding, and relate scientific concepts to real-life experiences.

The study further revealed that although teachers encountered challenges such as limited instructional materials, inadequate Science equipment, diverse learner abilities, and insufficient instructional time, they demonstrated resilience, flexibility, and instructional innovation by improvising learning materials, maximizing community resources, and adapting their teaching practices according to learners' needs. Their experiences highlight the important role of teachers as facilitators of inquiry and active learning rather than mere transmitters of knowledge.

Overall, the study concludes that effective Science 3 instruction depends on teachers' pedagogical competence, creativity, reflective practice, and commitment to providing learner-centered learning experiences. Strengthening instructional support, continuous professional development, and adequate educational resources will further enhance the quality of Science instruction in public elementary schools.

5. Implications of the Study

The findings have important implications for educational practice and policy. **Science teachers** are encouraged to continuously employ inquiry-based, contextualized, and experiential instructional strategies that actively engage learners in scientific investigation and problem-solving. Continuous reflection on classroom practices and collaboration with fellow teachers can further improve instructional effectiveness.

School administrators should strengthen instructional supervision by providing sufficient Science instructional materials, laboratory resources, and opportunities for professional development. Regular Learning Action Cell (LAC) sessions may also be utilized to promote the sharing of innovative teaching strategies and localized instructional materials.

For the **Department of Education**, the findings highlight the need to strengthen the implementation of the MATATAG Curriculum through sustained technical assistance, adequate funding for Science resources, and continuous teacher capacity-building programs focusing on inquiry-based and learner-centered instruction.

Teacher education institutions may integrate the findings into pre-service and in-service teacher education programs by emphasizing inquiry-based pedagogy, contextualized teaching, differentiated instruction, and authentic assessment practices. Preparing future teachers with these competencies will improve Science instruction in elementary schools.

Finally, the study contributes to the growing body of qualitative research on Science education in the Philippines by providing evidence on teachers' classroom experiences, instructional practices, and adaptive strategies in rural public elementary schools.

6. Recommendations

Based on the findings and conclusions of the study, the following recommendations are proposed:

1. **Strengthen Inquiry-Based Science Instruction.** Science teachers should continuously implement inquiry-based and learner-centered instructional strategies that encourage learners to investigate, observe, experiment, analyze evidence, and communicate scientific ideas.
2. **Enhance Contextualized and Experiential Learning.** Teachers should maximize locally available resources and community contexts in developing Science activities that make learning meaningful, relevant, and engaging for learners.
3. **Provide Adequate Science Resources.** School administrators and the Department of Education should allocate sufficient instructional materials, laboratory equipment, multimedia resources, and science manipulatives to improve classroom instruction and learner participation.

4. **Expand Professional Development Programs.** Continuous seminars, workshops, mentoring, and Learning Action Cell (LAC) sessions should be conducted to strengthen teachers' competencies in inquiry-based instruction, differentiated teaching, classroom assessment, and instructional innovation.
5. **Promote Collaborative Partnerships.** Schools should strengthen collaboration with parents, local government units, and community stakeholders to support school-based Science activities, environmental projects, and contextualized learning experiences.
6. **Conduct Further Research.** Future researchers are encouraged to conduct similar qualitative or mixed-method studies in other districts or regions to validate the findings and further examine instructional strategies, learner engagement, scientific literacy, and Science achievement in elementary education. Longitudinal studies may also be undertaken to determine the long-term impact of learner-centered instructional practices on pupils' scientific competencies and academic performance.

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