Promoting Equity in Science Learning Through Inclusive Classroom Strategies

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Abstract

International assessment results showed that the Philippines remains among the countries with relatively low student competence in science. Limited accessibility to quality learning resources, adequate instructional support, and effective inclusive teaching practices negatively affect students' academic performance and engagement in science education. This qualitative study explored the experiences of science teachers from Zamboanga Peninsula about how they promote equity in classrooms through inclusive instructional strategies. There were 20 teachers who participated in one-on-one interview process. Narratives served as the primary data in this study and were subsequently analyzed using reflexive thematic analysis to identify, interpret, and generate meaningful patterns from the participants' experiences. The findings revealed that inclusive classroom strategies can be strengthened and effectively applied to improve science learning outcomes and support better student performance. The study identified key inclusive classroom strategies used by science teachers, including differentiated instruction, student-centered teaching, scaffolding, flexible grouping, curriculum and material modification, multimodal resources, and relatable content, with a purpose of promoting equitable and meaningful science learning. Teachers' experiences also highlighted classroom diversity, instructional challenges, and ongoing professional reflection, as they managed academic gaps and varying learner needs through continuous adjustments in teaching strategies. Future studies may further explore the effectiveness of specific inclusive education strategies in improving students' science achievement across different grade levels and contexts. Researchers may also examine how these practices influence specific learner groups, including those with learning difficulties or low academic performance, to better understand their impact on equity in science education.

Keywords: inclusive education, instructional practices, science learning, student-centered learning, teacher experiences

Introduction

Inclusive education has become a worldwide priority in the effort to achieve fair and high-quality learning opportunities for all students. Grounded in the principles of social justice, human rights, and acknowledgment of learner diversity, it seeks to remove barriers that hinder the full participation of all learners, especially those with disabilities and individuals from marginalized communities (Lingayon, 2025).

Despite efforts to expand inclusive education policies and practices in the Philippines, significant challenges persist that hinder their consistent and effective implementation across various educational contexts, including science education in the country.

In the Philippines, schools face challenges such as outdated laboratory equipment, insufficient chemicals, and limited experimental spaces, with teachers often reporting reduced motivation and inadequate preparation, which negatively affects the quality of science instruction and students' learning outcomes (Monta & Perdio, 2025). These challenges were reflected in the Program for International Student Assessment (PISA) report, where the Philippines' average science score slightly decreased from 356 in 2018 to 355 in 2022. In contrast, the average in science remained considerably higher at 485 points, highlighting a substantial performance gap between the Philippines and more advanced education systems (Chi, 2023).

The educational disparity suggests persistent issues in science education delivery, including limited instructional resources, insufficient laboratory exposure, and gaps in teacher preparedness, which may collectively hinder students' conceptual understanding and problem-solving skills. Furthermore, it emphasized the need for sustainability in curriculum implementation, teacher training, and inclusiveness to enhance science learning outcomes and close the global achievement gap.

To address the achievement gap, inclusive education in science learning could help students, regardless of ability, background, or learning differences, access, engage with, and understand scientific concepts (Deehan et al., 2024).

Effective implementation of inclusive education requires deliberate and well-planned instructional strategies that consider learner diversity and varying abilities (Sahrudin et al., 2023). For example, one commonly used and effective approach is peer cooperative teaching, which allows learners with diverse needs to actively engage and participate in classroom activities (Perveen et al., 2026). Another valuable strategy is collaborative problem-solving, which, according to Retnawati et al. (2026), not only supports learners but also enhances overall school improvement and benefits all students by promoting active engagement, critical thinking, and shared learning experiences.

Other researchers also observed that remedial instruction helps in addressing specific learning difficulties through targeted interventions (Sibomana et al., 2026), particularly when learners require additional support to master certain concepts (Erasto et al., 2024). In other contexts, especially for learners with hearing impairments, a range of creative instructional strategies may also be employed, including deductive, inductive, heuristic, expository, traditional, and cooperative approaches (Nurjanah et al., 2024).

However, these strategies were less prominent in the context of inclusive classroom setting for science learning. Hence, this study was designed to explore different instructional practices employed by science teachers and how these strategies support the learning needs of diverse students in the classroom. It specifically explored how teachers adapt their teaching approaches, instructional materials, and classroom interactions to promote equity, accessibility, and active participation in science learning.

Literature Review

On a global scale, science education continues to require substantial enhancement. Data from the Trends in International Mathematics and Science Study (TIMSS) over the past decades indicate that students' early experiences in primary science education have not been sufficient to fully develop their academic potential (Deehan et al., 2024).

Continuous attention to primary science education over the past several decades appears to have contributed positively to instructional practices and classroom experiences in science teaching. Elementary

teachers frequently highlight science concepts through teacher explanations, classroom discussions, collaborative group work, and experiential, hands-on activities (Deehan et al., 2024). These practices reflect a growing emphasis on making science more engaging and accessible to young learners.

Despite these improvements, students' opportunities to actively develop scientific skills through direct engagement in authentic inquiry and experimentation remain somewhat constrained. In many cases, classroom activities still prioritize content delivery over sustained investigation, limiting learners' exposure to processes such as hypothesis formation, data collection, and evidence-based reasoning. Expanding inquiry-based approaches and providing more structured opportunities for students to "do science" themselves may further strengthen their conceptual understanding, problem-solving abilities, and long-term scientific literacy.

Furthermore, research about inclusive education in science learning was rather scarce. Although the bibliographic analysis from Comarú et al. (2021) indicates a growing body of literature addressing both scientific education and inclusive education, there is limited recognition of inclusive education within the broader scientific education field. They emphasized that there is a clear need to expand the research landscape to better address the needs of both learners and educators in science education.

Inclusive education ensures equal access to learning opportunities for all students. It emphasizes the active participation of every learner and ensures that all individuals are given fair chances to learn within the classroom setting (Nurjanah et al., 2024), regardless of differences in physical, behavioral, gender, psychological, or intellectual characteristics (Rahmi et al., 2024).

Inclusive education creates opportunities for learners to access education, which in turn strengthens their self-esteem, builds confidence, and nurtures empathy and understanding toward individual differences and limitations (Sahrudin et al., 2023). According to Malizal and Rahman (2024), when effectively implemented, inclusive education contributes to high-quality learning, improved academic outcomes, and the promotion of long-term social inclusion.

Science teachers generally demonstrate positive attitudes and a readiness to adapt or adjust their instructional approaches in order to foster an inclusive learning environment. They also recognize that science content plays an essential role in developing students' literacy and broader citizenship skills (Comarú et al., 2021). Nevertheless, research shows that many teachers experience insufficient institutional support and limited ongoing guidance in selecting and implementing appropriate pedagogical strategies, teaching methods, and technological tools that align with learners' needs (Barid et al., 2025; Comarú et al., 2021).

In this regard, scholarly work can play a significant role in informing classroom practice, facilitating knowledge exchange, and providing teachers with practical support in their day-to-day instruction, while also helping to clarify emerging directions in science education. This study was thereby conducted to contribute to the growing body of literature on inclusive science education by examining how teachers implement instructional strategies that support diverse learners in the classroom.

Objectives

This study identified inclusive classroom strategies for promoting equity in science learning. It explored the experiences of teachers teaching students with varying learning needs. Below are the specific objectives.

1. To identify the inclusive classroom strategies used by science teachers to promote equity in science learning.
2. To explore the experiences of science teachers in handling students with varying learning needs in the classroom.

Methodology

Research Design

This study was a qualitative research that identified applicable classroom strategies for promoting equity in science learning. Specifically, it applied an exploratory design to explore teachers' experiences in instruction, including the challenges they encounter, the approaches they employ to address diverse learners' needs, and the practices they consider effective in creating an inclusive science learning environment. Exploration allows in depth understanding of phenomena, uncover underlying experiences, and generate insights that may contribute to the development of meaningful practices and solutions (Chavez, 2025).

Research Setting

The study setting was in Eastern Visayas, Philippines. The study focused on science learning environments within selected schools in the region to explore teachers' experiences and practices in promoting equity in science education. The setting provided a relevant context for examining how educators adapt their instructional strategies to address the needs of diverse learners and encourage inclusive classroom participation. The region is expected to fill the gap regarding the status of the inclusive education in the Philippines (Chitiyo et al., 2024).

Participants of the Study

Purposive sampling was applied to identify the participants of the study. This sampling technique was used to select individuals who possess relevant experiences, knowledge, and insights related to science instruction and the implementation of equitable classroom practices (Chavez et al., 2026). In this study, 20 participants were selected based on the following criteria: (1) a science teacher for at least five years, (2) has implemented inclusive strategies in science instruction, (3) has experience handling diverse learners with varying academic abilities and learning needs, and (4) is willing to share their experiences, practices, and perspectives related to promoting equity in science learning. This process allowed the selection of participants who possess substantial teaching experience and direct involvement in inclusive science instruction, ensuring the credibility and depth of the data gathered.

Research Instrument

The primary research instrument was a semi-structured interview guide designed to elicit in-depth responses from the participants regarding their experiences, practices, and challenges in promoting equity in science learning. The guide consisted of open-ended questions that allowed flexibility in probing and follow-up questions and was designed to explore emerging ideas and clarify responses (Chavez et al., 2025). **Table 1** presents the semi-structured interview guide used in this study.

Objectives	**Interview Questions**
To identify the inclusive classroom strategies used by science teachers to promote equity in science learning.	1. What teaching strategies do you commonly use to ensure that all students can participate and learn effectively in your science class? 2. Can you describe specific instructional practices you implement to address differences in students' learning abilities? 3. How do you adapt your lesson plans or teaching materials to promote fairness and inclusivity in science learning?
To explore the experiences of science teachers in handling students with varying learning needs in the classroom.	1. Can you describe your experiences in teaching students with different learning needs in your science classes? 2. What challenges have you encountered when managing a diverse group of learners, and how did you address them? 3. How do your experiences with diverse learners influence your teaching practices and classroom decisions?

Data Gathering Procedure

Data collection was carried out in a structured and ethically guided manner to uphold the rigor of the qualitative research process. Participants were formally approached and invited to take part in the study. Prior to the interviews, informed consent was obtained, with clear emphasis on voluntary involvement and the assurance of confidentiality.

The interviews were conducted either through telephone calls or via Messenger, depending on the participants' availability and preferred mode of communication. These platforms were chosen to address geographic limitations and to ensure convenient participation for respondents in regional areas. Each interview session lasted between 45 and 60 minutes, allowing for a comprehensive discussion of their experiences and insights.

All interviews were audio-recorded to facilitate accurate transcription and analysis. This process also had the consent of the participants. In addition, field notes were kept capturing contextual information, non-verbal cues wherever applicable, and narratives throughout the data collection process.

Data Analysis

The primary data in this study was the narratives from science teachers about their classroom strategies in promoting equity in science learning. A reflexive thematic analysis approach was implemented to systematically interpret the participants' narratives.

All interview recordings were transcribed verbatim to ensure the accurate preservation of participants' original responses. Data analysis started with repeated reading of the transcripts to develop a thorough understanding and immersion in the data.

Initial coding was undertaken to identify meaningful segments of data. These codes were subsequently organized into broader categories that reflect recurring patterns across participants' accounts. Through an iterative and reflective analytic process, these categories were further refined and developed into overarching themes that illustrate interrelationships, feedback mechanisms, and institutional dynamics.

Attention was given to recurring issues and organizational responses as described by the participants. Throughout the analytic process, reflexive analysis was employed to minimize potential researcher bias and to enhance interpretive rigor, thereby ensuring the credibility and depth of the findings.

Results

Objective 1. To identify the inclusive classroom strategies used by science teachers to promote equity in science learning.

Question 1. What teaching strategies do you commonly use to ensure that all students can participate and learn effectively in your science class?

Theme 1: Differentiated Instruction

Teachers emphasized adapting lessons, activities, and assessments to accommodate varying abilities, learning styles, and academic readiness of students. This includes modifying tasks and providing tiered learning materials.

> "Kapag may mga estudyante akong iba-iba ang kakayahan, ina-adjust ko ang aking mga gawain at tanong para mas madaling maintindihan ng lahat." *Translation: "When I have students with different abilities, I adjust my tasks and questions so that everyone can better understand."*
>
> "Students do not learn in the same way, so I provide them with different activities depending on their level."
>
> "There are times when I simplify the lesson or provide additional support to students who are struggling."

Theme 2: Student-Centered

Instruction is commonly designed to engage students through hands-on activities, inquiry-based learning, group work, and collaborative tasks that promote active participation in science learning.

> "I use inquiry-based learning where I allow students to ask questions and find their own answers to scientific concepts."
>
> "Mas natututo ang mga estudyante kapag sila mismo ang gumagawa ng experiments at hands-on activities kaysa puro lecture lang." *Translation: "Students learn better when they themselves perform experiments and hands-on activities rather than just listening to lectures."*
>
> "I assign group activities so they can learn to collaborate and explain their ideas to one another."
>
> "In my class, I give students opportunities to actively participate in discussions so they can better understand the lesson."

Theme 3: Supportive and Environment

Teachers highlight the importance of creating a safe, encouraging, and inclusive classroom atmosphere where students feel valued, respected, and motivated to participate regardless of their learning differences.

> "Pinaparamdam ko sa mga estudyante na ligtas sila sa aking klase, kaya hindi sila natatakot magtanong o magkamali." *Translation: "I make my students feel safe in my class, so they are not afraid to ask questions or make mistakes."*
>
> "I ensure that all students are respected and that no one is left out or embarrassed in the classroom."
>
> "I give encouragement especially to struggling students so they will not lose motivation in learning."
>
> "Sa klase ko, importante sa akin na maramdaman ng bawat estudyante na sila ay mahalaga at may ambag sa talakayan." *Translation: "In my class, it is important that each student feels they are valued and that they have contributions in the discussion."*

Question 2. Can you describe specific instructional practices you implement to address differences in students' learning abilities?

Theme 1: Instructional Differentiation

Teachers modify lessons, activities, and assessments to match students' varying cognitive levels and learning abilities. This includes simplifying tasks, providing varied difficulty levels, and adjusting instructional pacing to ensure understanding.

> "Kapag nakita kong magkakaiba ang level ng mga estudyante, ina-adjust ko ang lesson para mas madali nilang maintindihan." *Translation: "When I see that students have different levels, I adjust the lesson so they can understand it more easily."*
>
> "I modify activities depending on students' abilities, providing both easier and more challenging tasks."
>
> "I slow down the lesson pacing when there are students who are struggling so they can keep up."
>
> "In my teaching, I ensure that assessments are aligned with the students' level of learning."

Theme 2: Scaffolding

Teachers employ scaffolding strategies such as guided instruction, step-by-step explanations, visual aids, and additional reinforcement activities to support learners who need extra help in understanding science concepts.

"Kapag may mahirap na lesson, binibigyan ko sila ng step-by-step explanations para mas madali nilang maunawaan." *Translation: "When the lesson is difficult, I provide step-by-step explanations so they can understand it more easily."*

"Gumagamit ako ng visual aids tulad ng diagrams at illustrations para mas malinaw ang concepts sa mga estudyante." *Translation: "I use visual aids such as diagrams and illustrations to make the concepts clearer for students."*

"I guide students while they are doing activities so they do not get lost in the process."

"When some students are struggling, I provide additional practice and reinforcement activities, such as games, puzzles, roleplay, to strengthen their understanding."

Theme 3: Flexible Grouping

Teachers organize students into flexible groups based on ability, learning needs, or mixed-ability arrangements. Peer tutoring and collaborative learning are used to allow students to learn from one another and bridge learning gaps.

"I group students based on their abilities so they can better understand the lesson."

"Sometimes I mix high-performing and struggling students so they can help each other."

"I use group activities to enhance collaboration and learning among students."

"I implement peer tutoring where faster learners help those who are struggling."

Question 3. How do you adapt your lesson plans or teaching materials to promote fairness and inclusivity in science learning?

Theme 1: Curriculum and Material Modification

Teachers adapt lesson plans and instructional materials by simplifying content, reorganizing topics, and modifying learning tasks to match students' diverse abilities and learning needs. This ensures that all learners can access and engage with science concepts effectively.

"When I notice that a topic is difficult for students, I modify the lesson plan by breaking the concepts into smaller parts so it becomes easier to follow and understand."

"I adjust instructional materials such as worksheets and activities to match the level of my students, especially those who are struggling."

"I modify learning tasks in a simpler way while still retaining the core concept that students need to learn."

"In adjusting the lesson plan, I ensure that every student has the opportunity to keep up and no one is left behind, even if their abilities differ."

Theme 2: Use of Multimodal Resources

Teachers incorporate various teaching materials such as visual aids, videos, real-life examples, and hands-on activities to accommodate different learning styles. These multimodal resources help make science concepts more understandable and inclusive for all students.

"Gumagamit ako ng mga visual aids tulad ng pictures, diagrams, at charts para mas madaling maunawaan ng mga estudyante ang science concepts." *Translation: "I use visual aids such as pictures, diagrams, and charts to help students understand science concepts more easily."*

"I show videos that demonstrate actual processes or experiments so the lesson becomes clearer."

"I provide real-life examples so they can relate the lesson to their daily experiences."

"In my class, I let them do hands-on activities so they can personally experience scientific concepts."

Theme 3: Relatable Content

Teachers contextualize lessons by relating science concepts to students' everyday experiences and local environment. They also adjust activities based on learners' interests, readiness, and participation levels to promote fairness and meaningful engagement.

> "I base the examples in my lesson on things students see and experience in their daily lives so they can understand science concepts more easily."
>
> "I adapt activities according to students' interests so they become more motivated to participate in class."
>
> "I assess students' readiness before giving tasks to ensure that they are capable of accomplishing them."
>
> "In my teaching, it is important that every student actively participates, so I adjust activities depending on their level of participation."

Objective 2. To explore the experiences of science teachers in handling students with varying learning needs in the classroom.

Question 1. Can you describe your experiences in teaching students with different learning needs in your science classes?

Theme 1: Diversity of Classroom Experiences

Teachers describe classrooms as highly diverse environments where students differ in academic ability, learning pace, motivation, and comprehension. These differences shape daily instructional experiences and require constant adjustment in teaching approaches.

> "In my class, I notice a wide range of differences among students in terms of ability; some learn quickly while others need more time."
>
> "There are students who are highly motivated and quick to understand, but there are also those who struggle to keep up with the lesson."
>
> "Students have different learning styles, so I need to adjust in every class I teach."
>
> "As a teacher, I experience classroom diversity every day, so I always think about how I can reach all students."

Theme 2: Instructional Challenges

Teachers report difficulties in managing students with varying learning needs, particularly in maintaining lesson pacing, ensuring understanding for struggling learners, and simultaneously challenging advanced students. These challenges often affect classroom dynamics and instructional flow.

> "One of the greatest challenges in teaching science is balancing the needs of students who learn quickly with those who require more explanation and guidance."
>
> "When some students struggle with a concept, I sometimes need to repeat and explain it in a simpler way to make sure they understand the lesson."
>
> "The flow of the class becomes difficult when I cannot pace the lesson properly, because some students can follow quickly while others still need extra time to understand."
>
> "I also experience difficulty in providing enough challenge for advanced students while still supporting struggling learners, which is why I really need to plan carefully."

Theme 3: Professional Reflection

Teachers emphasize the need to continuously adapt their teaching strategies and reflect on their instructional practices. Their experiences with diverse learners lead to the development of more flexible, inclusive, and responsive teaching approaches in science education.

> "In every class I teach, I always reflect on which strategies are effective and which are not, especially when some students do not immediately understand the lesson."

> "I learned to adjust my teaching strategies based on students' feedback and their performance in activities and quizzes."
> "Over time, I notice that I become more flexible in teaching because of my experiences with students who have different learning needs."
> "My experiences with diverse learners push me to continuously improve my teaching approach to make my class more inclusive and effective."

Question 2. What challenges have you encountered when managing a diverse group of learners, and how did you address them?

Theme 1: Academic Gaps

Teachers experience challenges in addressing wide differences in students' academic abilities, learning speeds, and comprehension levels. These differences often make it difficult to deliver lessons that are equally accessible to all learners within the same classroom.

> "In my class, there are students who quickly understand the lesson while others struggle even with basic concepts, resulting in a wide gap in their learning."
> "Sometimes it is difficult to deliver the lesson for everyone at the same time because some students need more examples and longer explanations."
> "I notice that students' academic performance is not equal, so I need to adjust to address their different needs."
> "There are times when even after teaching the lesson, some students still do not fully understand it, so I need to repeat it in a simpler way."

Theme 2: Classroom Management

Teachers report challenges in pacing lessons, maintaining student engagement, and balancing attention between advanced and struggling learners. Managing classroom behavior and ensuring participation from all students also add to instructional difficulties in diverse classrooms.

> "One of the challenges I experience is properly pacing the lesson because some students can keep up quickly while others need more time to understand the topic."
> "Sometimes I find it difficult to maintain the attention of all students, especially when the science discussion is long or difficult."
> "There are times when I need to divide my attention between fast learners and struggling students to ensure that no one is left behind."
> "Classroom management becomes challenging because I also need to ensure that all students are actively participating and following the activities."

Question 3. How do your experiences with diverse learners influence your teaching practices and classroom decisions?

Theme 1: Flexibility

Teachers report that experiences with diverse learners lead them to become more flexible in their instructional approaches. They continuously adjust lesson delivery, pacing, and classroom strategies to better accommodate varying student needs and improve learning outcomes.

> "Because of my experience with students of varying abilities, I have learned to adjust the pacing of lessons; for example, when discussing 'photosynthesis,' I slow down the discussion and add simple examples for struggling students."
> "I have become more flexible in my teaching approach, so instead of pure lectures on 'chemical reactions,' I sometimes turn it into group activities or experiments so everyone can better understand."

> "When I notice students falling behind in the lesson, I immediately adjust my teaching strategy, such as adding guided practice on the topic."
> "In my experience, I have learned to be flexible in classroom decisions. For example, in an 'electricity' lesson, I give simplified explanations to some students and advanced tasks to fast learners to engage everyone."

Theme 2: Intention

Exposure to learners with different abilities influences teachers to consistently apply differentiated instruction and inclusive teaching strategies. This includes modifying activities, providing scaffolds, and using varied instructional materials to ensure all students can participate meaningfully.

> "Because of my experience with students of varying learning abilities, I intentionally prepare differentiated activities, such as giving simplified worksheets for those struggling with the topic 'matter' and more advanced tasks for fast learners."
> "In every lesson plan I make, I intentionally use scaffolding strategies such as step-by-step guides in solving problems on 'forces and motion' to help students who struggle to follow."
> "As a teacher, I make sure that inclusion is present in every activity, so in group work, I mix fast and slow learners so they can learn from each other and stay actively engaged."

Theme 3: Reflection

Teachers emphasize that their experiences with diverse learners strengthen their reflective practice, guiding their instructional decisions. They evaluate the effectiveness of their teaching methods and make necessary adjustments to better support student engagement and understanding.

> "My experiences with students of varying abilities have deepened my reflection on every teaching strategy I use, especially in determining whether it is effective in reaching all learners."
> "I constantly evaluate the impact of my instructional decisions on student learning to determine whether my methods need to be changed or improved."
> "In dealing with diverse learners, I have learned to be more critical of my own teaching and to pay closer attention to signs of misunderstanding or learning gaps."
> "Continuous reflection on my classroom experiences guides me in making more appropriate, effective, and responsive instructional decisions."

Discussion

This study analyzed the inclusive classroom strategies of science teachers in Eastern Visayas, Philippines. It turns out that science teachers promote equity in science learning through *adaptive*, *inclusive*, and *learner-centered* instructional practices.

Science teachers commonly apply differentiated instruction by modifying lessons, activities, assessments, and learning materials according to students' different abilities, readiness levels, and learning styles. In the study of Efendi et al. (2024), teachers perceive differentiated instruction as an approach that addresses the diverse learning needs, abilities, and characteristics of students within the learning process. Similarly, differentiated learning can be implemented through adjusting instructional approaches, modifying learning activities, varying task difficulty, pacing lessons according to learners' needs, and aligning assessments with students' abilities.

Teachers emphasized that adapting lessons based on students' readiness levels allows learners to better understand science concepts and participate effectively in the learning process. This includes providing simpler or more challenging activities, offering additional support to struggling learners, and ensuring that instructional strategies match students' individual learning capacities.

Research on the impact of scaffolding on learning outcomes has been extensively conducted in mathematics education. However, earlier studies have not yet explored how scaffolding strategies influence learning outcomes in science education (Azzaroiha et al., 2025). In this study, scaffolding was implemented by science teachers through providing structured support, guided instruction, step-by-step explanations, visual aids, and reinforcement activities to assist students in understanding complex science concepts. Teachers gradually support learners by breaking down difficult lessons into manageable parts, clarifying instructions, and providing additional practice until students develop greater independence and confidence in learning.

Scaffolding is especially useful when dealing with abstract concepts like *energy* and *force*, as it promotes comprehension and encourages collaborative learning prior to students transitioning to independent work (Ecevit, 2022; Lui, 2023). This approach likewise strengthens learners' capacity for autonomous study, equipping them with skills that support long-term academic achievement (Masava et al., 2022). Teachers from Eastern Visayas likewise believed that scaffolding helps bridge students' prior knowledge with new scientific ideas, making complex lessons more accessible and less intimidating.

Furthermore, an important aspect of inclusive education is the relatability of instructional materials, as it ensures that learning resources are meaningful and connected to students' everyday experiences. Bordoh (2025) believed that instructional materials should be both relatable and engaging, consistent with a student-centered approach in learning. In this study, science teachers specified several methods to ensure relatability in science learning. Relatable content in science instruction can be implemented by intentionally linking abstract concepts to learners' lived experiences, familiar surroundings, and culturally relevant contexts. Teachers may begin by identifying common objects, daily routines, local practices, or community issues that naturally embody the scientific idea being taught. For example, concepts such as force, energy, or matter can be introduced through household activities, transportation, weather patterns, or agricultural practices that students regularly observe in their environment.

Lastly, the multimodal approach in science learning appeared to be an effective instructional strategy that applies various modes of representation such as visual, auditory, kinesthetic, and digital resources to enhance students' understanding of complex scientific concepts. Multimodal learning theory posits that learners acquire knowledge more effectively when they are engaged through various modes of representation, including visual, auditory, reading/writing, and kinesthetic channels (Ragab et al., 2025). This approach acknowledges differences in learners' preferences and abilities, which supports diverse learning needs while enhancing comprehension and encouraging deeper conceptual understanding (Giannakos & Cukurova, 2023). Science teachers believed that multimodal learning could be implemented using visual aids, videos, real-life examples, and hands-on activities to present lessons in more engaging and accessible ways.

This study hoped for the extensive application of inclusive practices in the classroom, particularly in science education, by encouraging teachers to adopt strategies that address the diverse needs, abilities, and backgrounds of learners.

The study sought to contribute to the enhancement of instructional practices by providing insights that may guide teachers in designing more accessible and engaging lessons. The study envisioned a responsive and learner-centered environment that implements inclusive strategies such as scaffolding, relatable content, and multimodal instruction.

Conclusion

The inclusive classroom strategies identified in the study included differentiated instruction, student-centered teaching, and the creation of a supportive and inclusive classroom environment, all of which were used to promote equitable participation in science learning. Teachers also implemented instructional differentiation, scaffolding, and flexible grouping to address varying learner abilities and

support understanding of complex concepts. In addition, curriculum and material modifications were applied alongside multimodal resources and relatable content to ensure that lessons were accessible, engaging, and meaningful for diverse learners.

The teachers' experiences further revealed three key dimensions: diversity of classroom experiences, instructional challenges, and professional reflection, highlighting the realities of managing heterogeneous learners in science classrooms. They encountered academic gaps and classroom management difficulties, which required continuous adjustments in pacing, instructional delivery, and learner support. Nevertheless, inclusive practices required a learner-centered approach aimed at improving accessibility, comprehension, and participation in science learning.

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