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# Navigating The Abyss: Challenges, Coping Mechanisms and Insights of Science Teachers in Teaching Science to Non-decoder Junior High School Students

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***Abstract****: This study explored the challenges, coping mechanisms, and insights of Science teachers in teaching non-decoder junior high school students at Alabel National High School, Sarangani Province, Philippines. Employing a qualitative research design, data were gathered through focus group discussions, classroom observations, and thematic analysis. Four (4) major themes emerged and were determined: Difficulty in Comprehension and Engagement, Behavioral and Emotional Challenges in the Classroom, Adapted Teaching Strategies for Non-Decoding Learners, and Differentiated Instruction for Diverse Learning Needs. Guided by Kolb's Experiential Learning Theory, the research identified key challenges, including low comprehension of scientific terms, time-intensive instruction, and behavioral issues among students. Teachers utilized adaptive strategies, such as multisensory teaching, simplified instruction, and collaborative techniques, to address these barriers. Their insights emphasized the importance of inclusive practices and tailored pedagogical approaches to foster engagement and comprehension among non-decoder learners. The findings contributed to the development of context-specific interventions, supporting educational policy enhancements aimed at improving Science education for learners with reading difficulties in the Philippines*

**Keywords:** Challenges, Coping Mechanism, Insights, Non-Decoders

## INTRODUCTION

### Background of the study

The rapid advancements in Science and Technology have significantly influenced educational systems worldwide, emphasizing the need for inclusive and adaptive teaching strategies. In the ASEAN region, Science curricula prioritize student-centered approaches that encourage active engagement through inquiry and experimentation rather than rote memorization (Firman, 2021). Despite curriculum variations, fostering scientific literacy remains a common goal, requiring students to develop observation, inquiry, and critical thinking skills. However, these objectives present substantial challenges for non-decoding learners, who face difficulties in comprehending text-based content, a primary mode of instruction in traditional Science education (Guo, 2020).

In the Philippines, this challenge is particularly concerning, as evidenced by the country's consistently low performance in international assessments like PISA, where Filipino students ranked near the bottom in Math, Reading, and Science in both 2018 and 2022 (Acido, 2024). The absence of improvement highlights the urgent need for targeted interventions to support non-decoding students who struggle to access Science concepts through text-heavy instruction (Alsuwat, 2016; Pelatero, 2023). Consequently, Science teachers face increasing pressure to adopt innovative strategies that cater to these learners, ensuring they can engage with scientific content despite their reading challenges (Pawilen, 2023).

The rising number of non-decoding learners, exacerbated by the COVID-19 pandemic, has further intensified these challenges (Idulog, 2023). While the Department of Education (DepEd) has introduced policies such as Orders No. 51, s. 2010, No. 55, s. 2010, and DepEd Memorandum No. 173, s. 2019, which aim to promote literacy, gaps persist in understanding how Science teachers address these issues. Most existing research focuses on students' perspectives (Reyes, 2023; Aguilar, 2022), underscoring the need for studies that examine teachers' experiences in navigating these challenges.

This qualitative study addresses this gap by exploring the challenges, coping strategies, and insights of Science teachers working with non-decoding junior high school students in Region 12 and Sarangani Province, particularly at Alabel National High School. The findings reveal that Science teachers employ adaptive strategies such as differentiated instruction, visual aids, and contextual learning to support non-decoding learners. Peer-assisted learning models and the integration of real-life examples were also identified as effective strategies for enhancing student engagement and comprehension.

To further support these learners, recommendations include integrating technology-driven tools such as adaptive learning platforms, speech-to-text applications, and augmented reality systems to create personalized learning pathways. Additionally, policy changes such as smaller class sizes, enhanced teacher training, and inclusive resources are suggested to ensure improved learning outcomes. Training programs on differentiated instruction, peer-assisted learning, and multimodal strategies are essential to equip teachers with effective tools for addressing non-decoding students' needs. Moreover, future research should explore the long-term benefits of peer-

assisted learning models and investigate the impact of culturally relevant content in motivating and engaging non-decoding learners in Science education.

## Research Questions

This study aimed to explore the challenges, coping mechanisms, and insights of Science teachers in teaching Science subject to non-decoder students.

Specifically, this study sought answers of the following questions:

1. What is the demographic profile of the participants of this study?
   1.1 Gender
   1.2 Age
   1.3 Position
   1.4 Educational Qualification
   1.5 Years in Service
2. What are the challenges encountered by the Science teachers regarding in teaching Science to non-decoder learners?
3. What are the coping mechanisms employed by the Science Teachers in handling their non-decoding learners?
4. What are the insights of the Science teachers about teaching Science to non- decoders?

### Research Design

### Sample

This study employed a qualitative research design to examine the challenges, coping mechanisms, and insights of Science teachers instructing non-decoding junior high school students. The participants were five Science teachers whose classes included non-decoding learners — students with significant reading difficulties. Selection criteria required participants to have at least one year of Science teaching experience and to currently teach junior high school classes with non-decoding students. All participants were from Alabel National High School, ensuring consistency in institutional context, resources, and support. These criteria ensured a homogenous sample with relevant experience and insights specific to the study's focus.

### Methodology

### Procedures

Following informed consent, the researcher conducted an orientation outlining the study's purpose, participant expectations, and procedures, including audio-recorded face-to-face interviews.

Classroom observations, permitted by participants, were also conducted. In line with *Sikolohiyang Pilipino*, the process began with *pagmamasid-masid* (observation), providing contextual insights. Next, *pakikipagpalagayang-loob* (building mutual trust) involved informing participants about potential risks, benefits, and confidentiality. Participants also set their preferred interview schedules to ensure convenience. To foster rapport, the researcher practiced *pakikisama* (harmonious interaction) during classroom observations, minimizing disruptions to regular discussions.

The interview phase, involving *pagtanung-tanong* (questioning) and *pakikipagkwentuhan* (conversational exchange), allowed participants to express themselves in their preferred language. Responses were translated into English, and follow-up discussions continued until data saturation was reached. Transcriptions underwent thematic analysis, and participants were invited to validate the final transcript and provide signatures for confirmation.

### Data Analysis

The researcher utilized participant descriptions to interpret the data, acknowledging that interpretation is inherent in qualitative research (Geertz, 1973). Observations, conversations, and contextual details were documented, ensuring a holistic understanding of the participants' experiences.

Colaizzi's (1978) method guided the data analysis, following seven structured steps (Speziale & Carpenter, 2007). First, transcripts were thoroughly reviewed to grasp overall content. Significant statements relevant to the study were identified and recorded. Meanings were then formulated from these statements, coded, and categorized to develop themes. An expert researcher reviewed the outcomes for accuracy and coherence. These themes were organized into clusters to construct a comprehensive narrative.

In the reduction phase, redundant or irrelevant data were eliminated to refine the findings. Quirkos software supported the thematic analysis by facilitating data organization, coding, and visualization, enhancing the clarity of emerging themes.

To ensure validity, participants reviewed the final interpretations. The results were anchored to Kolb's Experiential Learning Theory (ELT), which emphasizes learning as a transformative process where experiences are reshaped into knowledge (Kolb & Kolb, 2006).

## Results

### Demographic Profile of the Participants

**Table 1. Respondents' Profile**

| Teacher | Gender | Age | Position | Educational Qualification | Years in service | Subject Taught | Grade Level Taught |
|---|---|---|---|---|---|---|---|
| P1 | Female | 37 | T3 | BsEd-General Science MaEd- Educational management | 11 | Science | 7 |
| P2 | Female | 40 | T1 | Bs Chemical Engineering MaEd- Educational management | 15 | Science | 8 |
| P3 | Female | 35 | T3 | Bs Nursing MaEd- Educational management | 10 | Science | 8 |
| P4 | Female | 48 | MT 1 | BsEd Biology MaEd- Educational management | 26 | Science | 7 |
| P5 | Female | 38 | T1 | Bs Biology | 7 | Science | 7 |

The demographic and educational profiles of the five female Science teachers from Alabel National High School who participated in the focus group discussion (FGD) provide valuable insights into their experiences and perspectives on teaching Science to non-decoding learners. All participants are female, reflecting the gender representation in the teaching profession, particularly within the context of this study. Their ages range from 35 to 48, indicating a mix of early-career and more experienced teachers, which can enrich the discussion by incorporating a variety of perspectives and teaching experiences.

### Challenges encountered by the Science Teachers


**Figure 1. Thematic Diagram of the Challenges encountered by the Science Teachers**

### Theme 1. Difficulty in Comprehension and Engagement

One of the significant challenges that students face in the classroom is difficulty in comprehension and engagement with the learning material. This theme encompasses various cognitive barriers, such as the inability to understand complex concepts, poor retention of information, and a lack of motivation to engage with the lesson.

#### Low comprehension of scientific terms and concepts

Science teachers face significant challenges in instructing non-decoding learners, particularly due to poor comprehension skills. Some students struggle with basic literacy, including phonics and alphabet recognition, hindering their ability to grasp scientific concepts. As a result, teachers must invest additional time simplifying content and building foundational skills before progressing with the curriculum.

The persistent low performance of Filipino students in international assessments such as PISA (OECD, 2022) reflects the impact of these literacy gaps. Weak reading comprehension has been identified as a major factor limiting academic achievement (Abacejo, 2022; Imam, 2014).

This challenge is compounded by systemic issues, including outdated teaching methods and limited curriculum alignment with modern pedagogical practices (Hanushek, 2015; Darling-Hammond, 2017). To address these barriers, integrating literacy development into Science instruction is essential, requiring teachers to adopt flexible strategies that combine content delivery with literacy support.

#### Time-consuming and slow-paced instruction

Teaching Science to non-decoding learners is notably time-intensive, as educators must explain concepts word-by-word, yet some students still struggle to comprehend. This slower pace limits curriculum coverage, often resulting in at least one to two unmet competencies per quarter, totaling approximately eight missed competencies each school year.

The DepEd Grade 7 and 8 Science curriculum requires students to master concepts such as mixtures, ecosystems, motion, and energy transfer within specific timeframes. However, Science teachers report that constant repetition and simplified explanations are necessary for non-decoding learners, making it difficult to meet these learning goals.

Despite concerns about pacing, research highlights the value of prioritizing foundational skills and individualized instruction. While initially time-consuming, this approach fosters long-term academic success (Hughes, 2017). Bloom's (1968) mastery-based learning model supports flexible pacing to ensure comprehensive understanding. Active learning strategies, such as collaborative problem-

solving and hands-on experiments, have also been shown to enhance comprehension and retention (Bonwell & Eison, 1991; Brame, 2016).

Although teaching non-decoding learners demands greater time and effort, focusing on foundational skills and active learning strategies ultimately improves student outcomes, promoting deeper understanding and sustained academic achievement.

**Need for multisensory and simplified instruction**

Science teachers emphasized the effectiveness of multisensory strategies, including visual aids, hands-on activities, and simplified language, in supporting non-decoder learners. Interactive methods, such as video demonstrations and practical exercises, proved more effective than traditional lectures. For instance, students showed greater engagement during microscope activities when allowed to handle and reassemble its parts. Similarly, tracing the digestive system's pathway using models encouraged active participation.

Teachers also employed translation techniques to simplify complex scientific terms, enhancing student comprehension. By translating terms like *"inverted"* to *"nag balit-ad"* and digestive system terms into familiar dialects, educators bridged vocabulary gaps, improving understanding. This highlights the role of contextualization in connecting academic content to students' experiences, fostering deeper engagement and improved assessment performance (Dioneda, 2019; Bello, 2023).

However, while multisensory and contextualized approaches enhance accessibility, critics argue they may limit deeper cognitive engagement by oversimplifying concepts (Kapur, 2016; Korkmaz, 2013). Over-contextualization may hinder the development of abstract reasoning, essential for scientific inquiry (Davidson, 2021; Tapia, 2020).

To maximize learning outcomes, educators must adopt a balanced approach—integrating context and multisensory strategies while preserving conceptual rigor to promote both comprehension and critical thinking.

**Theme 2**: **Behavioral and Emotional Challenges in the Classroom**

Behavioral and emotional challenges, such as inattentiveness, aggression, and defiance, hinder both individual and collective learning while also affecting teacher well-being (Garwood, 2017; Närhi, 2017). Since student engagement and identity within the school environment are crucial to academic success (Korpershoek, 2020), managing these challenges is essential.

**Short attention span and disruptive behavior**

Non-decoder learners are frequently reported to have shorter attention spans, often resulting in disruptive behaviors that challenge classroom management and instructional flow. Teachers describe these students as prone to misbehavior when disengaged or struggling to follow lessons, necessitating additional management efforts. Such disruptions can undermine instructional momentum and contribute to teacher frustration. Research highlights that effective classroom strategies, such as multisensory instruction and inclusive practices, can enhance engagement and minimize behavioral issues (Smith, 2023; Torres, 2024). Misattributing disruptions solely to non-decoder traits risks reinforcing biases, underscoring the need for pedagogical approaches that address diverse learning needs (Dulay, 2020).

**Emotional toll on teachers and frustration management**

Teaching non-decoder learners presents emotional challenges for educators, often leading to frustration and feelings of inadequacy. Teachers highlighted the importance of maintaining patience and adapting instructional methods to meet these students' diverse needs. Emotional regulation is crucial, as visible frustration may alienate students and hinder learning. Strategies such as localized materials, experiential learning, and interactive teaching have been shown to improve engagement and behavior. Research underscores that teachers equipped with strong social-emotional skills and supported by professional development are better able to manage these challenges, ultimately reducing burnout and enhancing job satisfaction (Lozano-Pena, 2021; Bakker & Demerouti, 2017). While emotionally taxing, these challenges also provide opportunities for growth and resilience-building (Reeves, 2017; Lakkala, 2021; Nwoko, 2023).

**Importance of discipline and individualized strategies**

Effective classroom management for non-decoder learners requires a balanced approach that integrates both discipline and individualized strategies. Teachers emphasized the importance of establishing clear classroom rules while also tailoring instructional methods to meet individual student needs. Engaging, hands-on activities were identified as particularly effective in enhancing participation and understanding (Conner, 2016; Nguyen, 2018). However, critics warn that excessive reliance on individualized methods may lead to inconsistent discipline and hinder overall classroom stability (Smith, 2015). Research also suggests that structured environments with clear expectations can significantly reduce behavioral disruptions, even among students with cognitive challenges (Chaplain, 2016).

To achieve optimal outcomes, educators should adopt a hybrid approach that blends personalized strategies with consistent routines. This method not only supports non-decoder learners through engaging activities but also maintains order and predictability, fostering a productive and inclusive learning environment (Perez, 2019).

**The coping mechanisms employed by the Science Teachers in handling Non-Decoder Learners**

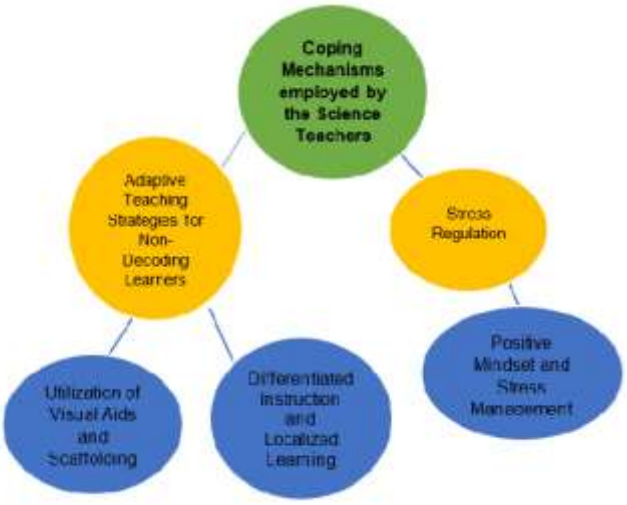


**Figure 2 Thematic Diagrams of the Coping Mechanisms employed by Science Teachers**

**Theme 1. Adaptive Teaching Strategies for Non-Decoding Learners**

Interviews with educators highlight the importance of adaptive teaching strategies in supporting non-decoder learners who struggle with traditional decoding skills essential for reading and comprehension. Effective approaches include visual aids, scaffolding, differentiated instruction, and localized learning, which collectively foster engagement and understanding. Additionally, promoting a positive mindset and implementing stress management techniques help create a supportive environment that empowers non-decoder learners to succeed. These strategies not only improve academic outcomes but also build student confidence and resilience, reinforcing the value of flexible and innovative teaching practices (Zakaria, 2016; Pasira, 2022; Onyishi, 2020).

### Utilization of Visual Aids and Scaffolding

Visual aids and scaffolding techniques play a crucial role in enhancing learning for non-decoder students, particularly by simplifying complex concepts and improving engagement. Visual aids such as diagrams, charts, and videos make abstract ideas more accessible by transforming them into concrete representations (Syofyan, 2018; Matusiak, 2019). For instance, using a water cycle diagram allows students to visualize concepts like evaporation and condensation, reducing reliance on text-based explanations (Newman, 2019). When combined with verbal explanations, visual aids improve retention and comprehension (Sarudin, 2019).

Scaffolding strategies, which involve breaking tasks into smaller, manageable steps, are equally vital. This method helps students build understanding progressively while reducing overwhelm (Bliss, 1996). Explicit modeling, where teachers demonstrate concepts before students attempt them independently, further supports clarity and confidence (Sundho, 2023). Additionally, incorporating students' native languages during instruction fosters inclusivity and improves comprehension by linking new content to familiar concepts (Nishanthi, 2020).

Research highlights that visual aids and multisensory approaches are particularly effective in promoting engagement. For example, studies show that integrating video lessons and interactive tools like Kahoot significantly boosts student participation and learning outcomes (Classroom Observation, April 24, 2024). Visual strategies have also been found to improve reading comprehension for low-proficiency learners (Pan, 2020) and enhance cognitive processing by aiding information retention (Stokes, 2002). In Science education, audio-visual tools have shown notable success in improving understanding and engagement among students in under-served regions (Ho & Intai, 2017).

However, poorly designed visual aids can result in cognitive overload, especially for novice learners, potentially overwhelming them with excessive or complex information (Mayer, 2014). Moreover, overreliance on visual strategies may hinder deeper understanding

in subjects requiring abstract reasoning (Kalyuga, 2016). Therefore, a balanced approach that integrates visual aids with scaffolded instruction, active learning, and problem-solving strategies is essential. By combining these methods thoughtfully, educators can create inclusive learning environments that cater to diverse student needs, maximizing both engagement and academic success (Vestal, 2023; Zhang, 2022).

### Differentiated Instruction and Localized Learning

Differentiated instruction and localized learning are effective strategies for addressing the diverse needs of non-decoding learners. Differentiated instruction involves tailoring content, processes, and assessments to accommodate varying abilities and learning preferences, fostering engagement by allowing students to demonstrate understanding through methods that align with their strengths (Suprayogi, 2017; Pozas, 2020). For instance, providing options such as written reports, oral presentations, or visual projects empowers students, enhancing motivation and participation (Smale, 2019).

Localized learning enhances comprehension by integrating students' real-life contexts into lessons, fostering relevance and meaningful connections to the material (Mam, 2017). Relating content to local issues, landmarks, or cultural practices encourages engagement and supports deeper understanding (Dioneda, 2019). Classroom observations further affirm that these strategies improve engagement and performance, especially when paired with experiential learning opportunities like hands-on activities.

However, these approaches present challenges. Differentiated instruction demands significant planning and may overwhelm educators, particularly those lacking training in adaptive strategies (Tomlinson, 2023). Similarly, excessive reliance on localized content may inadvertently exclude students who do not identify with the contextual references, compromising inclusivity (Makhambetova, 2021). Additionally, while these methods often boost short-term engagement, they may require reinforcement with structured instructional techniques to support deeper cognitive development (Kirschner et al., 2019).

To maximize effectiveness, differentiated and localized strategies should be integrated with evidence-based practices, ensuring balance between engagement, inclusivity, and academic rigor. Adequate teacher training and strategic implementation are crucial for fostering meaningful and sustainable learning outcomes for non-decoding learners.

### Theme 2: Stress Regulation

Effective stress regulation is crucial for Science teachers managing the challenges of instructing non-decoding learners—students who struggle with fundamental reading and comprehension skills. These educators face increased cognitive and emotional demands as they employ adaptive strategies such as differentiated instruction, visual aids, and scaffolding to enhance learning outcomes (Suprayogi, 2017; Pozas, 2020). While these approaches promote engagement and understanding, they require substantial preparation and emotional resilience, amplifying teachers' stress levels.

Unmanaged stress can adversely affect educators' well-being, leading to burnout, diminished instructional quality, and reduced capacity to foster inclusive learning environments (Herman, 2014). Conversely, teachers who adopt effective coping mechanisms, including mindfulness practices, collaborative problem-solving, and strategic resource management, demonstrate improved resilience and job satisfaction (Clipa, 2017).

Given these dynamics, addressing stress regulation is essential for supporting educators in sustaining effective teaching practices while promoting their overall well-being. Integrating structured support systems and professional development in stress management may enhance both teacher efficacy and student outcomes.

### Positive Mindset and Stress Management

Creating a positive classroom environment is essential for supporting non-decoding learners and fostering a growth mindset (Poe, 2021). Establishing a safe, supportive space where students feel encouraged to participate and take academic risks is crucial for building their confidence (Monteiro, 2021). Celebrating small achievements and providing constructive feedback further promotes engagement and resilience (Schwab, 2024). Growth mindset strategies, such as reframing challenges as learning opportunities, empower students to persevere through difficulties (Woods, 2020).

Educators must also prioritize their own well-being to sustain effective teaching practices. Mindfulness techniques, breathing exercises, and collaborative planning are effective strategies that promote teacher resilience and reduce stress (Hepburn, 2021). By modeling these behaviors, educators equip students with valuable coping strategies to manage anxiety and academic challenges (Ugwoke, 2018).

The role of Social and Emotional Learning (SEL) programs is particularly significant in this context. Teachers' social-emotional competence directly influences both student outcomes and classroom dynamics (Schonert, 2017). SEL frameworks not only support student well-being but also help educators manage stress, reduce burnout, and foster positive interactions. Participants in related studies highlighted that nurturing student-teacher relationships and modeling emotional regulation contribute to academic and social growth.

However, excessive focus on emotional comfort may unintentionally reduce cognitive rigor, limiting opportunities for students to engage with challenging content (Kirschner, 2020). Critics argue that overemphasizing individual resilience can obscure systemic challenges, such as resource inequities that disproportionately affect non-decoding learners (Dweck, 2019). Furthermore, teachers often struggle to integrate mindfulness and stress management practices due to workload demands, emphasizing the need for institutional support (Lawlor, 2014).

While promoting growth mindset strategies and stress management remains crucial, these efforts must be balanced with systemic reforms that address structural barriers and provide educators with the resources needed to manage their workload effectively (Dorman, 2015). Creating a collaborative, well-supported teaching environment is key to sustaining teacher well-being and enhancing student success.

**The insights of Science Teachers about teaching Science to Non-decoders**

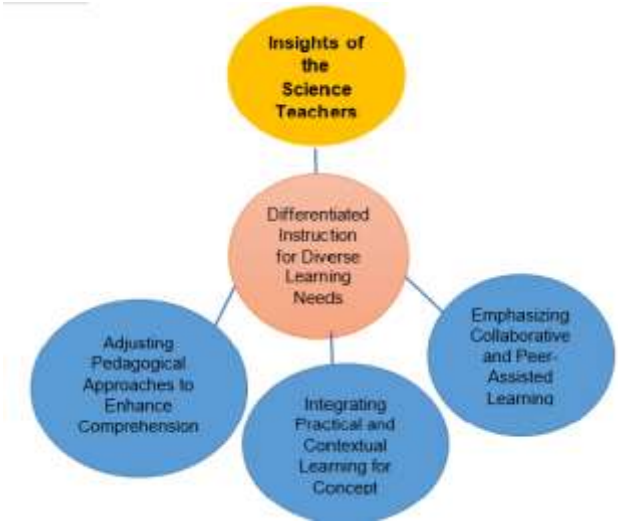


**Figure 3: Diagram of insights of Science Teachers about teaching Science to Non-decoders**

**Theme 1. Differentiated instruction for diverse learning needs**

Differentiated instruction is a vital strategy for addressing the diverse learning needs of students, particularly those struggling with decoding skills (Somantri, 2024). Science teachers recognize that traditional, one-size-fits-all methods often fail to meet the needs of these learners, who experience difficulty processing written information (Bondie, 2019). Consequently, educators adopt flexible teaching approaches that accommodate varied learning styles and abilities (Valiandes, 2018).

For non-decoding learners, differentiated instruction involves designing alternative pathways to grasp scientific concepts. Visual aids, hands-on activities, collaborative learning, and real-world examples serve as effective strategies for making content accessible (Silva, 2021). By reducing reliance on text-heavy instruction, Science teachers enable students to engage with material through observation, experimentation, and practical application—methods that align with their cognitive strengths (Şentürk, 2018).

This approach is particularly critical in Science education, where abstract concepts and technical language can be challenging for students with reading difficulties (Hidayah, 2023). By integrating visual strategies, interactive experiments, and contextualized learning experiences, teachers provide multiple entry points into the curriculum, enhancing accessibility and comprehension (Al-Shehri, 2023). Ultimately, differentiated instruction empowers non-decoding learners to participate actively in scientific inquiry, fostering deeper understanding and academic success.

### Adjusting Pedagogical Approaches to Enhance Comprehension

Science teachers recognize the challenges non-decoding learners face when engaging with traditional, text-heavy instruction. Consequently, educators frequently adjust their teaching methods to enhance accessibility and ensure comprehension (Li, 2021). These adjustments often include incorporating visual aids, hands-on activities, and experiential learning techniques, which provide alternative pathways for students who struggle with decoding and reading comprehension (Swancutt, 2020; Syofyan, 2018).

Visual tools such as diagrams, charts, models, and videos effectively convey complex scientific ideas by reducing reliance on text. For example, one teacher observed that students performed better when exposed to tangible learning experiences, such as recognizing

a funnel in the laboratory by relating it to household tools like a coconut shell with bamboo. Such approaches enable students to connect new information to familiar concepts, reinforcing comprehension. Classroom observations further revealed that students successfully linked prior lessons on the microscope to new content on plant and animal cells, demonstrating the effectiveness of visual and hands-on strategies (Observation sequence, April 23, 2024).

While these alternative pedagogical methods improve engagement and accessibility, challenges remain. Over-reliance on visual and practical techniques may hinder the development of essential reading and decoding skills, critical for long-term academic success (Mishra, 2019). Moreover, implementing these strategies often demands greater preparation time, resources, and teacher training, potentially creating inequities in classrooms with limited access to such support (Hart, 2021). Balancing individualized strategies for non-decoders with the broader needs of the class can also strain educators, impacting instructional consistency (Rodriguez & Cho, 2020).

To maximize the effectiveness of differentiated approaches, Science teachers should integrate visual and experiential methods with efforts to enhance literacy skills. Additionally, addressing resource gaps and providing adequate professional development can ensure these strategies are implemented equitably, fostering an inclusive yet academically rigorous learning environment.

### Emphasizing collaborative and peer assisted learning

Science teachers increasingly adopt collaborative learning strategies to support non-decoding learners by leveraging peer interactions to enhance comprehension and engagement (O'Donnell, 2013). Non-decoding students often struggle with tasks requiring extensive reading or interpretation of scientific text, yet when paired with proficient readers, they benefit from verbal explanations and simplified instructions (Nkechinyere, 2018). This peer-assisted learning approach not only helps non-decoders grasp scientific concepts but also improves their confidence and participation in classroom discussions (Järvenoja, 2020).

Observations from Grade 8 classes revealed that non-decoders integrated into groups with proficient readers showed improved engagement and comprehension (Observation sequence, April 24, 2024). Science teachers report that group work allows stronger readers to rephrase instructions, clarify concepts, and simplify information. One teacher noted, *"In group experiments, I pair non-decoders with students who excel in reading. The non-decoders benefit from hearing instructions explained in simpler terms, while they contribute during the practical tasks. It's a win-win because both students feel valued."* This approach not only facilitates content understanding but also nurtures communication and teamwork skills, creating a positive and inclusive learning environment.

Collaborative learning offers reciprocal benefits; non-decoders receive additional support, while proficient peers develop empathy, leadership, and improved communication skills (Parveen, 2017). Studies confirm that discussing scientific ideas in small groups helps non-decoders internalize content more effectively by bypassing the heavy reliance on text-based materials (Gillies, 2016).

However, challenges arise when non-decoders become overly dependent on their peers, potentially hindering their independent learning progress (Gillies, 2016). Additionally, group dynamics may disadvantage non-decoders if peers lack the patience or skills to provide meaningful support. Effective implementation demands structured group composition, explicit training in collaborative strategies, and consistent teacher oversight (Kaymak, 2021). Without these safeguards, collaboration may risk marginalizing struggling learners or limiting their cognitive growth.

In conclusion, while collaborative learning effectively enhances non-decoders' engagement and comprehension in Science education, it should be integrated alongside targeted interventions that build independent learning skills. By balancing group-based strategies with individualized support, educators can foster a dynamic, inclusive classroom environment that empowers all learners to succeed.

### Integrating Practical and Contextual Learning for Concept Retention

Contextual learning effectively enhances the comprehension of scientific concepts among non-decoding learners by connecting lessons to real-life scenarios (Nasreen, 2018). Non-decoders, who struggle with text-heavy content, benefit significantly when abstract concepts are presented through familiar experiences (Coronado, 2018). For instance, replacing textbook examples like a "snowman" with a culturally relevant scarecrow ("tao tao sa humayan") increased engagement and understanding (Pratama, 2019).

Practical demonstrations further support this approach. For example, illustrating heat transfer by having students observe a spoon heating over a candle allowed learners to visualize complex processes, improving retention. Research highlights that contextual learning enhances engagement and knowledge retention by aligning content with students' lived experiences (Satriani et al., 2012; Hasanah, 2024).

While effective, contextual learning requires increased preparation time, sufficient resources, and careful balancing to maintain academic rigor (Mahendra, 2016). Nevertheless, by combining contextual learning with visual aids, hands-on activities, and collaborative strategies, educators can significantly improve Science learning outcomes for non-decoding learners.

**Implications**

1. **Teacher Demographics and Experience:** Science teachers possess diverse qualifications and teaching backgrounds, combining experienced and entry-level educators. This diversity offers valuable insights into the instructional strategies and challenges faced in teaching non-decoding learners.
2. **Instructional Challenges:** Teachers identified low scientific comprehension among non-decoders, compounded by time constraints, behavioral concerns, and the need for multisensory instruction. Addressing these issues requires interventions that balance content delivery with emotional support.
3. **Adaptive Strategies:** Science teachers employ visual aids, scaffolding, and differentiated instruction to address learning gaps. Localized content integration and stress management strategies demonstrate resilience, though systemic support remains crucial.
4. **Effective Approaches:** Differentiated instruction, peer-assisted learning, and contextual teaching effectively enhance comprehension and engagement for non-decoding learners. These strategies highlight the importance of flexible, student-centered methods in improving Science education outcomes.

**Recommendations**

To improve outcomes for non-decoding learners, the Department of Education (DepEd) is encouraged to adopt technology-driven tools such as adaptive learning platforms, speech-to-text applications, and AR systems while considering policy changes like smaller class sizes and enhanced teacher training. Education Program Supervisors should equip teachers with training in differentiated instruction, multimodal teaching strategies, and peer-assisted learning programs to foster engagement and comprehension. School Heads are advised to allocate additional instructional time, provide counseling support, and invest in visual aids and multisensory tools to enhance learning. Teachers are encouraged to dedicate extra time to non-decoding learners through slower-paced teaching, remedial sessions, and visual aids while seeking counseling support to manage diverse classroom needs. Lastly, future researchers are recommended to explore the long-term benefits of peer-assisted learning and investigate the impact of culturally relevant content on the motivation and retention of non-decoding learners.

**Referances**

Abed, O. & Abu-Ali, M. (2022). Attitudes of Fourth and Eighth Grade Jordanian Students toward Science:A Cross-Sectional Study. Multicultural Education Volume 8, Issue 9, page 54-63. DOI:10.5281/zenodo.7117638.

Abdulwahid, A. A (2023). Challenges of Implementing Experiential Learning According to Kolb's Model from The Perspective of Biology Teachers. *International Journal of Studies in Advanced Education*, 2(6), ISSN(E): 2949-8945

Abdussemiu, A. (2022). Problems of teaching practical biology in senior secondary schools. *ASEAN Journal of Science and Engineering Education*, *2*(3), 199-206. https://doi.org/10.17509/ajsee.v2i3.44721

Abril, J. G., Acerbo, C. T., & Abocejo, F. T. (2022). The Philippine informal reading inventory (Phil-IRI) program: A critical analysis. *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal*, *5*(4), 432-441. DOI: https://doi.org/10.33258/birle.v5i4.7270

Acido, J. V., & Caballes, D. G. (2024). Assessing educational progress: A comparative analysis of PISA results (2018 vs. 2022) and HDI Correlation in the Philippines. DOI: https://doi.org/10.30574/wjarr.2024.21.1.0020

Awopetu, A. V. (2016). Impact of mother tongue on children's learning abilities in early childhood classroom. *Procedia-Social and Behavioral Sciences*, *233*, 58-63.

Baines, L. (2008). *A Teacher's guide to multisensory learning: Improving literacy by engaging the senses*. ASCD.

Beale, J. (2021). *Building Academic Resilience in Secondary School Students: A Research Review and Case Study*

Bear, G. G. (2020). *Improving school climate: Practical strategies to reduce behavior problems and promote social and emotional learning*. Routledge.

Beh, L. S., & Loo, L. H. (2012). Job stress and coping mechanisms among nursing staff in public health services. *International Journal of Academic Research in Business and Social Sciences*, *2*(7), 131. ISSN: 2222-6990

Bello, J., Concon, L., Polache, M. C. C., Ayaton, M. J., Manlicayan, R., Campomanes, J., & Saro, J. (2023). Contextualized and localized Science teaching and learning materials and its characteristics to improve Students' learning performance. *Psychology and Education: A Multidisciplinary Journal*, *7*(1), 77-84.

Bellová, R., Balážová, M., & Tomčík, P. (2023). Are attitudes towards Science and technology related to critical areas in Science education? *Research in Science & Technological Education*, *41*(3), 1117-1132. https://doi.org/10.1080/02635143.2021.1991298

Cano, J. S., Olvis, P. R., Disca, B. Y., & Docena, A. F. (2022). Simulation-Based Instructional Materials on Central Dogma of Molecular Biology: Basis in Studying Genetics for Grade 12 Learners. *International Journal of Technology in Education*, *5*(2), 249-268. DOI: https://doi.org/10.46328/ijte.219

Caraig, R., & Quimbo, M. A. (2022). Assessing reading comprehension difficulties in core Science subjects of senior high school students in a private school in Calamba City, Philippines: Assessing reading comprehension difficulties. *International Journal of Curriculum and Instruction*, *14*(3), 1983-2010.

Chowdhury, K. (2020). Attitude towards Science and technology in relation to learning interest and life experience. Sambodhi Journal ISSN: 2249-6661 (UGC Care Journal) Vol-43, No.-3, July to September (2020)

Clores, L. J., & España, R. C. N. (2023). Assessment of Teachers' Instructional Practices: Towards Proposing an Innovative Instructional Model for Teaching-Learning Material in Chemistry. *Journal of Practical Studies in Education*, *4*(4), 1-19. https://doi.org/10.46809/jpse.v4i4.69

Creswell, J. W., & Creswell, J. D. (2017). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage publications.

Congress of the Philippines. (2013). *Republic Act No. 10533 - Enhanced Basic Education Act of 2013*. Retrieved from https://lawphil.net/statutes/repacts/ra2013/ra_10533_2013.html

DeVito, M. (2016). Factors Influencing Student Engagement (Unpublished Certificate of Advanced Study Thesis). *Sacred Heart University, Fairfield, CT*

Dioneda Jr, I. P. (2019). Localization and contextualization in teaching Biology for grade 7 students of Paliparan National High School for school year 2018–2019. *IOER International Multidisciplinary Research Journal*, *1*(3).

Dorman, E. (2015). BUILDING TEACHERS'SOCIAL-EMOTIONAL COMPETENCE THROUGH MINDFULNESS PRACTICES. *Curriculum & Teaching Dialogue*, *17*.

Dulay, L (2020) Classroom Behavior and Academic Performance of Public Elementary School Pupils. IJRP 2020, 56(1), 45-78; doi:.10.47119/IJRP100561720201297

Lonzon, M. D. O., & Espiritu, R. D. (2024). Phenomenological Behavioural Problems Manifested by High School Students Enrolled in Subic National High School. *International Journal of Multidisciplinary: Applied Business and Education Research*, *5*(8), 3411-3421.

Loseñara, J. M., & Jugar, R. R. (2023). Technological, pedagogical, and content knowledge of diploma in professional education graduates teaching biology. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, *9*(1), 1-14. DOI: https://doi.org/10.22219/jpbi.v9i1.24070

Lozano-Pena, G., Saez-Delgado, F., Lopez-Angulo, Y., & Mella-Norambuena, J. (2021). Teachers' social–emotional competence: History, concept, models, instruments, and recommendations for educational quality. *Sustainability*, *13*(21), 12142.

Machika, A. K., Yususf, D. S. D., & Suleiman, D. F. B. (2024). Impact Of Improvised Instructional Materials On Academic Performance Among Secondary Schools Students Of Chemistry In Katsina State Nigeria. *Journal Of Educational Studies Trends and Practice*. Vol. 5, No.8, E-ISSN 3027-1630 P-ISSN 3026-8907

Serry, T., Snow, P., Hammond, L., McLean, E., & McCormack, J. (2022). Educators' perspectives about teaching and supporting students with learning difficulties in reading. *Australian Journal of Education*, *66*(3), 292-313.

Siddique, M., Hassan, K. H. U., & Akmal, F. (2023). The Role of Resilience for Developing the Self-Efficacy Among Chemistry Students in Pakistan. http://dx.doi.org/10.21015/vtess.v11i1.1401

Singua, C., & Saldana, J. B. (2023). Bridging Learning Opportunity Gaps (BLOG) Project: A Pandemic Remedial Intervention in Junior High School Science. *American Journal of Education and Technology*, *2*(2), 42-52. https://doi.org/10.54536/ajet.v2i2.1555

Siphukhanyo, L., & Olawale, B. E. (2024). Chronicling the experiences of life Sciences teachers and learners on the usage of enquiry-based learning in enhancing learners' academic performance. *Journal of Culture and Values in Education*, *7*(1), 19-36. https://doi.org/10.46303/jcve.2024.2

Villarino, R. T., & Villarino, M. L. (2023). Academic Performance of Rural Junior High School Students in Biology: Basis for Learning Activities Development. *Eurasian Journal of Teacher Education*, *4*(1), 1-10.

Walag, A. M. P., Fajardo, M. T. M., Bacarrisas, P. G., & Guimary, F. M. (2022). A Canonical Correlation Analysis of Filipino Science Teachers' Scientific Literacy and Science Teaching Efficacy. *International Journal of Instruction*, *15*(3), 249-266. https://doi.org/10.29333/iji.2022.15314a

Wan, Y., Yao, R., Li, Q., & Bi, H. (2023). Views of Chinese middle school chemistry teachers on critical thinking. *Chemistry Education Research and Practice*, *24*(1), 161-175. DOI: 10.1039/D2RP00237J

Wong, J. T., Bui, N. N., Fields, D. T., & Hughes, B. S. (2023). A learning experience design approach to online professional development for teaching Science through the arts: Evaluation of teacher content knowledge, self-efficacy and STEAM perceptions. *Journal of Science Teacher Education*, *34*(6), 593-623. https://doi.org/10.1080/1046560X.2022.2112552

Woods, D. M. (2020). Using Goal Setting Assignments to Promote a Growth Mindset in IT Students. *Information Systems Education Journal*, *18*(4), 4-11

Wu, L., Valcke, M., & Van Keer, H. (2019). Factors associated with reading comprehension of secondary school students. *Educational Sciences: ppTheory and Practice*, *19*(4), 34-47.

Yacat, J. (2013). Filipino psychology (sikolohiyang Pilipino). *The encyclopedia of cross-cultural psychology*, *2*, 551-556. https://doi.org/10.1002/9781118339893.wbeccp224

Yardley, S., Teunissen, P. W., & Dornan, T. (2012). Experiential learning: AMEE guide No. 63. *Medical teacher*, *34*(2), e102-e115.

Yildiz, K. (2022). Experiential learning from the perspective of outdoor education leaders. *Journal of Hospitality, Leisure, Sport & Tourism Education*, *30*, 100343. https://doi.org/10.1016/j.jhlste.2021.10034

Zakaria, Z., Care, E., & Griffin, P. (2016). Scaffolding Instruction Where It Matters: Teachers' Shift from Deficit Approach to Developmental Model of Learning. *Journal of Education and Practice*, *7*(23), 144-152.

Zhang, L., Kirschner, P. A., Cobern, W. W., & Sweller, J. (2022). There is an evidence crisis in Science educational policy. *Educational Psychology Review*, *34*(2), 1157-1176.