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NAVIGATING CHALLENGES IN IMPLEMENTING INQUIRY-BASED LEARNING: JUNIOR HIGH SCHOOL SCIENCE TEACHERS' PERSPECTIVES

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ABSTRACT

This study explored the lived experiences of Junior High School Science teachers in implementing Inquiry-Based Learning (IBL) in Cluster 2, Davao City. Inquiry-Based Learning is widely recognized for promoting student engagement, critical thinking, and conceptual understanding in science education (Hmelo-Silver et al., 2020; Bybee, 2022). Using a qualitative phenomenological design, the study examined the challenges teachers encountered, the coping strategies they employed, and the educational management insights derived from their experiences. Ten purposively selected participants underwent in-depth interviews, and data were analyzed through thematic analysis following Braun and Clarke (2006). Findings revealed that Inquiry-Based Learning enhances student engagement and deeper conceptual understanding through active participation and experiential learning (Prince & Felder, 2021). However, major challenges included limited laboratory resources, time constraints, and students' difficulty in engaging in independent inquiry (Wang et al., 2022; Smith & Kumar, 2023). Teachers addressed these challenges through instructional adaptation, scaffolding, collaboration, and integration of digital tools (Nguyen & Brown, 2023; Lee & Park, 2021). The study further emphasizes that institutional support, including flexible policies, continuous professional development, and access to resources, is essential for sustaining IBL (Darling-Hammond et al., 2022). Overall, effective IBL implementation requires a combination of teacher adaptability, collaboration, and supportive educational systems.

KEYWORDS: *Implementing Inquiry-Based Learning, Junior High School Science Teachers, Perspectives, Challenges*

1. INTRODUCTION

1.1 The Problem and Its Setting

Inquiry-Based Learning (IBL) is a student-centered approach that emphasizes active exploration, questioning, and investigation in the learning process (Hmelo-Silver et al., 2020). It encourages learners to construct knowledge through experience and interaction, aligning with constructivist learning theories (Piaget, 1972; Vygotsky, 1978). Research indicates that IBL enhances critical thinking, problem-solving, and student engagement in science education (Prince & Felder, 2021).

Despite its benefits, implementing IBL remains challenging due to factors such as curriculum demands, limited resources, and teacher preparedness (Garcia & Esteban, 2022; Wang et al., 2022). In developing contexts like the Philippines, these challenges are further intensified by systemic and institutional constraints.

Many junior high school science teachers in the Philippines have limited exposure to IBL methodologies during pre-service training, leading to a lack of confidence in facilitating student-driven investigations. Continuous professional development opportunities for IBL remain scarce, with most available training focusing on traditional lecture-based instruction rather than active learning approaches (Domingo et al., 2024).

A major challenge in Philippine public schools is the lack of laboratory equipment, instructional materials, and digital resources, which are crucial for effective IBL implementation. Schools in rural areas experience more significant resource gaps, limiting teachers' ability to conduct hands-on experiments and student-led inquiries (Alcantara & Lopez, 2024).

A significant challenge in implementing Inquiry-Based Learning (IBL) in Junior High School Science classrooms in the Philippines is the insufficient training and professional development opportunities for teachers. David and Cañete (2018) conducted a study in the Division of Pangasinan, Ilocos Region of Luzon, exploring the challenges faced by Physics teachers in implementing IBL. Their research, which involved semi-structured interviews with three Physics teachers from different schools, revealed both intrinsic and extrinsic challenges. Intrinsic challenges included a lack of experience and pedagogical content knowledge, while extrinsic challenges encompassed students' lack of self-efficacy in using IBL, time restrictions, and limited resources. These results highlight the need for professional development programs designed specifically for Filipino educators to improve their competency in implementing Inquiry-Based Learning effectively.

Additionally, a study assessed the extent of implementation, challenges encountered, and learning outcomes of Inquiry-Based Teaching and Learning (IBTL) in secondary schools in the Division of Aklan. The research indicated that while teachers were highly implementing IBTL, they encountered moderately evident challenges, including the need for more resources and support. This highlights the importance of providing adequate training and resources to teachers to overcome these challenges and improve the effectiveness of IBL in science education (Lopez, 2021).

However, in Davao City, junior high school science teachers encounter significant challenges in implementing IBL due to several systemic and contextual barriers. These challenges include curriculum constraints, limited teacher training, inadequate resources, student difficulties in adapting to inquiry-based instruction, and the varying levels of administrative support. Science teachers in Davao City struggle with the rigid structure of the K-12 curriculum, which prioritizes covering a broad range of topics within a limited time frame, leaving little room for in-depth inquiry-based activities. The pressure to prepare students for standardized assessments discourages teachers from using student-led investigations, which require more flexibility and extended periods of exploration (Reyes & Dela Cruz, 2022).

Moreover, considering all the existing issues the recognized benefits of Inquiry-Based Learning, its implementation presents significant challenges across different educational contexts. Factors such as curriculum constraints, lack of resources, teacher preparedness, student readiness, and policy inconsistencies hinder the widespread adoption of IBL in junior high school science classrooms. To address these gaps, a focused action is needed including enhanced teacher training, increased resource allocation, and the implementation of supportive educational policies.

This study aims to explore the lived experiences of Junior High School Science teachers in implementing IBL, focusing on their challenges, coping mechanisms, and insights for educational management.

1.2 Related Literature

This section presents the related literature and studies on the lived experiences of junior high school science teachers in implementing Inquiry-Based Learning. Significant information surrounding teachers' strategies in guiding their pupils and other affiliate topics that enrich study are also outlined in this section.

Teacher Readiness in Inquiry-Based Learning (IBL)

Inquiry-Based Learning (IBL) is a student-centered pedagogical approach that fosters critical thinking, problem-solving, and active engagement in learning. In science education, IBL encourages students to explore scientific concepts through questioning, investigation, and collaboration (Hmelo-Silver et al., 2020). The successful implementation of IBL in Junior High School (JHS) science classrooms depends on various factors, including teacher preparedness, instructional strategies, and institutional support.

Despite its advantages, implementing IBL in JHS science education poses several challenges. One of the primary barriers to IBL implementation is the lack of sufficient instructional time. Teachers often find it difficult to balance covering required topics with allowing students to explore concepts through inquiry-based activities. Another challenge identified in the literature is the limited availability of resources and laboratory facilities. Schools with inadequate funding and materials struggle to create an environment conducive to hands-on experimentation, which is integral to IBL (Martinez & Rivera, 2023).

Teachers implementing IBL are expected to create a learning environment where students feel empowered to pose questions, investigate solutions, and construct their own understanding. Teachers must design rich, inquiry-centered tasks, provide appropriate scaffolds, and allow students autonomy while ensuring that scientific rigor is maintained. However, many Junior High School Science teachers face difficulties transitioning into this new role. Teachers

accustomed to traditional lecture methods often find it challenging to give up control over the learning process and to accept multiple pathways to knowledge construction (Martin et al., 2022).

Adaptation Strategies in Implementing Inquiry-Based Learning

Given the challenges associated with IBL, teachers have developed various coping mechanisms to ensure effective implementation. Time management strategies, such as integrating mini-inquiry tasks within structured lessons, help teachers balance curriculum requirements with student exploration. Another common strategy is professional collaboration, peer support groups and teacher learning communities provide platforms for sharing best practices and innovative solutions (Carter & Williams, 2023).

Additionally, teachers utilize digital tools, including virtual simulations and online resources, to compensate for limited physical materials. Adaptive instructional strategies, such as blending direct instruction with guided inquiry, were also found to be effective. Furthermore, resilience-building techniques, such as mindfulness and stress management training, help teachers navigate the pressures associated with implementing IBL (Rodriguez, 2023).

Development institutional support plays a crucial role in the successful implementation of IBL. Schools that provide professional development opportunities, peer mentoring, and collaborative lesson planning sessions enable teachers to effectively implement IBL strategies. Moreover, administrative support, such as allocating more time for science instruction and providing access to necessary resources, can significantly impact teachers' ability to integrate inquiry-based approaches into their teaching (Adams & Foster ,2022).

One prominent coping strategy is engaging in professional collaboration. Teachers often rely on professional learning communities (PLCs) or informal peer networks to share lesson ideas, troubleshoot challenges, and provide moral support. Collaboration among science teachers helps build confidence in designing inquiry tasks and strengthens collective problem-solving skills (Nguyen & Lee, 2021).

Professional collaboration allows teachers to pool their resources, experiences, and expertise to design and implement effective inquiry-based lessons. Collaboration fosters a community of practice where teachers can engage in reflective discussions, co-create instructional materials, and jointly address challenges in the IBL process. Teachers engaged in collaborative professional learning communities demonstrated higher confidence and skill levels in planning and executing inquiry lessons compared to those working individually (Zhang & Yang, 2023).

Structured peer observation systems help normalize the challenges of IBL and create a supportive environment for risk-taking and innovation. Implementing IBL often brings uncertainties and stress. Peer groups provide emotiona backing, affirm teachers' efforts, and encourage resilience (Lopez &Smith, 2021).

Teachers who regularly engaged with supportive peer networks reported lower levels of burnout and a more positive outlook toward sustaining inquiry-based practices (Sharma & Gomez, 2022).

Virtual professional learning communities (PLCs) enhanced teachers' access to diverse strategies and allowed real-time sharing of experiences, thus empowering more teachers to confidently navigate IBL. Professional collaboration and peer support are powerful coping mechanisms for science teachers implementing Inquiry-Based Learning. They not only enhance pedagogical skills but also provide emotional, motivational, and logistical support necessary to overcome the challenges of IBL. Building strong professional communities, both physical and digital, ensures that teachers are not isolated in their efforts and fosters a culture of continuous improvement and shared success (Lee & Hernandez, 2021).

Research Questions

This study aimed to explore the lived experiences of Junior High School Science Teachers as they navigate the challenges of implementing Inquiry-Based Learning (IBL) using a phenomenological approach. Inquiry-Based Learning is highly recognized for its potential in enhancing student's critical thinking and scientific inquiry, yet its successful implementation varies due to multiple contextual barriers. Through this study, the voices and experiences of teachers were examined to understand the realities they face in adapting to IBL methodologies. By capturing their firsthand experiences, this study sought to provide a deeper understanding of the pedagogical and institutional

challenges they faced, along with the strategies they employ to overcome them. The study seeks to address the following research questions:

1. What are the lived experiences of junior high school science teachers on implementing Inquiry-Based Learning?
2. What coping strategies do Junior High School Science Teachers employ to address the challenges associated with implementing Inquiry-Based Learning?
3. What educational management insights emerge from teachers' experiences with the implementation of Inquiry-Based Learning?

2. METHODOLOGY

2.1 Research Design

This study utilized a qualitative phenomenological design to capture teachers' lived experiences and meanings attached to IBL implementation (Creswell, 2019). Phenomenological research was concerned with studying experiences from the individual's perspective, "bracketing" taken-for-granted assumptions and usual ways of perceiving. The phenomenological approach was based on a paradigm of personal knowledge and subjectivity. It emphasized the importance of personal perspective and interpretation. Thus, it was powerful in understanding subjective experiences, gaining insights into participants' motivations and actions, and cutting through the clutter of taken-for-granted assumptions and conventional wisdom (Lacadin, 2024).

Qutoshi (2019) found that data collection and analysis were conducted simultaneously to clarify specific experiences and identify phenomena as perceived by the participants in each situation. A phenomenological study broadens perspectives, enhances understanding of phenomena, fosters forward-thinking, and clarifies the researcher's approach through intentional examination of lived experiences. However, subjectivity and personal knowledge in perceiving and interpreting experiences from the research participants' point of view remained central in phenomenological studies. To achieve such objectives, phenomenology was extensively used in the social sciences.

The phenomenological research design is qualitative research; interviews offered a detailed way to gain deep insights and understand the perspectives of the participants. A questionnaire was meticulously crafted, designed, written, and tested questions were administered to the participants to gather data. These semi-structured questionnaires, which included some open-ended questions, were prepared to accommodate participants who were too busy or difficult to trace. Furthermore, the questionnaires facilitated the efficient collection of substantial data within a short period of time. The open-ended questions enabled respondents to further elaborate opinions by qualifying or substantiating their answers and were designed to gather comprehensive information from all respondent categories (Delve & Limpaecher, 2022).

The primary rationale for employing qualitative research is to obtain a comprehensive and nuanced understanding of a specific topic, issues or meaning derived from direct experience. This was achieved through a relatively small but focused sample, as data collection was time-consuming and qualitative research emphasized depth rather than quantity of findings. A qualitative research design was concerned with establishing answers to the "why" and "how" of the phenomenon under investigation.

The qualitative research design considered both the content of the participant's statement and actions, as well as the manner of delivering expressions and gestures or as performed. In certain circumstances, mannerisms provide direct insights into the research questions, as body language and voice tone were significantly considered.

As a researcher, I employed a qualitative methodology utilizing phenomenological design. Qualitative research is typically subjective, producing findings in written form rather than numerical figures and data. As a result, this information cannot be analyzed quantitatively using statistical methods due to variations in the findings. However, during the data analysis, a coding process is implemented. Common categories were identified during data analysis, enabling a more systematic and structured interpretation of the data.2.2 Participants

Ten Junior High School Science teachers from Cluster 2, Division of Davao City, were selected through purposive sampling. Participants met criteria including teaching experience and instructional competence (Campbell et al., 2020).

2.2 Research Participants

The study includes ten (10) Junior High School Science Teachers from Cluster 2, Division of Davao City. The participants were selected through purposive sampling, a non-probability technique in which individuals were deliberately chosen because of their ability to provide valuable and relevant insights into the research problem.

To qualify, teachers had to be currently teaching science subjects in Junior High School (Grades 7–10). Teachers have at least three years of continuous teaching experience in the subject area and hold a "Very Satisfactory" performance rating for the last three consecutive years. Both male and female teachers participated provided they were considered proficient and capable of reflecting meaningfully on the challenges of implementing Inquiry-Based Learning. The use of purposive sampling was justified as it ensured that participants met well-defined criteria aligned with the objectives of the study.

2.3 Research Instrument

This study employed a semi-structured interview protocol as the primary research instrument. The semi-structured interview guide was used to gather in-depth insights from ten (10) Junior High School Science teachers.

The semi-structured interview guide consisted of open-ended questions designed to explore teachers' experiences, challenges, coping mechanisms, and educational management insights in implementing Inquiry-Based Learning (IBL). This format provided flexibility, allowing the researcher to probe deeper into participants' responses while ensuring that all key areas of inquiry were consistently addressed.

Instruments underwent content validation by three experts in education and qualitative research to ensure clarity, relevance, and alignment with the research objectives. Necessary revisions were incorporated based on expert feedback. A pilot test was also conducted with teachers outside the actual participants to further refine the instruments. The validated instruments ensured that the data collected were credible, reliable, and aligned with the purpose of the study.

2.4 Data Analysis

Data were analyzed using thematic analysis following the framework of Braun and Clarke (2006). The process began with data familiarization, which involved repeated listening to the record interviews and thorough review of the transcribed in-depth interviews. During this phase, initial observations, reflections, and ideas were systematically documented to gain a comprehensive understanding of the data gathered.

Subsequently, initial codes were generated by identifying meaningful phrases and significant statements from the transcripts. These codes captured the participants' experiences, challenges, and strategies in implementing Inquiry-Based Learning (IBL). Coding was conducted manually, with careful attention to preserving the context and meaning of participants' responses.

The coded data were then organized into broader themes by identifying patterns and relationships among codes. These themes reflected key aspects of the teacher's lived experiences, particularly in relation to professional challenges and instructional practices in implementing IBL. The themes were reviewed and refined to ensure consistency, coherence, and alignment with the entire data set. Overlapping or weak themes were revised, merged, or discarded to strengthen the analytical framework.

Each theme was clearly defined and named to reflect its core meaning and relevance to the research questions. For instance, themes on coping mechanisms included strategies such as collaboration, scaffolding, and integration of digital tools.

Finally, the findings were presented in a narrative format, supported by direct quotations from participants to ensure authenticity and depth. To enhance the trustworthiness of the study; strategies such as triangulation, member checking and peer debriefing were employed. The use of Braun and Clarke's (2006) thematic analysis framework ensured a systematic, transparent, and rigorous analysis of the data.

2.5 Trustworthiness of the Study

In qualitative research, the traditional concepts of validity and reliability were reframed into the construct of trustworthiness to ensure rigor and authenticity. Lincoln and Guba (1985) emphasized that trustworthiness was composed of four essential components credibility, transferability, dependability, and confirmability. These criteria strengthened confidence that the findings were accurate representations of participants' experiences. Establishing trustworthiness in this study was crucial, as the results informed not only teaching practice but also school- and policy-level decisions in improving the implementation of Inquiry-Based Learning (IBL) in Junior High School Science.

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3. RESULTS AND DISCUSSION

This section presents the findings of the study in relation to the research questions, drawing from 10 participants responses on their lived experiences in implementing Inquiry-Based Learning (IBL). The analysis reveals 3 major themes highlighting teachers' experiences, coping mechanisms, strategies and educational management insights.

Table 1. Junior High School Science Teachers Experiences on Implementing Inquiry-Based Learning

The finding indicates that IBL serves as a transformative pedagogical approach that enhances learners' engagement, promotes conceptual understanding through experience, and inquires adaptive instructional practices. However, its implementation is accompanied by challenges such as limited resources, tome constraints, and carrying student readiness.

Enhanced Learner Engagement and Active Participation. Teachers reported that IBL significantly increases students' engagement, curiosity, and participation. Students actively participate to ask questions, make predictions, and engage in collaborative learning activities. These findings support constructivist learning theory, which emphasizes knowledge construction through active participation (Piaget, 1972; Vygotsky, 1978). Similarly, Garcia and Thomas (2022) and Ahmed and Johnson (2024) noted that IBL fosters curiosity and critical thinking through inquiry-driven questioning.

> *IDI-I6: "In my experience using Inquiry-Based Learning, I observed that the class becomes more active and livelier, especially when the lesson requires exploration like in force and motion."*
> *IDI-I8: "In my experience using Inquiry-Based Learning, I observed that students are more interested when they conduct the experiment themselves. They become more active when they explore the lesson on their own."*
> *IDI-I6: "One positive outcome is that students become more interactive. They ask questions, make predictions, and even help correct their classmates' misconceptions."*

Development of Conceptual Understanding Through Experience. This theme highlights how IBL helps learners construct knowledge through observation and real-life application. This aligns as Kolb and Kolb (2022) emphasized that experiential learning supports the development of conceptual understanding by allowing learners to transform direct experiences into meaningful scientific knowledge. Similarly, Bybee (2022) stated that inquiry-based learning enhances conceptual development by engaging students in active exploration and reflective thinking during science learning.

> *IDI-I1: "In my experience using Inquiry-Based Learning, I observed that students become more active when the lesson is connected to their environment. They are more interested when they investigate and find answers on their own."*
> *IDI-I9: "In my experience, major difficulties were not strongly emphasized, but good planning is still needed to make IBL effective."*
> *IDI-I2: "One difficulty I experienced is that some students struggle to connect their observations to scientific concepts without my guidance."*

Challenges in Implementing Inquiry-Based Learning. This theme presents the barriers teachers encountered in using IBL effectively. This aligns as Wang et al. (2022) found that limited laboratory resources in inquiry-based learning environments restrict students' ability to conduct authentic investigations and reduce the depth of scientific inquiry. Hence, Bogador et al. (2024) similarly emphasized that insufficient laboratory materials often force teachers to rely on improvised resources, which may limit the quality of experimental learning experiences.

> *IDI-I4: "Even with limited materials, I still observed that students were engaged and experienced hands-on learning using simple materials."*
> *IDI-I5: "The biggest problem is time. Sometimes not all lessons are covered because one activity already takes too long, and there are many competencies that need to be taught.*
> *IDI-I8: "The challenge I experienced is more related to student readiness because some students struggle to connect observation and concept."*

Teacher Facilitation and Instructional Adaptation. This theme focuses on how teachers adjust their strategies to effectively implement IBL. According to Aidoo and Boateng (2024) emphasized that effective inquiry-based learning requires teachers to continuously adapt instructional strategies to address classroom challenges and support student engagement. Cámara et al. (2021) found that instructional scaffolding and teacher facilitation are essential in inquiry-based environments to guide learners toward achieving their learning goals while maintaining autonomy.

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IDI-I3: "The difficulty I experienced is more related to student readiness, as they have different levels of acceptance toward inquiry-based learning."
IDI-I4: "Students still showed interest and engagement even with limited materials, but their exploration was not very deep."
IDI-I10: "In the force and motion lesson, I let students ask 'what if' questions and make predictions about outcomes."

Table 2: Coping Mechanisms of Teachers with the Challenges In Implementing Inquiry-Based Learning. The study identifies three main coping mechanisms employed by teachers in addressing challenges in implementing Inquiry-Based Learning (IBL).

Instructional Adaptation Strategies. It highlights how teachers modify their teaching approaches by simplifying activities without removing the inquiry process, using scaffolding and structured inquiry techniques, and managing time and student understanding through gradual guidance and task breakdown.

IDI-I1: "When I encounter difficulties in using IBL, I try to adjust the activity to make it simpler, but without removing the inquiry process."
IDI-I6: "I break the lesson into smaller steps and give scaffolded questions to help the students."
IDI-I9: "When I experience difficulties in IBL, I break the activity into smaller steps so students can follow it more easily."

Collaboration and Professional Support. It emphasizes the importance of collegial interaction, where teachers seek advice from peers, co-plan lessons, share resources such as low-cost materials, and participate in mentoring and professional development activities to strengthen their instructional practices.

IDI-I2: "My colleagues are a big help because they share ideas and strategies, such as using simple materials for experiments."
IDI-I10: "When I experience difficulties in IBL, I ask for help and suggestions from my co-teachers."
IDI-I3: "Collaboration with my fellow teachers is a big help because they provide ideas and alternative strategies such as using simulations."

Institutional and Resource Support Systems. It shows that school-based support plays a crucial role, as administrative flexibility in lesson pacing, access to digital tools and simulations, and strategies for addressing limited laboratory resources enable teachers to sustain effective IBL implementation despite contextual constraints.

IDI-I4: "Our school leaders are a big help because they give us flexibility in pacing and access to online resources and simulations."
IDI-I3: "The collaborative lesson planning in our science department helped a lot because we shared strategies and lesson ideas there."
IDI-I7: "The support from school administrators through access to online resources and encouragement to use digital tools is a big help."

Table 3: Educational Management Insights from the Experiences of Teachers in Implementing Inquiry-Based Learning

As teachers navigate the complexities of facilitating student-centered inquiry, their responses highlight the importance of institutional support, professional development, collaboration, and instructional adaptability. These experiences reveal how school leadership, resource availability, and collegial cooperation play a crucial role in enabling teachers to manage challenges and sustain innovative teaching approaches. The participants shared their educational management insights, and it was narrowed down into one to generate the themes. These themes were carefully analyzed and formulated based on what came from informants' accounts and reflections.

Institutional and Policy Support. This theme reflects the structural and policy-related conditions that influence the effective implementation of Inquiry-Based Learning in schools. This theme is grounded by Fullan (2021) emphasizing supportive educational policies and leadership structures are essential in reducing teacher workload and improving instructional quality. Similarly, Darling-Hammond et al. (2022) found that policy alignment and institutional backing significantly enhance teacher performance and student learning outcomes. Thus, it implies that flexible time allocation, curriculum decongestion, and realistic leadership expectations are essential to enable teachers to implement meaningful inquiry-based instruction effectively.

IDI-I1: "For me, teachers really need support through more flexible time allocation and adjusted lesson pacing, because IBL takes longer than traditional teaching."
IDI-I3: "In my view, curriculum and policies should be revised to reduce overloaded topics and give space for deeper inquiry activities."
IDI-I7: "My most important recommendation is to understand that IBL is a gradual process and to encourage teachers through recognition of their efforts."

Capacity Building and Continuous Professional Development. The findings focuse on strengthening teachers' knowledge, skills, and instructional practices through ongoing training, mentoring, and collaboration. The findings reveal by Avalos (2021) stated that continuous professional development enhances teachers' instructional practices and adaptability in diverse classroom settings. Then, Desimone and Garet (2022) found that sustained professional learning opportunities significantly improve teaching quality and student achievement. It suggests that sustained professional development and collaborative learning opportunities are necessary to enhance teachers' competence and confidence.

IDI-I2: "When I experience difficulties in IBL, I seek help and suggestions from my fellow teachers on how to handle the activity."
IDI-I9: "My most important recommendation is the establishment of a continuous mentoring program for teachers implementing IBL, because through this they can be guided better and the implementation can be improved."
IDI-I6: "In my view, DepEd and schools should invest in collaborative systems and learning communities to make IBL implementation easier."

Resource Provision and School-Level Support Systems. This theme highlights the availability of instructional materials, evaluation systems, and leadership practices that facilitate effective teaching and learning. This align as Li and Lin (2022) highlighted that adequate provision of educational resources at the school level is essential for ensuring equitable and quality learning outcomes. Similarly, Garcia and Torres (2024) found that strong school-level support systems, including access to materials and infrastructure, significantly improve teacher performance and student achievement.

IDI-I1: "For me, one gap is the lack of focus on actual time for inquiry and the lack of laboratory resources in public schools."
IDI-I4: "My most important recommendation is to provide adequate equipment and support to schools for IBL."
IDI-I8: "In my view, policies and pacing guides should be adjusted to fit the actual time needed for IBL activities."

4. IMPLICATIONS AND FUTURE DISCUSSIONS

This study, focusing on the lived experiences of Junior High School Science teachers in implementing inquiry-based learning, provides several significant implications for practice, policy, and research. The experiences of Junior High School Science teachers in implementing inquiry-based learning imply, consistent with Jean Piaget's (1972) Constructivist Learning Theory, that students learn best through active engagement, hands-on experiences, and real-world connections that promote curiosity and deeper understanding. However, challenges such as limited resources, time constraints, and learners' difficulty in independent inquiry highlight the need for scaffolding, instructional adaptation, and strong institutional support, emphasizing the teacher's critical role in balancing guidance and student autonomy to ensure meaningful learning.

The coping mechanisms of Junior High School Science teachers in implementing inquiry-based learning reflect key implications aligned with Jean Piaget's (1972) Cognitive Constructivism, emphasizing that learning occurs through guided interaction and active knowledge construction. Instructional adaptation strategies such as simplifying activities without losing inquiry, scaffolding lessons, and managing time support students' gradual understanding while maintaining meaningful engagement. At the same time, collaboration and professional support through peer idea sharing, resource innovation, and continuous training enhance teachers' capacity to design effective inquiry experiences. Furthermore, institutional and resource support systems including administrative flexibility, use of digital tools and simulations, and strategies to address resource constraints enable teachers to sustain inquiry-based practices despite limitations, highlighting the importance of supportive environments in fostering student-centered learning.

The educational insights drawn from the lived experiences of Junior High School Science teachers imply, in line with Lev Vygotsky's (1978) Social Constructivism, that effective implementation of inquiry-based learning requires strong social and institutional support systems that facilitate collaborative knowledge construction. Flexible time allocation, reduced workload, and curriculum decongestion allow teachers to engage learners in deeper inquiry, while realistic expectations and recognition from school leaders sustain motivation and gradual implementation. Moreover, capacity building through continuous training, mentoring, and collaborative professional learning communities strengthens teachers' instructional competence and promotes shared expertise.

4.1: IMPLICATIONS

This study, focusing on the lived experiences of Junior High School Science teachers in implementing inquiry-based learning, provides several significant implications for practice, policy, and research.

The findings of this study have several important implications for classroom practice, school management, and educational policy in relation to the implementation of Inquiry-Based Learning (IBL) in junior high school science education.

Firstly, the results highlight that challenges in IBL implementation often lead teachers to adapt instructional strategies to maintain inquiry while ensuring feasibility. Teachers simplify activities, use guided demonstrations, and scaffold learning tasks. This implies that flexible instructional design is essential, and teachers should be encouraged to adjust inquiry levels (from open to guided or structured inquiry) depending on classroom constraints such as time, resources, and student readiness.

Secondly, the study implies that instructional scaffolding is a critical coping strategy in sustaining effective IBL. Breaking lessons into smaller steps, using scaffolded questions, and integrating graphic organizers help learners engage meaningfully in inquiry despite cognitive and contextual limitations. Therefore, science teachers should be trained to design scaffolded inquiry tasks that balance rigor with accessibility.

Thirdly, the findings emphasize the importance of collaboration among teachers as a professional support system. Sharing strategies, co-planning of lessons, and adaptation of low-cost or alternative materials strengthen the implementation of IBL. This implies that schools should promote collaborative planning time and professional learning communities to support sustained innovation in science teaching.

Fourthly, the study suggests that institutional support plays a significant role in effective IBL implementation. Administrative flexibility in pacing, as well as access to digital tools and simulation software, helps teachers overcome limitations in laboratory facilities and resources. This indicates that school leaders should actively provide both logistical flexibility and technological support to enhance inquiry-based instruction.

Lastly, the findings imply that continuous professional development is necessary to strengthen teachers' competence in implementing IBL. Training and mentoring programs should focus on practical classroom strategies such as scaffolded inquiry design, resource improvisation, and the effective use of digital simulations. Sustained support will help teachers confidently navigate the complexities of inquiry-based science instruction.

4.2 FUTURE DIRECTIONS

Based on the findings and implications of this study, the following future directions are recommended:

Development of Inquiry-Based Learning Support Programs. Future research may design and evaluate structured support programs aimed at strengthening the implementation of Inquiry-Based Learning (IBL) in junior high school science classrooms. These may include scaffolded inquiry lesson models, resource adaptation strategies, and classroom-based interventions that help teachers manage time, materials, and student engagement challenges.

Quantitative Validation of Instructional Strategies in IBL. Further studies may employ quantitative approaches to measure the effectiveness of key coping strategies identified in this study, such as scaffolding techniques, guided demonstrations, use of digital simulations, and collaborative teaching practices, in improving student engagement and learning outcomes in science.

Expansion to Other Grade Levels and Learning Contexts. Similar studies may be conducted across other grade levels (elementary or senior high school) and in different subject areas to determine whether the challenges and coping mechanisms in IBL implementation are consistent or context specific. Comparative studies across urban and rural schools are also recommended.

Teacher Professional Development and Training Enhancement. Future research may focus on developing and evaluating professional development programs that strengthen teachers' capacity to implement IBL effectively. Training modules may include lesson scaffolding, inquiry design, classroom management during inquiry activities, and the integration of low-cost and digital instructional resources.

Exploration of Student Experiences in Inquiry-Based Learning. Additional studies may investigate the lived experiences of students in IBL classrooms to complement teacher perspectives. Understanding learners' engagement, difficulties, and perceptions of inquiry activities will provide a more comprehensive view of how IBL functions in actual classroom settings.

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