



THE LIVED EXPERIENCES OF SCIENCE EDUCATORS HANDLING LEARNERS WITH SPECIAL EDUCATIONAL NEEDS

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ABSTRACT

This study explored the lived experiences of untrained science teachers handling learners with special educational needs (SNED) in inclusive science classrooms. Using a qualitative phenomenological design, data were gathered through in-depth, semi-structured interviews and analyzed using thematic analysis. Findings revealed that teachers faced difficulties due to lack of formal training, limited instructional materials, time constraints, diverse learner needs, classroom management issues, and lesson adaptation challenges. Despite these, they used differentiated instruction, simplified materials, peer-assisted learning, flexible strategies, self-directed learning, collaboration, patience, and practical classroom adjustments. The study concludes that untrained science teachers remain committed to inclusive science teaching, but their efforts are limited by insufficient institutional and policy support. It recommends strengthening teacher training, providing inclusive instructional resources, improving access to SNED specialists, and reinforcing school-based support systems. Aligned with SDG 4: Quality Education, the study highlights the need for inclusive, equitable, and meaningful science learning opportunities for learners with special educational needs.

Keywords: *Inclusive Education, Science Teaching, Special Educational Needs, Phenomenology, Teacher Experiences*

INTRODUCTION

Science education serves an important role in helping learners understand the world, think critically, and solve everyday problems in a world that is continuously changed by science and technology. Despite of this, meaningful access to science learning remains limited, even in inclusive classrooms for students with special needs.

Many science lessons are primarily designed for normally developing learners and rely more on abstract concepts, technical language, and laboratory activities that may not be accessible to all students. These leads those learners with special needs to often struggle in fully engaging in class and they can't benefit from instruction without adequate support and adaptation.

Inclusive education is a reform which intends to educate all students in general classrooms, regardless of their different characteristics or special educational needs (Donath et al., 2023). However, inclusive education is still far from being realized for many learners with disabilities. According to UNESCO's Global Education Monitoring (GEM) Report (2020), the world still struggles to live up to the idea that "all means all." Many countries still lack strong laws, clear policies, or enough resources to support every learner. This holds true when crises, such as the COVID-19 pandemic hit, underprivileged students and those with special needs suffered the most. In addition, UNESCO's Global Report on Teachers highlights a global shortage of educators to teach inclusively. Many of educators do not have enough training, support, or incentives to inclusively teach. This is especially seen in subjects such as science, where the curriculum and hands-on learning is even more complex to teach inclusively.

Moreover, this gap typically starts from structural concerns such as inadequate teacher preparation and a shortage of research into effective instructional strategies specially designed for this population (Boyle and Anderson, 2020). According to Jaffal (2022), inclusive education needs ordinary teachers, who mostly do not major in Special Needs Education, to be prepared to accommodate students with special needs in their classrooms. However, this would cause serious issues to occur because teachers do not have enough specialized training and support which makes it difficult for many science teachers to successfully implement inclusive practices (Jaffal, 2022; Byrd & Alexander, 2020; LeDoux et al., 2012).

In the Philippines, the "Inclusive Education as Strategy for Increasing Participation Rate of Children" or the DepEd Order 72, s. 2009, is the fundamental policy in implementing inclusive education for students with special needs. It requires regular schools to accept children with special needs through three basic integration pathways: inclusion in regular classes, resource-room pull-outs, or special-education classes. Inclusive education's implementation is highly important at that time as emphasized in the Order itself that at the time it was enacted only about 2% of the roughly 2.2 million Filipino students with special needs is being accommodated by special education programs.

Despite the urgency, recent data cited by EDCOM 2, shows that a majority of the enrolled learners with special needs are being mainstreamed into regular classes, often with teachers who lack specialized training. Also, many of the students with special needs have no formal medical diagnosis, and with minimal resource support only indicates that inclusive education is becoming more of a statistics than a support program. In addition to the existing challenges of teacher training, there is also the immediate need and recognition for continued development and research in science and technology education to support teachers in inclusive settings (Leonardo & Cha, 2021).

In the local setting, while there have been many studies of inclusive education and teachers' competencies in relation to learners with special needs, however there was still a big gap remains as the researcher conducted the study in Santa Cruz National High School specifically in the understanding about why untrained science teachers did not fulfil professional performance standard. In the chosen school, it is among the schools in the Davao del Sur Division that have had limited opportunities for training in Special Needs Education (SNED). Consequently, science teachers were untrained to teach students with disabilities.

This was when the researcher at the conduct of the study revealed the data coming from the planning officer of the school that untrained science teachers were below-ratings in the performance standard of science teachers in the Classroom Observation Tool (COT) specifically (COT 4–7) an indicator that manifest teachers' poor skills in handling learners diverse in terms of communication strategies, collaborative learning, and teaching strategies that are responsive to learners with disability. Classroom Observation Tool or COT's are valid proof of the performance of teachers in class room setting. This has been observed by Master Teachers and duly approved by the School Principal. Further, the existing literature tends to focus on successful examples of inclusion practice, level of teacher preparation in general or implementation of the policy at large. However, there was limited phenomenological research that tends to detail the personal struggles, meanings and experiences of teachers who were not yet ready and adequately prepared for inclusive classrooms.

This research was anchored on the theory of Social Constructivist (Vygotsky, 1978) as it deals with how teaching students with special needs often requires scaffolding, collaboration, and differentiated instruction, which untrained teachers may struggle to provide. Vygotsky's theory emphasizes that learning is an act that requires social interaction and directed experience, as such when there is lack of training in these areas it poses significant challenges. The role of "mediating artifacts" such as tools and signs (including language) is highlighted in this theory as an aid in shaping mental and cultural development (Hockham & Wallis, 2023). This theoretical lens suggests that the development and application of specialized educational tools and communication approaches designed to fit varied learning needs can significantly influence inclusive educational practices.

In the context of the study, this theory was highly relevant because it highlighted social interaction, collaboration, and guided support as elements through which learning occurs, factors that are also essential to effective inclusive teaching.

In the context of untrained science teachers handling students with special needs, this theory provides a lens to understand how the absence of formal training can limit teachers' ability to apply social constructivist strategies such as scaffolding, differentiated instruction, and peer collaboration.

Research Question

This study was guided by the following research questions to understand the practices and challenges experienced by untrained science teachers in teaching students with special needs:

What are the lived experiences do untrained science teachers face in handling students with special needs in inclusive classrooms?

METHODOLOGY

Research Locale

This study was carried out by a lone school in Santa Cruz South District Division of Davao del Sur which was established to cater open education to all students who want to pursue study irrespective of socioeconomic status. It offers basic education in varied programs such as General Section (Gen.Sec), Science Technology and Engineering (STE), Special Program in the Arts (SPA) and Foreign Language (FL). Further, year level is expanded to Grade seven (7) to Grade ten (10).

Moreover, the school was located in Ciriaco Godoy Street, Poblacion, Zone III, Santa Cruz Davao del Sur. The area was in vicinity of the former Municipal Hall, Municipal Training Center and Former Municipal Plaza and later convert into classrooms. Also, the said institution was near the coastal area.

In addition, the school was selected because it is among the schools in the Davao del Sur Division that have no recent records of training for science teachers related to Special Needs Education (SNED). Consequently, science teachers in this school remained untrained and inadequately prepared to teach students with disabilities.

Design and Sampling Methods

The study utilized Qualitative method utilizing Phenomenological Design. Phenomenological research design is a qualitative research strategy focused on deeply exploring and understanding lived experiences of individuals regarding a particular phenomenon or event (Daruhadi, 2024; Oluka,2025). This approach utilized inductive, qualitative techniques such as participant discussions, in-depth observations, and interviews to gather rich, first-hand accounts of these experiences. Also, the core aim was to describe how humans perceive phenomena in given circumstances and to uncover the meanings people attach to their life events and situations (Tiwari et al., 2025).

The design was appropriate for this study since the researcher gathered observations through in- depth interview (IDI) to the following teachers on their lived experiences pertaining to their adversities in teaching class room set up with students'

disability. Further, teachers involved were also asked on their practices in handling these students even if they don't have intensive trainings as well.

This study employed a purposive sampling technique. Purposive sampling technique is a non-probability sampling method in which selects participants based on specific characteristics or qualities that are relevant to the research purpose (Etikan et al., 2016). Further, purposive sampling, particularly in Phenomenological studies, is suitable for qualitative research because it allows the researcher to intentionally select individuals who possess firsthand experience and substantial knowledge about the phenomenon under investigation.

In this study, the respondents were the untrained science teachers handling students with special needs from Santa Cruz South District. The inclusion criteria in which the participants' selection were based on (a) three (3) years science subject teaching experience, (b) no exposure to SNED trainings (c) directly involved in teaching students with special needs, and (d) willingness to participate and share their experiences. These criteria ensured that each participant could meaningfully contribute to understanding the unique and common lived experiences.

In addition, participation is limited to a small and specific group of respondents excluding other subject teachers, school administrators, and students. Thus, the findings of this study were context-bound and not intended to generalize all schools. However, the insights generated may be used as reference to enhance inclusive science instruction and support teachers who encounter similar classroom circumstances.

A total of eight (8) respondents were selected from one of the schools in Santa Cruz South District, located in Ciriaco Gudoy Street, Poblacion, Zone III, Santa Cruz Davao del Sur. These participants were consisting of teachers currently teaching in Grades 7-10 in Junior High School. The selection of this specific school was based on its unique features, diverse student body, a high number of special needs students. The number of respondents was determined using the principle of data saturation, a widely recognized qualitative research methodology. In his literature on qualitative inquiry, John W. Creswell defines data saturation as a data adequacy point where no new information can be obtained from participants (Sarfo et al., 2021). This state occurs when the researcher determines that further data collection and analysis will not yield new themes, insights, or patterns (Ahmed, 2024).

Data Gathering Procedure

The researcher rest assured that before the conduct of the study permission to conduct a study was secured. First, the research secure letter from the Institute of Graduate School of DSSC. Once approved the researcher sends a letter to the Division office of Schools Division of Davao del Sur Research Ethics focal person. As soon as the letter was granted, the researcher furnished copies from the respective school where it was conducted. Also, an informed consent letter was given to the target participants for them to be notified on what they were going to do during the interview and asked

permission if they willingly participate in the said conduct. An In-depth Semi-Structured Interviews was administered to the selected teachers as it explores teachers' lived experiences, challenges, practices and perception of policy implementation. The interview was administered face-to-face and each last only 45 minutes. With the permission of the participants, their responses were recorded and transcribed verbatim.

Instruments

The main tool used in this study was a structured in-depth interview (IDI) guide developed by the researcher to gather in-depth insights from untrained science teachers who handle students with special needs in inclusive classrooms within the Santa Cruz South District. The instrument aimed to understand their experiences, challenges, coping strategies, and ideas that could help improve inclusivity in education.

Data Analysis

The researcher used a phenomenological data analysis approach. This method focuses on understanding the lived experiences and meanings shared by the participants. Analysis started with repeated, in-depth readings of each participant's narrative to get a clear sense of their experiences. Next is horizontalization, where the researcher treats each statement as equally important. This step helped identify significant statements that show how participants experience the phenomenon.

Phenomenological analysis is a well-known qualitative method that aims to capture the essence of human experiences by breaking down individual accounts into themes that reflect shared meanings and perspectives (Moustakas, 1994; Creswell & Poth, 2018), through a systematic process of coding, clustering significant statements, and forming meaning units, the researcher builds a detailed description that remains true to the participants' voices.

Scope and Limitation

This study explored how science teachers handle students with special needs in only one secondary school within the Santa Cruz South District using a qualitative phenomenology design. The said school was chosen because it was one of the many schools in Davao del Sur Division who happened to be no recently record of training for science teachers pertaining to SNED. Hence, Science teachers were untrained and unprepared in teaching students with disability.

Further, eight (8) science teachers were purposively selected based on specific criteria to ensure they could provide meaningful insights. Each participant had at least three (3) years of experience teaching Science in junior high school and had direct involvement in handling students with special needs in inclusive classrooms. Besides, science teachers were no longer exposed to trainings nor not given the chance to trainings related to SNED resulting to unprepared and unequipped in handling with students with disability in an inclusive classroom environment.

On the other hand, the study mainly concentrated on the teacher's lived experiences instructional practices, challenges, and coping strategies in teaching students with special needs. It did not include other subject teachers, school administrators, or the students themselves. Since the study involved a small and specific group of participants, the findings were limited to their particular context and were not meant to represent all schools. However, the insights gathered can still serve as a valuable reference for improving inclusive science teaching and supporting teachers who faced similar classroom situations. Their willingness to participate and openness to share their experiences were also considered. In addition, the selection process was done in coordination with school heads and special education coordinators to identify teachers who met these qualifications. This careful approach ensured that the participants could genuinely represent the realities and challenges of inclusive teaching in science.

To ensure the systematic administration of the study, the researcher prepared a timeline for its implementation. The entire timeline of the study was conducted from September 2025 to April 2026, which falls finishing the paper within the second semester of the school year.

RESULTS AND DISCUSSION

Using thematic analysis, themes and subthemes were developed to represent the realities of untrained science teachers as they navigated inclusive classrooms. These themes reflected their lived experiences, instructional practices, challenges, coping strategies, and policy recommendations for improving inclusive science education for learners with special educational needs.

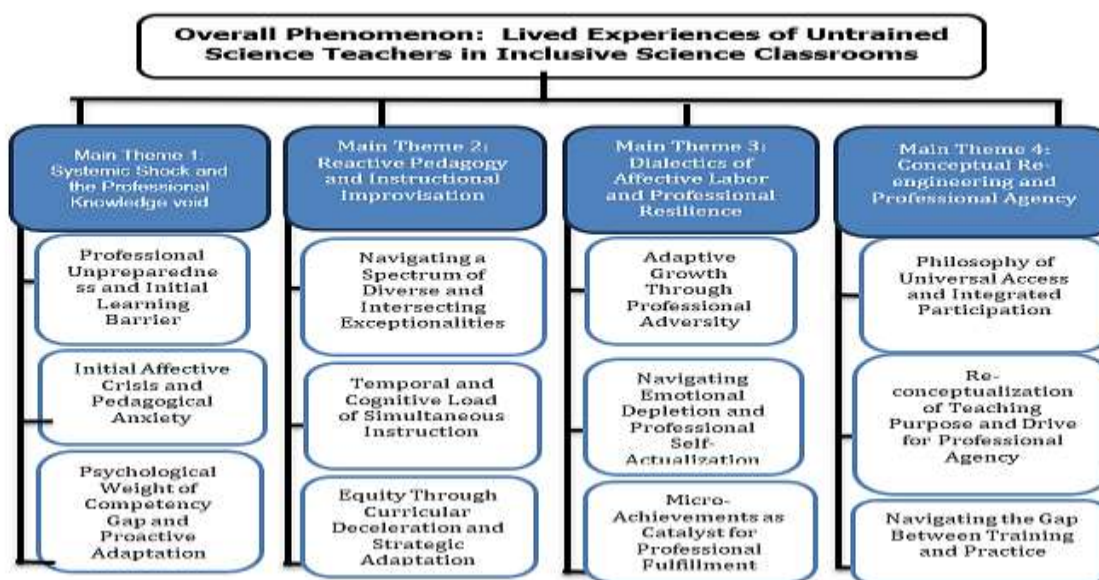


Figure1. Overall Thematic Structure of the Lived Experiences of Untrained Science Teachers in Inclusive Classrooms.

Main Theme 1: Systemic Shock and the Professional Knowledge Void

One of the central themes that emerged in the study was the experience of systemic shock and professional knowledge void among untrained science teachers handling learners with special educational needs in inclusive classrooms. The participants revealed that they were often placed in situations where they had to teach learners with diverse needs without enough preparation, training, or clear guidance. This is grounded in the study of Kryukova et al (2023) that Science teachers frequently report having "little or no background" in special education, which acts as a primary barrier to effectively accommodating students with disabilities in science classrooms. This deficiency often leads to a "reality shock" for educators, where their perceived preparedness to teach inclusive content significantly diminishes upon encountering the complexities of an actual classroom setting (Whitaker, 2017).

This was reflected in the experience of one participant:

"It is very difficult at first because I had no formal training, so I got used to it through observation, experience, and constant adjustment of my teaching strategies. Over time, I learned to be more patient and flexible in order to meet the needs of all learners." ID14

This response shows that the teacher experienced inclusive teaching as difficult at the beginning because there was no formal preparation. Instead of entering the classroom with clear strategies, the teacher had to learn through observation, experience, and constant adjustment. This suggests that the teacher's learning happened while already facing the actual demands of inclusive instruction. Although this experience eventually helped the teacher develop patience and flexibility, it also reveals that the process began with uncertainty and professional unpreparedness.

Similarly, participant (ID18) reflects her experiences by saying:

"I am a science major but I do not have units or training in SNED, so I was really shocked at first because the needs of the students are different. I've been teaching for almost 8 years, and I have been handling SNED learners for about 4 to 5 years, so I was able to adjust over time." (ID18)

The participant's statement shows that being trained in science did not fully prepare the teacher to handle learners with special educational needs. The lack of SNED training caused shock and difficulty at first because the learners had different needs. Over time, however, the teacher gradually adjusted through experience. This suggests that while classroom exposure helps teachers adapt, proper training, mentoring, and support are still needed to prepare science teachers for inclusive education.

The findings imply that untrained science teachers need stronger preparation before they are assigned to inclusive science classrooms. Since the participants experienced shock, uncertainty, and difficulty due to the absence of formal training, schools should ensure that teachers are oriented on the needs, behaviors, and learning characteristics of learners with special educational needs. This preparation may help reduce confusion and increase teachers' confidence in handling inclusive classroom situations.

Sub Theme 1: Professional unpreparedness and initial learning barrier

Teachers shared that teaching learners with special educational needs in inclusive science classrooms was difficult at first. Many felt unprepared because they had no formal training or background in special education. Because of this, they struggled to manage classroom situations, adjust their teaching strategies, and give the right support to learners with different needs.

Participant (IDI4) highlight initial challenges in managing classes with diverse needs, as shown below:

"It was very difficult at first because I had no formal training, so I got used to it through observation, experience, and constant adjustment of my teaching strategies. Over time, I learned to be more patient and flexible in order to meet the needs of all learners".
(IDI4)

Building on this, recent research from Lemos et al (2019) Many science teachers do not feel "empowered" to handle students with special educational needs, regardless of the specific type of disability, due to a fundamental lack of preparation in their initial training programs. Untrained Science Teacher (IDI8) reflected on her experiences:

"My experience as an untrained science teacher, it was really difficult at first because I did not have formal training or background in special education. I am a science major but I do not have units or training in SNED, so I was really shocked at first because the needs of the students are different". IDI8

These experiences were also echoed by participant (IDI6), who emphasized the absence of formal training:

"First is the difficulty of handling those SPED learners because we are indifferent with their needs and behaviours. So, it is very difficult because I do not have formal training. And so you really need to have a lot of patience". IDI6

The participants shared that their first experience in teaching learners with special educational needs was filled with uncertainty and difficulty. For untrained science

teachers, the challenge was not only about teaching science, but also about entering an inclusive classroom without enough preparation in special education. As IDI4 shared, it was “very difficult at first” because there was no formal training, and the teacher had to learn through “observation, experience, and constant adjustment.” This shows that teachers had to figure out the right strategies while already doing their teaching duties. Although their lack of preparation became a major challenge at first, it also helped them become more observant, patient, and flexible in supporting their learners.

Similarly, IDI8 shared that the experience was difficult because, although the teacher was trained in science, there was no formal background or training in special education. The statement, “I was really shocked at first because the needs of the students are different,” shows the pressure of being placed in an inclusive classroom without enough preparation. This also reveals the gap between knowing science content and knowing how to teach it to learners with different needs. Although the teacher understood the subject, handling varied behaviors, learning needs, and support requirements became a major challenge.

Furthermore, IDI6 shared that handling SNED learners was difficult because teachers were not familiar with their needs and behaviors. The statement, “you really need to have a lot of patience,” shows that patience became an important way of coping. These experiences show that untrained science teachers learned to manage inclusive classrooms mostly through personal adjustment, not through formal training. The lack of preparation did not stop them from teaching, but it made the experience more difficult, uncertain, and emotionally demanding.

Moreover, the experiences draw support from the study of Gyasi et al (2020) that most of untrained Science teachers have limited understanding of specific special educational needs and disabilities. Further, teachers often report lacking the necessary training and professional development to successfully create an inclusive setting, especially for students with conditions like Autism Spectrum Disorder (Jaffal, 2022).

This means that the challenges faced by the participants are not isolated experiences, but part of a larger issue in inclusive education. When teachers do not have enough knowledge about learners’ conditions and receive limited training, they often rely on trial and error, personal observation, and advice from colleagues. These may help them manage the situation for a while, but they may not be enough to fully support learners with special educational needs. Because of this, untrained science teachers need continuous training, mentoring, and practical school-based support so they can become more confident, prepared, and responsive in inclusive classrooms.

Sub Theme 2: Initial affective crisis and pedagogical anxiety

Teachers shared that their first experience with learners with special educational needs brought feelings of worry and uncertainty. Many were assigned to inclusive science classrooms without enough background, orientation, or formal training. Because of this, they felt shocked, afraid, confused, and unsure of what to do. This shows that the early stage of teaching was emotionally and professionally difficult, as teachers tried to

understand their learners' needs while questioning their own readiness to teach inclusively.

Reflecting on affective and pedagogical anxiety of participant (ID14):

"The first thing that came into my mind was how I will handle them, SNED students, how to handle this because I really have no background in this. I really had no training, even orientation, it was just assigned". ID14

To strengthen this point, research of Suprihatiningrum et al (2022) revealed that Teachers are frequently required to work with learners with special educational needs without being given the time or orientation to prepare what is to be taught or how to adapt the curriculum.

These experiences were similarly reflected in one of the participant (ID12):

Hmm, I struggle to handle students with special needs. How will I handle their behavior? What are my strategies? What are my techniques to understand how to cope? What else should I do so that their behavior during classes will not become hyper, will not have tantrums, like that. (ID12)

Adding to this perspective, a study from Jaffal (2022) shows that untrained science teachers often report lacking the necessary training and professional development to successfully create an inclusive setting, especially for students with conditions like Autism Spectrum Disorder. This is the reason why Teachers report feelings of "shaky" loss of control, fear, and despair when faced with challenging behaviors, which stems from a perceived lack of mastery in managing inclusive environments (Øen et al.,2023).

In addition, this pervasive unpreparedness among general education teachers is well-documented, with many expressing insufficient training and limited knowledge regarding diverse learning needs, despite a significant portion of students with disabilities spending most of their school day in mainstream classrooms (Boardman et al., 2024).

As for the implication, this sub-theme emphasizes that inclusive science education will be more effective when teachers are prepared not only in content and pedagogy, but also in emotional coping, behavior management, and professional confidence. Addressing teachers' initial affective crisis and pedagogical anxiety can lead to more responsive, calm, and meaningful inclusive classroom practices.

Sub Theme 3: Psychological weight of competency gaps and proactive adaptation

Teachers shared that the lack of formal training in special education created stress and pressure in handling learners with special educational needs. They felt unsure and

sometimes inadequate, especially in managing classroom behavior, communicating with learners, and preparing lessons for different needs. Although they were trained as science teachers, they felt unprepared for responsibilities that required special education knowledge. Still, they slowly learned to adjust by doing their own research, asking help from SNED teachers, and learning from daily classroom experience. Their adjustment took time and was built through patience, initiative, and constant exposure to inclusive teaching.

Reflecting on the lack of formal trainings for special educations that created into stress and pressures in handling the learners (ID17):

“Um, sometimes I have the tendency to have difficulty also in designing a learning plan for them that is really suited for them. That is it. And then it is difficult to adapt to the different disabilities, especially if your training is really general. Communication is also one problem” ID17.

Further supporting this claim by Balık & Özgün (2024) that teachers have a common issue is the lack of sufficient materials and resources tailored for special needs education. Also, teachers often cite a lack of support services, insufficient instructional materials, and not enough time for extra tuition as challenges.

These accounts were likewise evident in one the untrained science teacher in dealing with classroom management (ID11):

“As an untrained science teacher, I have limited knowledge and skills because I am not trained. I also have difficulty in classroom management, especially in maintaining students' engagement. I use trial-and-error teaching approaches, so I learn through experience. I have learned to adjust to every situation that arises in my classroom. Despite that, I think my patience has increased a lot”. (ID11)

These observations were also consistent with İlik & Hacıeminoğlu (2019) that Behavioral incidents are noted to "change the flow of the lesson" and distract other students, which leads to a fear that typical students are being "affected negatively" by the teacher's constant focus on behavioral management. This further exacerbates teachers' anxieties and their perception of inadequacy in inclusive settings, particularly when they lack professional development opportunities tailored to the specific pedagogical demands of diverse learners (Boardman et al., 2024).

It suggests that schools should strengthen professional development programs, provide practical coaching, offer guidance in lesson adaptation and behavior management, and create collaborative systems where untrained science teachers can confidently seek help. This will help reduce the psychological burden of competency gaps

while transforming teachers' proactive efforts into more guided, effective, and sustainable inclusive teaching practices.

Main Theme 2: Reactive Pedagogy and Instructional Improvisation

The main theme shows how untrained science teachers adjusted their teaching based on the immediate needs of their learners. Since many had no formal training in special education, they relied on observation, trial and error, and quick decision-making in the classroom. When faced with different learner needs, unfamiliar behaviors, and limited resources, they modified activities, simplified lessons, changed strategies, and gave support as needed.

This theme explains how untrained science teachers handled the diversity of learners in inclusive classrooms. They encountered learners with sensory impairments, neurodevelopmental conditions, learning difficulties, attention problems, physical disabilities, and some cases that were not clearly diagnosed. Because learners had different capacities and support needs, teachers had to adjust their pacing, simplify science concepts, and modify instruction so that learners could still participate in the lesson.

This was reflected in the statement of one participant:

"I have blind students, deaf, and mute. There are also ADHD, slow learners, and autism, there is autism, so their needs are really different". ID11

This statement shows the range of learner needs that untrained science teachers had to handle in one classroom. The presence of learners with different conditions required teachers to go beyond ordinary science instruction. For ID11, the classroom was not composed of learners with the same needs or pace; rather, it included students who required different forms of communication, support, and instructional adjustment. This explains why teachers had to become reactive and improvisational in their practice, because each learner's need demanded a different response.

Similarly, another participant shared:

"So you handle them all at the same time. So you are teaching the blind, and you are also teaching the mute. So multitasking. So it becomes stressful because of time management. So I handle them one by one, I individualize them. So after them, I go back again to the class, so that I can also cater the regular students." ID11

This narrative reveals the temporal and cognitive load experienced by teachers in inclusive classrooms. The teacher had to attend to learners with special educational needs while also managing the regular learners. The statement "I handle them one by

one” shows that individualized support became necessary, but it also created pressure in terms of time management. This reflects how instruction became reactive, as the teacher moved from one learner to another depending on who needed immediate assistance. The teacher’s practice was not simply planned teaching; it became a continuous balancing act.

The result gives back up on the study of Suprihatiningrum et al (2022) that many science teachers enter inclusive classrooms without a formal background in special education, they are forced to develop strategies "incidentally" rather than through informed planning. This reactive approach often results in a significant decrease in attitude, perceived knowledge, and self-efficacy regarding inclusive practices among prospective and novice teachers (Fränkel et al., 2023).

In addition, the implication of this theme is that schools should provide untrained science teachers with more practical and structured support in inclusive teaching. Since teachers are already simplifying lessons, adjusting strategies, and individualizing instruction, these efforts should be strengthened through formal training, mentoring, and access to adapted science materials. Teachers also need guidance on how to manage simultaneous instruction, balance the needs of regular learners and learners with special educational needs, and apply differentiated strategies without becoming overwhelmed.

The implication of this sub-theme is that schools should provide teachers with clear learner profiles, proper orientation, and practical training on different types of special educational needs. Science teachers need support in understanding sensory impairments, autism, ADHD, intellectual disability, learning disability, attention difficulties, and other learner conditions that may affect classroom participation.

Sub Theme 1: Navigating a spectrum of diverse and intersecting exceptionalities

Teachers shared that inclusive science classrooms exposed them to many kinds of learner needs, such as sensory impairments, developmental conditions, learning difficulties, attention problems, physical disabilities, and mental health concerns. Some learners also showed difficulties even without a formal diagnosis. Because of this, teachers had to observe closely, adjust their lessons, change how they communicated, and respond to different behaviors and abilities.

Based on the participants’ responses, teachers handled learners with sensory impairments, neurodevelopmental conditions, cognitive and learning difficulties, attention concerns, physical disabilities, and even learners whose conditions were not clearly identified or formally diagnosed. This shows that inclusive science classrooms were not composed of learners with one type of need only. Instead, teachers were placed in a complex classroom environment where different exceptionalities existed together, requiring them to observe carefully, adjust instruction, and respond to multiple learner needs at the same time.

This was reflected in the experience of one participant:

"I have blind students, deaf, and mute. There are also ADHD, slow learners, and autism, there is autism, so their needs are really different."ID11

This statement shows how diverse the learners were in one inclusive classroom. ID11 encountered learners with sensory impairments, attention-related concerns, learning difficulties, and autism. The phrase "their needs are really different" highlights the teacher's realization that one teaching approach could not address all learners. This also explains why teachers had to constantly adjust their strategies, materials, and classroom responses depending on the learner's condition and capacity.

Similarly, another participant shared:

"So there are a lot of diverse students there. They are difficult, like slow learners, ADHD, and autistic students."ID13

The response of ID13 reveals that learner diversity was experienced as both visible and challenging. The participant recognized that students had different learning and behavioral characteristics, which made teaching more difficult. This suggests that untrained science teachers were not only teaching science content, but were also trying to understand how each learner's condition affected participation, attention, and comprehension in class.

The findings are in congruent with the study of Griendling et al (2022) that students with multiple marginalized identities often face greater achievement disparities in science, as traditional teaching methods rarely account for the interplay between these different sociocultural factors. This necessitates a paradigm shift in teacher training, moving beyond a superficial understanding of inclusion to a more robust, specialized preparation that addresses both pedagogical content knowledge and culturally responsive practices (Calumpang, 2025).

Sub Theme 2: Temporal ang cognitive load of simultaneous instruction

Teachers' experiences revealed that inclusive science teaching required them to manage several classrooms demands at the same time. They had to multitask, attend to learners individually, redirect behaviors, sustain the flow of instruction, and balance the needs of both regular learners and learners with special educational needs. This simultaneous responsibility often resulted in stress, frustration, anxiety, time management difficulties, and daily fatigue. The sub-theme Temporal and Cognitive Load of Simultaneous Instruction reflect how teachers continuously adjusted their attention, energy, and strategies just to maintain classroom order, participation, and meaningful learning within limited instructional time.

The findings are in congruent with the study of Chen (2022) that science teachers in inclusive classrooms face a unique "cross-pressure" where the temporal and cognitive

demands of managing diverse learners significantly impede their ability to provide quality instruction.

Participant (IDI1) echoed her statement managing several classrooms demands at the same time (IDI1):

“So you handle them all at the same time. So you are teaching the blind, and you are also teaching the mute. So multitasking. So it becomes stressful because of time management. So I handle them one by one, I individualize them. So after them, I go back again to the class, so that I can also cater the regular students”. IDI1

The participant’s narrative is aligned to the study of Whitaker (2017) that the cognitive demands of "simultaneous instruction" often lead to a state of "reality shock" or mental exhaustion, especially for those without specialized training.

Similarly, another participant described the emotional and physical fatigue caused by handling learners with special educational needs at the end of the school day:

“Yes, every time that I am in their room because 6 is dismissal, last period. Hmm, at 6 dismissal and SPED is the last, so I really feel tired and stressed because it is end of the day and it is already hard to handle the class.”IDI4

The response of IDI4 highlights the accumulated fatigue experienced by teachers. Teaching learners with special educational needs during the last period became more difficult because the teacher was already tired. This shows that time and energy are important factors in inclusive teaching. The challenge was not only about lesson delivery, but also about sustaining patience, focus, and emotional control until the end of the day.

The implication of this sub-theme is that schools should consider the workload and classroom conditions of teachers handling inclusive science classes. Smaller class sizes, teacher aides, SPED/SNED support personnel, adjusted schedules, and co-teaching arrangements may help reduce the burden of simultaneous instruction. Teachers also need training on time management, differentiated instruction, and classroom routines that can help them balance learner needs more effectively.

Sub Theme 3: Equity through curricular deceleration and strategic adaptation

Teachers shared that inclusive science teaching required constant adjustment so that all learners could understand and participate. They simplified science concepts, modified activities and materials, adjusted their teaching strategies, and slowed down lessons based on the learners’ abilities. They also emphasized fairness by avoiding bias, giving equal chances to learn, and showing patience and effort. The sub-theme shows how teachers made science lessons more accessible by slowing down, simplifying, and adapting instruction for learners with special educational needs.

Participant reflect on her experiences (IDI6):

“So the current practices are that you should, as a teacher, adjust your lessons and simplify the concepts for their better understanding because I also observed in my students that the strategies that would really work for them are important”(IDI6).

The participant’s narrative is aligned to the study of Rasmitadila et al (2021) that equity is achieved when teachers recognize that inclusive students may need "additional time" for activity completion, which often necessitates a reduction in the total number of concepts covered in a single session.

The findings is in consistent with the study of Juergensen and Zangori (2023) as research indicates that the most common adaptations in inclusive science classrooms involve modifying the pacing of the lesson to match the student's cognitive processing speed.

Participant reflect on her experiences (IDI6):

“So the current practices are that you should, as a teacher, adjust your lessons and simplify the concepts for their better understanding because I also observed in my students that the strategies that would really work for them are important”.DI6.

The participant’s narrative is aligned to the study of Rasmitadila et al (2021) that equity is achieved when teachers recognize that inclusive students may need "additional time" for activity completion, which often necessitates a reduction in the total number of concepts covered in a single session. This adaptive pedagogical approach is crucial for optimizing learning outcomes for students with diverse cognitive processing speeds and attentional capacities (Pujaningsih et al., 2021). This aligns with observations that successful inclusion practices often involve teachers making adaptations in the purpose, content, and assessment of science courses (Uygun & BİLGİÇ, 2025).

The implication of this sub-theme is that schools should support teachers in developing practical skills for differentiated and adaptive science instruction. Teachers need training on how to simplify abstract science concepts, modify activities, adjust lesson pacing, and design materials that match learners’ capacities without lowering the value of learning. Schools should also provide adapted science resources, visual materials, and guidance from SPED/SNED specialists so teachers can implement equity-based instruction more effectively.

Main Theme 3: Dialectics of Affective Labor and Professional Resilience

The main theme shows the balance between the emotional demands of inclusive science teaching and the strength teachers developed from these experiences. Teachers

shared that handling learners with special educational needs required patience, flexibility, emotional control, and constant adjustment. Although they faced stress, uncertainty, and difficulty, these experiences helped them become more aware, adaptable, and committed to inclusive teaching. This theme shows that while inclusive teaching was emotionally demanding, it also became a source of growth and resilience for the teachers.

This was reflected in the experience of one participant:

“Teaching in an inclusive classroom is both challenging and rewarding. Emotionally, I sometimes feel overwhelmed when trying to meet different needs, but I also feel fulfilled when I see students learn and participate. Professionally, it has helped me become more patient, creative, and flexible. You really need a lot of patience in handling students with special needs.” IDI1

This statement shows the dual nature of inclusive science teaching. IDI1 experienced emotional overwhelm because of the responsibility of meeting different learner needs, but also found fulfilment when learners participated and learned. The teacher’s experience reveals that emotional difficulty and professional growth existed together. The challenge did not only drain the teacher but also helped develop patience, creativity, and flexibility.

Similarly, another participant shared:

“Emotionally and professionally, teaching in an inclusive classroom can be both challenging and developing. There are times where I feel pressured because I am not always confident if I am meeting the needs of students with special needs. But at the same time, it also pushed me to improve my teaching strategies and become more patient. Over time, it really helped me to become more responsible and flexible as a teacher.” IDI3

The response of IDI3 highlights how pressure and uncertainty became connected to professional development. The teacher felt unsure whether the needs of learners were being met, yet this uncertainty also became a reason to improve teaching strategies. This shows that resilience developed not because the experience was easy, but because the teacher continued to adjust and grow despite the pressure.

Literature on the Dialectics of Affective Labor and Professional Resilience explores the complex interplay between the emotional "cost" of teaching in inclusive settings and the transformative process of developing professional strength (Avraamidou, 2019). Research suggests that this relationship is dialectical because the very stressors that

cause emotional strain often serve as the catalysts for a teacher's professional evolution and identity formation (Vallés & Clarà, 2022).

The implication of this theme is that schools should recognize the emotional labor of untrained science teachers and provide support systems that protect their well-being while strengthening their professional growth. Teachers need mentoring, wellness support, opportunities for reflection, and continuous professional development to help them manage stress and improve their inclusive teaching practices. Schools should also acknowledge small learner progress as meaningful evidence of teacher effort.

Sub Theme 1: Adaptive growth through professional adversity

The sub-theme shows how untrained science teachers grew through the challenges they faced in inclusive classrooms. At first, they felt unsure, unprepared, and challenged in teaching learners with special educational needs. Over time, these experiences helped them learn, adjust, and improve. Through daily classroom exposure, they became more patient, flexible, and sensitive to learner differences. This shows that their professional growth developed gradually through practice, reflection, and resilience.

This was reflected in the experience of one participant:

“As an untrained science teacher, my experience in an inclusive classroom is really challenging but at the same time it is really a learning process. Since I do not have formal training, most of what I do is only based on experience, observation, and trial-and-error. There are moments where I become uncertain on how to handle different learning needs in one class, because the level of the students is not the same. But along the way, this really helped me to become more patient, more careful, and more aware of the individual differences of the students.” IDI3

This statement shows that inclusive teaching became a difficult but meaningful learning process for the teacher. IDI3 experienced uncertainty because the learners had different levels and needs, yet this uncertainty also became a source of professional growth. Through experience, observation, and trial-and-error, the teacher became more patient, careful, and aware of individual differences. This reveals that adversity shaped the teacher's ability to adjust and become more responsive to learners.

The participants echoed on how she grew through the challenges that faced (IDI4):

“Flexible, it is really tiring. You become flexible because you need to understand them even if the situation is difficult, but honestly it can also be draining sometimes because their needs are different. That is why

I realized that inclusive teaching is very challenging for me".ID14

Teachers became more flexible and learned to make constant adjustments in their teaching. Their narratives showed that inclusive science instruction required them to modify their approaches depending on the situation and the needs of the learners.

The insinuation of this sub-theme is that schools should provide structured support that builds on the adaptive growth already shown by teachers. Since teachers learn through experience, their learning should be strengthened through mentoring, reflective teaching sessions, peer coaching, and formal training in inclusive science education. Professional adversity can lead to growth, but teachers should not be left to develop through struggle alone.

Sub Theme 2: Navigating emotional depletion and professional self-actualization

The sub-theme shows how untrained science teachers experienced emotional stress while also discovering their ability to grow. Teaching learners with special educational needs often made them feel tired, frustrated, uncertain, and doubtful of themselves, especially because they lacked formal training and support. However, these challenges also helped them recognize their patience, strength, and purpose as teachers. Through continuous adjustment and reflection, they learned that their struggles helped build their resilience, responsibility, and deeper understanding of inclusive teaching.

Participant's narrative on how untrained science teachers experienced emotional stress (ID12):

"It is stressful, ma'am. You really struggle; you question your teaching capacity. You have difficulty in how to get their learning, so it is really challenging" (ID12).

Teachers questioned their own teaching capacity and doubted whether their actions and strategies were correct. Their experiences showed that handling learners with special educational needs often led them to reflect on their competence and effectiveness as science teachers.

Likewise, another participant shared:

"It affects me emotionally because teaching in an inclusive classroom is very stressful. Sometimes you feel pressure, sometimes frustration, sometimes you question yourself if you are effective or not because no matter how much effort you give, no matter how much you push them, there are still students who do not understand or are difficult to follow in class. But

professionally, it helps me or it pushes me to grow and improve my teaching strategies.”
IDI4

The response of IDI4 shows the tension between emotional exhaustion and professional growth. The teacher experienced pressure and frustration, especially when learners still struggled despite the effort given. However, this same difficulty became a reason to grow professionally and improve teaching strategies. This suggests that emotional depletion did not simply weaken the teacher; it also became a turning point for reflection and improvement.

The study is in support on the study on Day & Hong (2016) that emotional depletion in inclusive settings is characterized as a "shaky" and "exhausting" state resulting from the constant demand for "affective labor. This emotional investment, while draining, is often cited as a critical component in developing the deep empathy and flexible pedagogical approaches necessary for effective inclusive education (Shuakbayeva et al., 2025). However, this heightened emotional labor can also precipitate burnout, particularly among special education teachers who already face substantial workload demands and individualized educational planning requirements (Budiono et al., 2025).

The implication of this sub-theme is that schools should provide both emotional and professional support for teachers handling inclusive classrooms. Teachers need access to mentoring, counseling, peer support, professional development, and opportunities for further study in special education. Their emotional exhaustion should not be ignored, because it affects their confidence, motivation, and classroom performance. At the same time, their desire to improve should be supported through scholarships, training, and institutional encouragement.

Sub Theme 3: Micro-achievements as catalysts for professional fulfilment

The sub-theme shows how small learner successes encouraged untrained science teachers. Teachers felt fulfilled when learners passed quizzes, remembered lessons, used learning in real life, understood simple concepts, attended class regularly, or showed better behavior. These moments reminded teachers that progress in inclusive science classrooms is not always seen in big achievements, but in small signs of improvement. These small successes affirmed their efforts, increased their motivation, and made their role more meaningful.

Participant expressed her experience on how she felt fulfilled when something small things accomplished (IDI1):

“Yes, especially if I give a quiz and then the special students are also able to answer, that is fulfilling”(IDI1).

Teachers experienced a deep sense of fulfillment when learners performed well in quizzes or achieved perfect scores. For them, these moments were more than academic

results; they became meaningful evidence that their patience, adjustments, and efforts in teaching learners with special educational needs were beginning to bear fruit.

Participant's narrative on relational management as a form of progress:

"Not someone who nags. I talk to them personally" (IDI2).

The response of IDI2 shows that fulfillment was not only found in academic performance but also in the teacher's ability to build a better relationship with the learner. Instead of relying on constant correction or reprimand, the teacher chose to talk to the student personally. This reflects a more compassionate and humanized approach to classroom management. Through personal communication, the teacher was able to create a space where learners felt understood rather than judged. This suggests that small relational improvements can also become professional victories in inclusive classrooms.

The implication of this sub-theme is that schools should recognize small learner progress as an important indicator of success in inclusive education. Teachers handling learners with special educational needs should be encouraged to document and celebrate micro-achievements such as improved attendance, better participation, correct responses, behavioral changes, and practical application of lessons. These small signs of growth can help sustain teachers emotionally and professionally.

Main Theme 4: Conceptual Re-engineering and Professional Agency

The main theme Conceptual Re-engineering and Professional Agency show how untrained science teachers changed the way they understood teaching in inclusive classrooms. Their experiences showed that teaching learners with special educational needs required them to rethink science concepts, adjust their methods, and make decisions based on the learners' actual needs and abilities. Instead of depending only on traditional teaching, they learned to simplify lessons, change strategies, ask for support, and find better ways to make science learning accessible. This theme shows that inclusive teaching pushed teachers to become more reflective, resourceful, and active in improving their own practice.

Participant's narrative on inclusive education as shared learning:

"Learn together with other students" (IDI5).

The response of IDI5 shows that inclusive education was understood as a form of shared learning. The participant recognized that learners with special educational needs should not be separated from other learners, but should be given the opportunity to learn within the same classroom environment. This suggests that the teacher's understanding of inclusion was not limited to access or enrollment alone. Instead, inclusion was seen as participation, belongingness, and the opportunity to experience learning with others.

Likewise, another participant shared:

“Participate and understand... together” (IDI6).

The statement of IDI6 emphasizes that inclusive education involves both participation and understanding. The teacher recognized that learners with special educational needs should be part of classroom activities and should also be supported in understanding the lesson. This shows a shift from simply allowing learners to sit in the classroom to ensuring that they are meaningfully involved in the learning process. The participant’s experience reflects a more active and responsive view of inclusion.

The findings back up with the study of Margas (2023) that teachers are often left to navigate these challenges without clear institutional "how-to" guidance, they develop a form of autonomous agency, relying on their own "learning energy" to bridge knowledge gaps. This self-directed learning often stems from an intrinsic motivation to create an equitable and supportive learning environment for all students (Shuakbayeva et al., 2025), leading to the development of innovative pedagogical strategies tailored to diverse needs (Christensen, 2023).

The theme also implies that teacher agency should not be treated as a substitute for institutional responsibility. Schools should provide seminars, mentoring, special education training, collaborative support from SNED teachers, and opportunities for further study. If teachers are expected to implement inclusive education, they must also be equipped with the knowledge, confidence, and resources needed to make inclusion meaningful for all learners.

Sub Theme 1: Philosophy of universal access and integrated participation

The sub-theme reflects how teachers understood inclusive education as a shared and meaningful learning space for all learners. In their experiences, inclusion was not only about allowing learners with special educational needs to be physically present in the classroom, but about giving them the chance to participate, understand, and learn together with their peers. Their narratives showed a belief that education should be accessible, fair, and responsive to different learner needs. Through this, teachers began to view inclusive science teaching as a practice of acceptance, adjustment, and equal opportunity, where every learner is given a place in the learning process.

The participant expressed her narrative by saying (IDI5):

“For me, inclusion is a kind of strategy or learning approach that you can give to students with special needs. Students with special needs need different kinds of strategies, so inclusion means adjusting and providing appropriate teaching strategies so they can still participate and learn together with other students in the classroom”(IDI5).

Teachers experienced inclusive education as a shared space where learners with special educational needs could learn alongside their peers. For them, inclusion was not

merely placing learners in the same classroom, but allowing them to participate, understand, and belong within the learning process together with others.

Another participant expressed a similar understanding by saying:

“Inclusion means adjusting and providing appropriate teaching strategies. It is accepting and teaching all students, so they can participate and understand together. It also means giving them equal learning opportunities based on the capacity of our learners”. (IDI6)

This statement highlights the connection between acceptance, participation, and equal opportunity. The lines “accepting and teaching all students” show that inclusion begins with recognizing every learner as part of the classroom community. However, acceptance alone is not enough. The participant also emphasized the need for learners to “participate and understand together,” which means that students with special needs should not only be physically present in the classroom but should also be guided to understand the lesson according to their capacity. The phrase “equal learning opportunities” further shows that the teacher believed inclusion should provide fair chances for all learners, even if the support given to them may differ depending on their needs.

The findings imply that untrained science teachers already possess an emerging inclusive philosophy grounded in access, acceptance, participation, and equal opportunity. However, this philosophy must be supported by actual training, appropriate instructional materials, curriculum flexibility, and collaboration with SNED teachers. Since the participants recognized the need to adjust strategies and provide opportunities for learners to participate and understand together, schools should strengthen professional development programs that help science teachers translate inclusive beliefs into effective classroom practices.

Sub-theme 2: Re-conceptualization of teaching purpose and drive for professional agency

The sub-theme shows how teachers changed their understanding of their role in inclusive science classrooms. They realized that teaching was not only about delivering lessons or finishing subject requirements. It also meant reaching learners with different needs, abilities, and learning capacities. Because of this, teachers learned to adjust, make decisions, seek help, and improve their strategies. This sub-theme shows that inclusive teaching helped them rethink their purpose as educators and pushed them to become more responsive, capable, and intentional in supporting all learners.

The participant reflects her experience by saying (IDI2):

“I became more... ma’am, you really become inspired. It is like it becomes a wake-up call. You

have a wake-up call about your purpose in teaching, that it is not only for normal students. You are also challenged. You feel compassion, you feel sympathy. Then your teaching goes beyond, your purpose and motivation become deeper” (IDI2).

Inclusive classroom teaching became a meaningful realization for teachers, prompting them to reflect more deeply on their purpose as educators. In handling learners with special educational needs, they began to see their role not only as science teachers who deliver content, but as teachers who must understand, adjust, and respond to the realities of every learner. This experience deepened their motivation and led them to re-examine the meaning of teaching within an inclusive classroom.

Likewise, another participant shared:

“For me, inclusive education means accepting and teaching all students. It is also giving them the chance to participate and understand together with other learners in the classroom” (IDI6).

The statement of IDI6 highlights the idea that inclusion begins with acceptance. For the participant, learners with special educational needs should not be treated as separate or less capable members of the class. Instead, they should be accepted and taught together with other learners. This reflects a philosophy of integrated participation, where learners are not only physically present but are also given opportunities to engage, understand, and take part in classroom learning. The participant’s experience shows that inclusive education becomes meaningful when students are welcomed and supported as part of the same learning community.

The implication of this sub-theme is that schools should ensure that inclusive education is practiced not only as a policy but as a lived classroom reality. Learners with special educational needs should not only be enrolled or placed in regular classrooms; they must also be supported to participate, understand, and learn with dignity. Teachers need training in differentiated instruction, curriculum adaptation, classroom accommodation, and inclusive assessment so they can respond to the needs of different learners.

Sub Theme 3: Navigating the gap between training and practice

Teachers’ experiences revealed that the gap between training and actual classroom practice became clear as they handled learners with special educational needs. Although inclusive teaching felt overwhelming and emotionally demanding, it also pushed them to develop patience, adjust their strategies, and align materials with learners’ needs. Their narratives showed that limited exposure and lack of formal training made it difficult to respond to diverse conditions and unfamiliar behaviors. To cope with these gaps, teachers sought help from experienced SNED teachers and conducted their

own research, showing their effort to become more responsive and prepared in inclusive science classrooms.

The participant reflects by saying (ID18):

“So every day, the situation is really different, you always need to adjust teaching strategies, lesson delivery, and classroom management. I did research, I asked SNED teachers, and I did trial and error to know what is effective for them. In the whole experience, I can really say that it is overwhelming but at the same time I also developed patience and understanding of the diversity of learners” (ID18).

Teachers experienced inclusive teaching as overwhelming, yet it also helped them develop patience over time. Their narratives showed that the difficulty of handling learners with special educational needs created emotional pressure, but also became a pathway for personal and professional growth.

Another participant expressed:

“I cannot adapt to their behavioral patterns, so I ask other teachers who really teach SNED. I also do research on what should be done so that I can adjust my teaching strategies” (ID17).

The response of ID17 shows how teachers tried to bridge the gap between training and practice through collaboration and self-directed learning. The participant admitted difficulty in adapting to the behavioral patterns of learners with special educational needs, which reflects the need for proper training in behavior management and inclusive classroom strategies. However, instead of remaining passive, the teacher sought help from SNED teachers and conducted personal research. This reveals professional agency, where the teacher actively looked for ways to improve despite the absence of formal preparation. At the same time, it also shows that teachers are compensating for institutional gaps through personal effort.

The implication of this sub-theme is that schools should not assume that general education teachers can immediately handle inclusive classrooms without proper preparation. Teachers need structured training on special education, behavior management, differentiated instruction, instructional material adaptation, and inclusive assessment. Schools should also establish mentoring systems where SNED-trained teachers can guide untrained subject teachers in planning lessons, managing behaviors, and responding to learner needs.

Conclusions

The research findings show that untrained science teacher lived experiences with children with special educational needs in inclusive classrooms are determined by a constant shift from uncertainty to adjustment, and from professional inadequacy to purposeful agency. The participants first suffered systemic shock as a result of their lack of formal training, minimal history in special education, and rapid assignment to inclusive classroom duties. These phenomena provoke feelings of fear, perplexity, stress, and self-doubt, particularly as instructors grappled with classroom management, communication hurdles, behavioral issues, and the development of suitable learning plans for students with various needs.

Recommendations

Future studies may explore the experiences of learners with special educational needs in inclusive Science classrooms. Since this study focused on teachers, learner perspectives may provide a deeper understanding of how inclusive practices affect participation, confidence, and learning.

Future researchers may also examine the experiences of parents or guardians. Their insights may reveal home-based challenges, support needs, and expectations from schools and teachers.

Another direction is to study the effectiveness of specific inclusive Science strategies, such as visual aids, tactile materials, peer-assisted learning, simplified modules, assistive technology, and hands-on activities.

Future studies may also examine how Science teachers and SNED teachers can collaborate more effectively through consultation, co-planning, mentoring, and referral systems.

Further research may focus on assessment practices for learners with special educational needs. Since teachers had difficulty measuring learning accurately, future studies may develop or evaluate modified tests, performance-based assessments, and individualized rubrics.

Lastly, future studies may assess whether training, coaching, or mentoring programs improve the confidence, competence, and coping strategies of science teachers in inclusive classrooms.

Overall, the study advises that schools and educational authorities should improve the training and support of science educators who work with learners with special educational needs in inclusive classrooms based on the findings. As participants who has firsthand experienced difficulty, anxiety, stress, and uncertainty due to the lack of formal training and limited background in special education. Hence, School administrators may consider engaging in regular capacity building activities on inclusive science teaching,

classroom management, behavior management, differentiated instruction, and preparation of adapted learning materials.

Compliance with Ethical Standards

This study followed proper ethical guidelines to make sure that all participants were respected, protected, and treated fairly. We value their rights, dignity, and well-being, and it follows the institutional and national guidelines.

Informed Consent. Before joining the study, each participant were clearly informed about what the research was all about regarding its purpose, what they will be asked to do, and any possible risks or benefits. It was explained everything both in writing and verbally to make sure it was easy to understand and that participants feel fully informed before they decided to take part.

Voluntary Participation. Participation in this study was completely voluntary. Before the interview begins, participants were reminded that they were free to stop or withdraw at any time without any penalty or negative consequences. This right to withdraw was clearly stated both in the written consent form and explained verbally, so participants feel informed, respected, and comfortable throughout the entire process.

Vulnerability. This study recognized that the participants were teachers in the same school, and this situation may make them feel vulnerable especially if areas of weakness were identified. Because of this, the researcher was committed to making sure that no participant will experience any professional risk or harm as a result of joining the study. Participation was completely voluntary. Teachers were clearly informed that whether they choose to participate or not it will not affect their job, professional reputation, or relationships within the school. To avoid any pressure or influence, school administrators were not involved in selecting participants.

In addition, the study's results only presented anonymized data. This means that no names or identifying details were included, ensuring that individual responses cannot be traced back to any specific teacher.

Anonymity. Steps were taken to protect the identity of every participant. Any personal information that could reveal who they were was removed, and pseudonyms were used in all research documents to ensure their privacy and confidentiality.

Confidentiality and Data Security. Participants were assigned pseudonyms to ensure anonymity. The schools was anonymized in the study. All data, including audio recordings, transcripts, and field notes, were securely stored in password-protected files. Access to this data was restricted to the researcher and authorized personnel only. Further, steps were taken to ensure that no administrative or professional repercussions arises from the data collection. Any data that could potentially identify participants weren't shared with school administrators or any other stakeholders.

Audio Recording. Audio recordings were stored securely and only accessible to the researcher. Participants were informed about the storage, use, and security of these recordings before they were made. Once transcribing was done. The researcher deleted all the audio/mp3 files.

Debriefing: After the interviews, participants received a debriefing session to address any concerns, provide additional context about the study, and offer resources if they experience discomfort.

Conflict of Interest. The study clearly stated that there is no conflict of interest. The researcher affirms that there are no financial, personal, or professional interests that could influence the results or affect the honesty and integrity of the study.

Reflexivity. Consistent with a phenomenological approach, the researcher engaged in reflexivity to maintain objectivity and ensured that the study remains grounded in participants lived experiences. A reflective journal was maintained throughout the study to bracket personal assumptions and ensured that interpretations are rooted in participants' voices.

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