



# NAVIGATING OBSTACLES: A CASE STUDY ON THE CHALLENGES FACED BY JUNIOR HIGH SCHOOL TEACHERS IN GRADE SEVEN SCIENCE INSTRUCTION

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## ABSTRACT

The purpose of this study was to explore the challenges faced by Junior High School teachers in delivering Grade Seven Science instruction. I selected two research participants who represent a diverse range of experiences and backgrounds in teaching science. I included one teacher from an urban school and one from a rural setting to capture the different contextual challenges they might face. The research design adopted a qualitative case study methodology to provide an in-depth examination of the challenges faced by teachers in Grade Seven Science classrooms. This approach enabled the researcher to gather rich, contextualized data from a small, selected group of participants, thus allowing for detailed insights into the specific difficulties encountered in the science teaching process. This study sheds light on several significant barriers faced by educators, specifically the lack of resources and materials. In many junior high schools, particularly in rural areas, teachers struggle with limited access to essential teaching tools and scientific equipment. This scarcity not only hampers the delivery of effective science instruction but also prevents students from fully engaging with the content. Hands-on activities, which are critical to fostering a deeper understanding of scientific concepts, become almost impossible without proper materials. As a result, students may be deprived of the opportunity to develop essential scientific inquiry and problem-solving skills, which are central to fostering a robust science education. The implication of this challenge is clear: the lack of resources restricts the scope of teachers' instructional methods, ultimately impacting the quality of learning students experience.

**KEYWORDS:** Navigating, Obstacles, Case Study, Junior High School, Teachers Grade Seven, Science Instruction

## INTRODUCTION

Teaching science in junior high schools, particularly in grade seven, poses unique challenges for educators. This critical stage in students' academic development requires teachers to convey complex scientific concepts while fostering engagement and curiosity effectively. However, many junior high school teachers face obstacles that can hinder their ability to deliver high-quality instruction. These challenges include insufficient resources, diverse student abilities, rigid curriculum requirements, and a lack of professional development opportunities. Such difficulties not only affect teachers' instructional practices but also impact student learning outcomes in science.

Grade seven science teachers in Malaysia face several challenges in delivering effective instruction, including language barriers, overcrowded curricula, and inadequate resources. Many students struggle with English, the medium of instruction for science, limiting their understanding of complex scientific concepts (Abdul Rahman, 2019). Additionally, teachers often work with large class sizes and limited access to modern science equipment and technology, hindering hands-on learning (Chia & Lim, 2020). The national curriculum's heavy focus on content delivery leaves little room for inquiry-based learning, which is essential for fostering critical thinking (Zainuddin & Abdullah, 2019). These challenges are compounded by a lack of ongoing professional development for teachers, reducing their ability to adapt to new pedagogical methods and technological advancements in science education.

However, in the United States face several challenges in the classroom, including issues related to student engagement, curriculum complexity, and resource constraints are faced by teachers. Many students at this age



are transitioning from elementary to middle school and may struggle to see the relevance of science in their daily lives, leading to a lack of motivation and interest (Sadler et al., 2020). Teachers must also contend with a curriculum that is often packed with content, making it difficult to engage in deep, inquiry-based learning. The focus on preparing students for standardized tests further exacerbates this problem, as teachers are often pressured to prioritize testable content over creative and exploratory teaching methods (Anderson et al., 2018). This emphasis on test preparation can hinder the development of critical thinking and problem-solving skills that are central to science education.

In addition to curricular and motivational challenges, teachers in the U.S. often face difficulties related to classroom resources and professional development. Many schools, particularly in underfunded districts, lack the necessary equipment and technology to conduct hands-on experiments, which are crucial for fostering a deeper understanding of scientific concepts (Baser et al., 2021). Furthermore, teachers may not receive adequate ongoing professional development to stay current with the latest pedagogical strategies or scientific advancements, which can affect their ability to effectively teach and engage students. Addressing these issues requires systemic changes, including more investment in educational resources, ongoing teacher training, and a balanced approach to testing and curriculum design.

In Japan face several challenges related to curriculum demands, classroom dynamics, and student engagement. The Japanese education system places a strong emphasis on standardized testing and academic achievement, which can limit opportunities for inquiry-based learning and hands-on experimentation in science (Yamaguchi, 2019). Teachers often struggle to balance the need to cover a broad and detailed curriculum with the goal of fostering deep understanding and critical thinking. The pressure to prepare students for high-stakes exams leads to a teaching approach that may focus more on rote memorization rather than interactive or creative learning, which can diminish students' enthusiasm for science (Tobin, 2020). Additionally, the fast-paced nature of the curriculum leaves little time for teachers to explore topics in depth or engage students in active problem-solving.

Furthermore, teachers in Japan face challenges related to classroom resources and professional development. While Japanese schools generally have good facilities, the availability of science-specific materials and equipment for hands-on learning can vary significantly, especially in rural areas (Sato & Nagai, 2020). The emphasis on teacher-centered instruction in Japan also means that teachers may not always have the opportunity for collaborative or reflective practices that could help them adapt their teaching methods to meet students' diverse needs (Tobin, 2020). Moreover, while Japanese teachers are highly skilled, they often do not receive enough professional development in new pedagogical approaches or emerging scientific fields, which can hinder their ability to incorporate innovative teaching strategies into their classrooms (Yamaguchi, 2019). Moreover, teachers in Cebu City also face the challenge of an overcrowded curriculum and limited instructional time. The Department of Education's curriculum for grade seven is dense, covering a wide range of topics that teachers often feel compelled to rush through in order to meet academic standards (Tan & Gozun, 2020). This pressure to finish the curriculum leaves little room for in-depth exploration or practical experiments, which are essential for fostering student interest and comprehension in science. Additionally, many teachers struggle with the lack of adequate resources in schools, such as science labs, teaching materials, and updated textbooks. This limits their ability to provide a hands-on, engaging science education that can effectively support diverse learning styles (Sanchez & Lagro, 2021).

On the other hand, the dense and rigid curriculum also poses a significant challenge for grade seven science teachers in Metro Manila. The Department of Education's curriculum for science is extensive, and teachers often feel pressured to cover all the required topics without having enough time to delve deeply into important concepts or conduct hands-on activities that can enhance learning (Bautista & Pascual, 2022). Teachers have expressed frustration with the pace of the curriculum, as they are expected to prepare students for standardized assessments while also dealing with the constraints of online learning environments. This has led to a reliance on lecture-based instruction rather than interactive learning, which limits students' ability to engage with the subject critically and creatively. Furthermore, a lack of resources such as updated textbooks and laboratory equipment further limits the teachers' ability to provide high-quality, hands-on science education (Santos & Dizon, 2021).

In addition to technological challenges, science teachers in Region IV also face difficulties with the overcrowded curriculum and insufficient resources. The Department of Education's curriculum for grade seven science is expansive, which creates pressure on teachers to cover all topics within the limited time frame, leaving little opportunity for deeper exploration or interactive activities (Bautista & Pascual, 2022).



Furthermore, the lack of access to updated science textbooks, laboratory materials, and even basic resources in some schools' limits teachers' ability to conduct experiments or provide students with the hands-on experiences crucial for science learning. These limitations impact the quality of science education and contribute to decreased student interest and engagement in the subject (De Guzman & Ramirez, 2021).

Junior high school science teachers in Davao City, similar to other regions in the Philippines, face challenges related to the shift to online and modular learning. Many teachers and students in Davao City, especially in rural areas, struggle with limited access to reliable internet connections and modern technological devices. This has hindered the effectiveness of online learning and made it difficult for teachers to conduct interactive science lessons, which typically require hands-on activities and experiments to engage students (Lacson & Dizon, 2021). In addition, many teachers lack sufficient training in using online learning platforms and digital tools, which affects their ability to facilitate engaging and effective virtual science lessons. The challenges of maintaining student motivation and participation in an online setting are particularly pronounced in science, a subject that often requires active learning and practical experiments.

Another major issue faced by junior high school science teachers in Davao City is the overcrowded curriculum and inadequate teaching resources. Teachers are required to cover a vast amount of content within a limited time, leading to rushed lessons and limited opportunities for in-depth exploration of complex scientific concepts. This pressure is compounded by the lack of adequate science laboratories, updated textbooks, and teaching materials, which makes it difficult to conduct hands-on experiments that are essential for developing students' scientific skills (Bautista & Pascual, 2022). Despite efforts to improve education in the region, these resource gaps continue to impact the quality of science education and contribute to student disengagement, especially in schools that are already under-resourced.

## LITERATURE REVIEW

The role of teachers in science instruction is central to shaping students' understanding of scientific concepts, fostering critical thinking, and promoting scientific literacy. As educational paradigms evolve, science teachers are increasingly recognized as facilitators of learning rather than mere transmitters of knowledge. They are tasked with guiding students through inquiry-based learning, fostering hands-on experiences, and promoting the development of scientific skills that are essential for both academic success and informed citizenship. Research has highlighted that the effectiveness of science instruction is largely influenced by teachers' ability to create engaging, interactive, and meaningful learning environments that stimulate curiosity and exploration (Darling-Hammond, 2021).

One of the key roles that science teachers play is in bridging the gap between theoretical knowledge and practical application. Effective science instruction involves not just delivering content but also helping students apply their knowledge in real-world contexts. Teachers must design activities that allow students to experiment, observe, and analyze, encouraging a deeper understanding of scientific principles (Abbott et al, 2021).

According to a study by Gormally et al. (2020), science teachers who use inquiry-based approaches, where students engage in hands-on experiments and problem-solving, improve students' critical thinking skills and increase their engagement with the subject. This approach aligns with the growing emphasis on experiential learning in science education, which is essential for fostering a deeper understanding of complex scientific concepts.

Moreover, science teachers must also cater to the diverse needs of their students. In contemporary classrooms, students come from a wide range of backgrounds, and teachers must adapt their instruction to address varying levels of prior knowledge, learning styles, and cultural contexts. This requires not only content knowledge but also pedagogical flexibility. A study by Johnson et al. (2022) highlights the importance of culturally responsive teaching in science education, noting that when teachers connect scientific concepts to students' real-life experiences and cultural backgrounds, students show increased motivation and better academic performance. Teachers play a pivotal role in making science accessible and relevant to all students, especially in diverse classrooms where students may face challenges related to language, socioeconomic status, or prior exposure to science content.

In addition to content delivery, teachers are responsible for fostering an environment of scientific inquiry. This involves encouraging students to ask questions, develop hypotheses, and engage in evidence-based reasoning. According to a report by the National Research Council (2021), a key element of high-quality science instruction is the ability to engage students in the practices of science, including designing experiments,



analyzing data, and drawing conclusions. These practices not only help students develop scientific literacy but also teach them how to think critically and problem-solve, skills that are valuable across all disciplines. Teachers thus act as mentors, guiding students through the scientific process and helping them build the skills necessary to investigate and understand the natural world.

Lastly, teachers must also continually engage in professional development to stay abreast of the latest advancements in both science content and pedagogical practices. As scientific knowledge grows and educational technologies evolve, it is crucial for teachers to refine their instructional strategies and adopt new tools that can enhance student learning. A study by Perera and Keane (2021) emphasizes that continuous professional development, especially in integrating technology into science instruction, can significantly enhance teaching effectiveness. Teachers who engage in ongoing learning are better equipped to navigate the challenges of modern classrooms and provide students with the skills they need to succeed in an increasingly complex world.

### Research Questions

1. What challenges do junior high school teachers encounter when teaching science to grade seven students in both rural and urban schools?
2. In what ways do teachers adapt their teaching strategies to accommodate diverse learning needs within the grade seven science classroom in rural and urban settings?
3. How do professional development opportunities influence teachers' insights of their challenges and effectiveness in teaching science in both rural and urban schools?

## METHODOLOGY

### Research Design

The research design adopted a qualitative case study methodology to provide an in-depth examination of the challenges faced by teachers in Grade Seven Science classrooms. This approach enabled the researcher to gather rich, contextualized data from a small, selected group of participants, thus allowing for detailed insights into the specific difficulties encountered in the science teaching process. The case study design was particularly useful in exploring complex, context-dependent phenomena and involved data collection through semi-structured interviews, school visitation, and document analysis. By focusing on individual teachers' experiences, the study uncovered the nuances of the teaching environment, including issues related to curriculum implementation, student engagement, and resource limitations (Yin, 2021).

The research procedure began with the selection of participants using purposive sampling, focusing on junior high school teachers currently responsible for teaching Grade Seven Science. These participants were chosen based on criteria such as teaching experience, school location, and willingness to share insights into their teaching practices. Upon securing informed consent, the researcher conducted semi-structured interviews with each teacher to explore the challenges they faced in lesson planning, classroom management, and student learning outcomes. These interviews were supplemented with classroom observations, where the researcher attended live science lessons to identify any difficulties that may not have emerged through interviews alone. Document analysis was also conducted on relevant curriculum materials and lesson plans to understand how instructional strategies were designed and implemented in practice (Flick, 2020).

Once data collection was complete, the researcher analyzed the information using thematic analysis, a widely used approach in qualitative research that involved identifying patterns and themes within the data. This method allowed for the systematic examination of challenges related to content delivery, student behavior, and the integration of digital tools in science instruction. The findings were situated within the broader context of current research on science education challenges, including issues like teacher preparation, technology integration, and the impact of diverse student needs (Bennett et al., 2021). The research provided recommendations for professional development programs aimed at addressing the identified obstacles, thus contributing to the enhancement of Grade Seven Science teaching practices. The study ultimately offered valuable insights that could inform both educational policy and classroom practice, with a focus on overcoming barriers to effective science instruction in the future.

### Research Participants

I selected two research participants who represent a diverse range of experiences and backgrounds in teaching science. I included one teacher from an urban school and one from a rural setting to capture the different contextual challenges they might face. A total of two participants were considered for this study, each undergoing in-depth interviews and school visitation. This diversity allowed me to explore how factors such as



school resources, student demographics, and community support influenced their teaching practices and the obstacles they encountered.

I ensured that at least one participant had several years of experience, while the other was a relatively new teacher, to examine how experience levels affected perceptions of challenges and coping strategies. I believed this mix of backgrounds would provide rich, varied insights into the common issues in Grade Seven science instruction (Creswell & Poth, 2022). By selecting participants strategically, I aimed to gather comprehensive data that reflected a broader spectrum of experiences, ultimately enhancing the depth and applicability of my findings.

### Research Instrument

I utilized a combination of semi-structured interviews and classroom observation checklists as my primary research instruments. The semi-structured interviews allowed me to ask open-ended questions that encouraged teachers to share their experiences and perspectives on the challenges they faced in teaching science (Creswell & Poth, 2022). I designed the interview guide to cover key areas such as resource availability, classroom management, and student engagement, ensuring that I could capture the nuances of their experiences.

Additionally, I employed classroom observation checklists to systematically document instructional practices and classroom dynamics during science lessons. This tool enabled me to gather quantitative data that complemented the qualitative insights from the interviews, providing a comprehensive view of the challenges encountered (Merriam & Tisdell, 2019). By triangulating the data from both instruments, I enhanced the validity of my findings and developed a richer understanding of the obstacles faced by Grade Seven science teachers.

This case study approach ultimately contributed to a more robust analysis and provided actionable recommendations for improving science instruction in junior high settings.

### Data Analysis

In conducting my case study on the challenges faced by junior high school teachers in Grade Seven Science instruction, my data analysis procedure was carefully designed to ensure the findings were both meaningful and actionable. The first step in my analysis was to organize and prepare the data collected from interviews, surveys, and classroom observations. I transcribed all interview recordings and organized the survey responses into a manageable format, ensuring that I had accurate and complete data to work with. For classroom observations, I reviewed my field notes and organized them by themes or categories that emerged during the observation process.

I used software such as NVivo or ATLAS.ti to assist with coding and categorizing qualitative data, which allowed me to systematically identify recurring patterns, challenges, and themes. This process helped create a comprehensive overview of the obstacles that teachers faced in their science instruction (Saldana, 2021).

Once the data was organized, I moved into the second phase of analysis, where I employed both thematic analysis and descriptive statistics. For the qualitative data from interviews and observations, I performed thematic coding, identifying key themes related to challenges in science instruction, such as curriculum constraints, lack of resources, or student engagement issues. I also looked for emerging subthemes that provided deeper insights into these challenges. This combined approach allowed me to triangulate the data, providing a more robust understanding of the issues at hand and offering a nuanced view of the challenges faced by Grade Seven science teachers (Braun & Clarke, 2021; Creswell & Poth, 2022).

Finally, I interpreted the data within the context of the theoretical framework and research questions, drawing connections between the challenges identified and existing literature on science education. I compared my findings with previous studies to identify trends and potential areas for intervention. In this phase, I focused on generating actionable recommendations that could be applied to improve science instruction at the junior high school level.

I also considered any limitations in the data and was transparent about potential biases or gaps in the analysis. The final step involved writing a comprehensive report that synthesized the findings and provided clear, evidence-based suggestions for addressing the challenges teachers faced. By following this rigorous data analysis procedure, I aimed to contribute meaningful insights to the field of education and help inform future efforts to support teachers in delivering effective science instruction (Merriam & Tisdell, 2020; Patton, 2021).

## RESULTS AND DISCUSSION

### Implications



This study sheds light on several significant barriers faced by educators, specifically the lack of resources and materials. In many junior high schools, particularly in rural areas, teachers struggle with limited access to essential teaching tools and scientific equipment. This scarcity not only hampers the delivery of effective science instruction but also prevents students from fully engaging with the content. Hands-on activities, which are critical to fostering a deeper understanding of scientific concepts, become almost impossible without proper materials. As a result, students may be deprived of the opportunity to develop essential scientific inquiry and problem-solving skills, which are central to fostering a robust science education. The implication of this challenge is clear: the lack of resources restricts the scope of teachers' instructional methods, ultimately impacting the quality of learning students experience.

Another key challenge identified in the study is the difficulty in incorporating hands-on and inquiry-based learning in the classroom. These pedagogical approaches are central to modern science education, as they encourage active learning, critical thinking, and collaboration. However, without sufficient resources and time, teachers often revert to more traditional, lecture-based methods. In both rural and urban settings, the ability to design and implement inquiry-based activities is limited by constraints such as large class sizes, insufficient time for lesson planning, and lack of adequate support structures. The study implies that overcoming these challenges is crucial for promoting a more engaging and interactive science curriculum that aligns with the needs of 21st-century learners. To achieve this, schools must prioritize the development of strategies that enable teachers to embrace these more student-centered teaching methods despite resource limitations.

The study also highlights the varying impact of professional development in rural versus urban schools. In urban areas, teachers generally have more access to professional development opportunities, such as workshops, seminars, and collaborative networks. However, rural educators often face challenges in accessing these resources due to geographical constraints and a lack of infrastructure. This disparity in access to professional development leads to differences in teaching effectiveness, particularly when it comes to implementing innovative instructional strategies such as inquiry-based learning. The implications of this finding suggest that there is a need for equitable professional development opportunities across both rural and urban schools. Tailored training programs that address the unique challenges of rural schools such as online learning platforms or mobile workshops could help bridge this gap and ensure that all teachers are equipped with the necessary skills to enhance their practice.

Connecting the study's findings to Constructivist Learning Theory, it becomes evident that the lack of resources and professional development in rural schools directly undermines the principles of constructivism. This theory emphasizes the importance of active learning, where students construct their knowledge through experience and interaction with the world around them. Without the necessary materials and support, teachers are unable to create the hands-on, exploratory learning environments that constructivist theory advocates. Teachers in both rural and urban contexts face the challenge of adapting their practices to meet these expectations, but those in rural schools face more profound difficulties due to resource scarcity. To address this, educational systems must work toward providing both the resources and professional development opportunities necessary for teachers to effectively implement constructivist methods in the classroom, particularly in rural areas.

Lastly, the study also explores the connection between Social Development Theory and Teacher Self-Efficacy, particularly in how teachers' perceptions of their own abilities affect their teaching practice. According to Vygotsky's Social Development Theory, learning occurs in a social context, and teachers must create a supportive environment for students to learn through interaction. However, when teachers feel unsupported or lack the necessary skills, as is often the case in resource-poor settings, their self-efficacy can be significantly impacted.

### **Future Directions**

This study brings to light several critical challenges that significantly impact the effectiveness of science education at the junior high level. These challenges have direct implications for science teachers, students, school administrators, and future researchers. Below, the study's implications are examined according to the three key areas identified: lack of resources and materials, incorporating hands-on and inquiry-based learning, and the impact of professional development in rural and urban schools.

Science teachers, the study underscores the importance of resource availability and professional development in improving teaching quality. The lack of resources and materials poses a significant challenge to effectively teaching Grade 7 science, especially when it comes to hands-on activities and inquiry-based learning. Teachers are advised to advocate for more resources and seek out creative, low-cost alternatives to make learning



engaging despite these limitations. The study also emphasizes the need for teachers to pursue continuous professional development, particularly in integrating inquiry-based learning into their instruction. For teachers in rural areas, this may involve seeking out online training opportunities or participating in regional teacher networks to overcome geographical barriers. By enhancing their own professional competencies, teachers can better navigate the challenges of limited resources and improve the quality of science education they provide.

Science students, the study suggests that the lack of hands-on and inquiry-based learning experiences may hinder the development of critical thinking and scientific inquiry skills. Science students in both rural and urban areas are at risk of missing out on interactive, experiential learning opportunities that foster deep understanding and curiosity about scientific concepts. The implications for students are significant: without access to these engaging learning methods, their academic growth and long-term interest in science may be stifled. The study calls for a more balanced approach to instruction that combines foundational knowledge with active, student-centered learning. Educators and administrators must prioritize creating environments that encourage exploration, experimentation, and inquiry to ensure students are prepared for future scientific challenges.

School administrators, the study highlights the need for targeted interventions to address the gaps in resources and professional development. Administrators are encouraged to allocate funding and support toward acquiring the necessary materials for science education, such as lab equipment, books, and technology. Furthermore, school leaders must ensure that professional development opportunities are accessible to all teachers, with particular attention paid to the needs of those in rural areas. The study suggests that administrators could partner with local or regional education bodies to provide online workshops, peer learning networks, and resource-sharing platforms to overcome the barriers posed by geographical isolation. By investing in both resources and teacher development, school administrators can create a more supportive environment for science instruction, which will directly benefit both teachers and students.

Future researchers, this study opens up several avenues for further investigation into the challenges faced by science teachers. Future research could explore in greater depth the impact of professional development programs tailored to the unique needs of rural versus urban teachers, examining how such programs can be improved to make them more effective and accessible. Additionally, research could investigate the long-term impact of inquiry-based learning and hands-on activities on student achievement and interest in science, particularly in resource-poor settings. The role of teacher self-efficacy in overcoming instructional challenges could also be a focal point for future studies, especially in understanding how teachers' confidence influences their ability to implement innovative teaching practices. Finally, researchers could evaluate the effectiveness of alternative resource strategies, such as community partnerships or virtual science labs, to determine viable solutions for schools with limited physical materials.

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