



Science Teachers' Lived Experiences and Challenges during COVID-19 Pandemic

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ABSTRACTS

COVID-19 pandemic has negatively affected all areas of lifestyle, especially the education sector, from both the students' and teachers' points of view. As we are all concerned with students' difficulties, this study focuses on teachers' lived experiences and challenges and their adaptive strategies in class operations, especially in teaching Science Education. This study is interview-based data instrumentation as it is a phenomenological type of research exploring the lived experiences of Science teachers. Lived experiences, challenges, and adaptive strategies are the thematic base of the data. Findings revealed that (1) there are three core themes under the lived experiences of Science teachers, including building relations, call of duty, and instruction reconstruction. (2) Science teachers were also mostly challenged during distance learning during the COVID-19 pandemic, including the authenticity of students' outputs, instruction delivery, internet connectivity, lack of resources, safety, and topography, which resulted in the difficulty of Science class operation. Despite the lived experiences and challenges brought by distance learning, (3) they learned to possess adaptability, accept assistance, be flexible and innovative, manage time, and use a specialized strategy or radio-based instructions. The study recommends that Science teachers exert extra effort, be resourceful, and cope with digital divides such as attending seminars and workshops to better utilize opportunities in distance learning. They must possess a positive outlook in every way possible. The higher office of the education sector initiates adaptive strategies for teachers.

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1. INTRODUCTION

In December 2019, an outbreak of pneumonia of unknown origin was reported in Wuhan, Hubei Province, China. To date, the world has paid a high toll on this pandemic in terms of human lives lost, economic repercussions, and increased poverty (Ciotti et al., 2020; Lu et al., 2020). The disease was scientifically termed Corona Virus Disease 2019 or COVID-19. As the pandemic affects every lifestyle area, it cannot bypass the field of education. According to United Nations, the COVID-19 pandemic has created the largest disruption of education systems in human history, affecting nearly 1.6 billion learners in more than 200 countries. Closures of schools, institutions, and other learning spaces have impacted more than 94% of the world's student population.

To curb the spread of COVID-19, most governments have opted to employ quarantine protocols and temporarily shut down their educational institutions. As a consequence, more than a billion learners have been affected worldwide. Among this number are over 28 million Filipino learners across academic levels who have to stay at home and comply with the Philippine government's quarantine measures. While the world, specifically in the Philippines, turns its concerns to the students caused by the halt of the pandemic, teachers are also with a great effort to find ways to enable class operation. With that, Robosa et al. (2021) stated that teachers must be more supportive and dedicated to teaching the students, despite the difficulty in proximity and communication. It will help form healthy relationships that promote perseverance, significance, and optimism in the learning environment. One approach to achieving this is utilizing systems that reward positive understudy practices. Educators also need to ensure they deal with themselves to deal with others. Without effectively thinking about themselves, educators lose the ability to think about others.

Teachers, not to deny, go through experiences and challenges during the pandemic. However, to build the bridges into a continuous class operation, the coping mechanism enables teachers to find ways to teach learners. Science teaching needed more illustrative figures and lots of supplements in giving the exact learning that a student must acquire. Teachers' lived experiences in the new normal would have to employ new practices and forms of management both professionally and emotionally to adapt to the virus outbreak changes fully, which provided a structured timeline for response management, such as guidance, utilizing technology, and forming digital re-creational activities. Furthermore, the experiences of teachers while converting their classes to distance instruction and after managing the classes received little attention in the first weeks following the transition. Therefore, among the experiences of teachers as the result of converting their classes on short notice, they said that less than half used a school-provided LMS, instead of using a wide range of other technologies and good planning, emphasizes doing what it takes to serve their students (Marek et al., 2021).

According to a recent study, as a result of the transition on short notice, most Science Teachers reported that they could either manage to provide a decent amount of learning or do their duties throughout the class by using a virtual classroom as a platform for learning. These teachers are trying their best to do so. Some of them provide alternative material like posting notes in google classroom recorded and pre-recorded video lessons (flipped classroom) and providing a PowerPoint presentation for students that can easily stream the lesson instead of videos. The teachers make changes, especially their virtual timetable, to adjust the student's available time and cope with poor signals where they do some classes at night in which the internet is stable. However, it was reported that there was a lack of competence and skills among Science teachers in associate with remote teaching. One reason

for this lack of competence and skills could be that schools did not meet these teachers' necessary training and assistance.

Teaching has not been easy during the pandemic—and teaching Science is no exception. The teachers must overcome many challenges while adopting the new teaching and learning methodology. Teachers of all levels were concerned about teaching Science while social distancing or while being online. Science is best taught in a hands-on fashion, and teachers struggle with different modalities of teaching. Those who taught in a hybrid fashion were concerned that their students had poor attendance due to the pandemic and often zoomed in with those in person. Teachers struggled with concentrating on the content they were responsible for teaching while they knew their students were concerned about COVID-19 and were facing many issues due to the pandemic.

Three barriers to web-based distance education implementations in teacher education: lack of high-speed internet and durable technology, lack of trainer and student skills, and lack of support services; because these teachers, as well as students, would have difficulty and trouble doing and completing tasks that can be accessed through the internet especially the laboratory activities in Science. A recent study showed that the main challenges for Science teachers during COVID-19 were the absence of hands-on activities, conducting experiments in wet labs, fostering interaction in the online classroom, and managing students' behavior. This study found that most Science teachers preferred teaching in the traditional classroom. Following the necessity to switch to a blended classroom, they now prefer it to the traditional classroom. In Science teaching, teachers cannot finish their lessons in the given period because of this issue. This subject is more on laboratories and research, and they cannot give the learnings that students deserve because of their shortcomings (al Darayseh, 2020).

Despite teachers' lived experiences and according to Linton (2017), participants in his study mentioned that they are better at collaboration and sharing best practices through peer-mentoring. When preparing learning resources and ICT tools, they seek guidance and support from each other. In Science education, the need for teachers to consult with their peers is a must as previous Science concepts might be either altered or growing. Moreover, this needs to authenticate certain subtopics, there must be some teachers that are not well aware of some deep online resources, so this must be a way of asking for guidance from their peers.

On the other hand, a support system can ease the difficulties and is one of the adaptive strategies during the pandemic. Teachers also play an important role in this effort and can be valuable partners with parents in cultivating Science learning confidence and skills in school-age youth. NSTA recognizes the importance of parent involvement in Science learning and offers the following recommendations to parents.

In the case of assessment, Vahid argued that "we might replace large high-stakes exams with many smaller low-stakes activities like homework, quizzes, or small custom projects." These strategies might be useful for future classes if the pandemic continues. However, it might affect teaching Science as it mostly requires actual application of concepts, and it needs assessments that are mainly demonstrations.

With the advent of technology, teachers should also be equipped by their schools or local authorities with computer hardware and software necessary for distance teaching. Both supplies with technologies and training on using them could eliminate at least one important barrier teachers face during distance teaching (Klapproth *et al.*, 2020).

As a result of the presented problem, this study intends to give information about the lived experiences and challenges of Science high school teachers and their adaptive strategies

brought by the COVID-19 pandemic on a more local scale. The study was conducted in one of the national high schools in T'Boli, South Cotabato.

2. METHODS

2.1. Research design

This study used a phenomenological qualitative research design. Phenomenological research is a qualitative research approach that seeks to understand and describe the universal essence of a phenomenon. The approach investigates the everyday experiences of human beings while suspending preconceived assumptions about the phenomenon (Delve & Limpaecher). It provides knowledge and investigates the lived experiences and challenges of the Science teachers during the COVID-19 pandemic. The primary data utilized the use of written descriptions by the participants and from the open-ended questions interview.

2.2. Locale of the study

This study was conducted in one of the national high schools in T'Boli, South Cotabato. The school is one of the three main national high schools in the municipality of T'Boli. The locale is nestled in the mountainous rural South Cotabato. The school has a total of twenty-nine (29) faculty and staff and a population of seven hundred eighteen (718) students for the recent school year, forty-nine percent (49%) of the students were indigenous people (IP), specifically Tboli. The pandemic also affected the school, allowing it to implement a modular learning modality by integrating online means.

2.3. Respondents of the study

The respondents of this study were Science high school teachers in one of the national high schools in T'Boli, South Cotabato. The respondents comprise six (6) participants who were fit to participate in the data gathering in compliance with ethical considerations. The participants were Science teachers of the school above, range of not less than four (4) years in service and not more than ten (10) years, and were all graduates of Bachelor in Secondary Education, major in Biological Science.

2.4. Sampling technique

The research applies purposive sampling; purposive sampling, also known as judgmental, selective, or subjective sampling, was a form of non-probability sampling. The participants were selected. This study will utilize this kind of sampling as it was the best way to identify the population representing the desired participants: the Science teachers. The selected participants must be Science high school teachers who experienced challenges teaching during a pandemic and were considered because the students were mostly indigenous people (IP), specifically Tboli.

2.5. Data gathering instrument

The data about the Science teachers' experiences, challenges, and adaptive strategies were gathered through several methods, including written descriptions by the participants and an in-depth interview with an open-questions guide validated by the selected panel members from the College of Teacher Education Department, Sultan Kudarat State University (SKSU), and external guidance. The interview guide was composed of open-ended questions. A face-to-face interview was conducted in compliance with minimum health protocols.

2.6. Data gathering procedure

It was critical to continue following the methodical procedure and working on data gathering. In gathering the data, the procedure was as follows:

- (i) We issued a permission letter signed by the research adviser and the department dean, allowing the conduct of the data gathering.
- (ii) Open-ended questions were formulated and structured as a questionnaire for the interview participants. The instrument was validated by the adviser, member of the panel, and external guidance to review the reliability and validity of the instrument.
- (iii) A schedule was established for the official travel to the location of the study.
- (iv) A letter of consent was issued to the head teacher, requesting approval for the conduct of the study. Then, the study's purpose, confidentiality, and basic information. Finally, we introduced ourselves to the participants. Their approval was also being considered.
- (v) The research instrument was issued to the participants allowing them to have a written description of their responses before an in-depth interview with open-ended questions. We assigned different roles during the discussion, such as the documenter (picture-taking and taking notes) and the interviewer. We guide the interview towards the satisfaction of the problem statement.
- (vi) The data obtained underwent crucial data analysis, including the formulation of verbatim transcriptions of recorded interviews directed to bracketing, horizontalization, clustering, and verification.

2.7. Data analysis

This study utilizes thematic analysis. The responses from the participants were transcribed to determine the lived experience and challenges of Science high school teachers in one of the national high schools in T'boli, South Cotabato, and their adaptive strategies. The response gathered in the written description of participants and in-depth interviews with open-ended questions underwent various crucial data analyses, it includes:

- (i) In bracketing data, all forms of prior knowledge were set aside and focused on the lives experience and challenges and their adaptive strategies.
- (ii) In Horizontalization, the transcribed responses were read thoroughly and highlighted the important details (Eddles-Hirsch, 2015).
- (iii) Clustering attempts to define groups of cases by mapping the similarities or dissimilarities on multiple dimensions (Henry *et al.*, 2005).
- (iv) For verification, we met with the participants again and provided a hard copy of the verbatim transcriptions of their responses and how they were interpreted.

3. RESULTS AND DISCUSSION

3.1 Lived experiences

Lived experiences are a presentation that focuses on everyday life events and awareness of the experiences, choices, and possibilities that shape one's perspective in teaching Science Education. This study reveals that out of six (6) total participants, five (5) of them talked about building relations, five (5) of them talked about instruction reconstruction, and three (3) of them talked about the call of duty. The following are the emerging themes under lived experiences.

3.1.1. Building relation

According to Pianta et al. (2002), teachers are a vital but frequently underappreciated resource in the lives of children and adolescents. When properly handled, teacher-student connections can resemble mentorship at their best. Further, it is vital for Science education as this field is always considering conceptual understanding, mostly through visual presentation and in-person guidance.

Building relation is a set of experiences that the Science teachers in this study had in teaching Science among high school students during the COVID-19 pandemic. These are experiences where teachers are struggling to reach out to their students and how they build connections.

As the pandemic halts the teaching-learning process and environment, especially in teaching Science Education, Science teachers are struggling to reach out to their students. Participant number four (P4) said that, *"It is hard for the students to do the on-hand experiment. Learning hand-on-hand is important in Science"*.

It makes sense because of distance learning. In connection to this, participant number one (P1) added, *"it is harder to teach kasi nga diba limited 'yung ano natin, ah... pakikipag salamuha natin sa mga students (it is harder to teach as we only have limited..., interactions with our students)"*, it is because the latter participant believe and that is confident that learning Science is a more hands-on approach field of study. He believes that it requires activities that are done by themselves.

However, now, they could not do any of the hands-on activities because participant number three (P3) mentioned that, *"maraming changes ang nangyari this new normal, kasi dati we have face to face, but now, we do online class (there are so many changes during new normal, because before we have face-to-face but now, we do online class)"*, and she added that it is hard to engage in online class/teaching.

The participants are also in struggle to connect or build relation as a result distance learning. Participant number two (P2) believes that there should be enough appropriate teaching style and motivation during the pandemic to catch the students' attention. He said that, *"Simply look for enough information and appropriate activities for you to cope or catch their attention as well."*

It makes them struggle even more because some students rely on their behavior, as mentioned by participant number six (P6). He said that, *"As a teacher, there are verbal cues that you can see or read in the learner's behavior."*

It includes mannerisms and gestures that cannot be seen online.

To go into the main points of what has been said by the participants in this study, the Science teachers are struggling in conducting hands-on activities for students, having difficulty determining the communication cues and motivating the students during distance learning.

3.1.2. Instruction reconstruction

These participants' experiences backed up Pokhrel and Chhetri's (2021) assertion that the COVID-19 pandemic has altered the public educational sectors regarding educational modalities of instructional delivery, school operations, and policies. It has resulted in significant changes in every part of our life. Reopening schools once the restrictions have been lifted is another problem since many new standard operating procedures have been implemented.

Instruction reconstruction is also a set of experiences that allows the Science teachers to reconstruct what is set to be done during the learning and teaching process. As a result of

teaching during the COVID-19 pandemic, it brings the need to re-establishment the structure of teaching. Contents provided during regular class operations can be reconstructed to achieve the learning goal.

In times of pandemics, teachers, especially Science teachers, struggle with how to deliver the curriculum to the students. That is why they have to modify or change the way it is presented or assigned to the students. As participant number one (P1) mentioned, *“the lesson and activities were reconstructed to be easier and more suitable for students in their homes with fewer laboratories equipment and materials”*.

It is because he believes that it is unnecessary to only follow the content and activities provided by DepEd. After all, some resources are not available in their households. In addition to this, participant number six (P6) added, *“wala man sang mga drawing diri (LSM) kalabanan sulat budlay intindihon especially sa side sang mga bata (there is no drawing/images provided in the (LSM) mostly are written, and it is hard for the students to understand the text alone).”*

Similar to the latter participant, participant number four (P4) said that, *“I research more videos related to the topic and let them learn by watching it,”*, especially in activities involving experiments.

Science teachers in this study have the experience of undergoing a complete transition from traditional teaching to technology integration.

“So, you have to look for it and change it from traditional to modern technology,” said participant number two (P2). He believes that to reach out to the students. He has to change how the instruction is being taught, which is the integration of new strategies such as technology integration.

Participant number five (P5) added, *“I maximized the use of technology, especially messenger, zoom, and google meet”*. She believes these applications are very helpful in teaching and instructing learners' activities. The latter will utilize this way to teach in the future.

Overall, according to the participants in this study, to improve instructions and make these more convenient for everyone, they have interventions wherein they reconstruct the instruction and provide examples and supplications that help students better understand the lesson. They also utilize technology, which is helpful to everybody.

3.1.3. Call of duty

In response to these, [Padilla and Brenda \(2021\)](#) noted that most rural teachers demonstrated commitment, tenacity, and resourcefulness in the face of inconsistent, unclear, or non-existent government support. They took charge of and responsibility for their professional growth by looking for ways to fill knowledge gaps and continuing to support their students.

Call of duty is a set of experiences of participants in this study. It shows how the Science teachers function in teaching during the COVID-19 pandemic. It also includes the teacher's emotional aspect during the pandemic teaching episode.

As participant number three (P3) mentioned, *“as a Science teacher, dumami ang aming ginagawa like printing modules and checking the papers or modules of our students (as a Science teacher, Our works have been doubled like printing modules and checking the papers or modules of our students)”*.

She believed that they could not stick to the existing practice but had to accelerate the possible ways of teaching. Participant number two (P2) also added, *“I have to prepare also my PowerPoint presentation. So, it is very time management/time constraints because you have to prepare all of these in an overnight situation.”*

Despite all of this efforts, participant number six (P6) said, *“marealize mo nga daw mas makulangan man gali ang imo nga pagiging teacher kung wala na ang mga bata daw feeling mo hindi ka buo as a teacher kung wala ang learner mismo ara sa tubangan mo (you will realized that there is a missing part of you as teacher because the students are not around)”*.

Science teachers confidently believe that the teaching and learning process is more effective in an in-person setting and that teaching in such a setting is very fulfilling.

Consequently, in this study, participants said that they are obliged to do the duties that a teacher must fulfill. Somehow, they realize that the essence of being a teacher is seeing your student's presence, being with them face to face, sharing a thought, and other things that usually happen inside the room's four corners.

3.2 Challenges

Challenges are the situations that a person may encounter when performing a duty or commitment that are a barrier to achieving their desired outcome. This study reveals that out of six (6) total participants, three (3) of them talked about the authenticity of students' outputs, five (5) of them talked about instruction delivery, three (3) of them talked about internet connectivity and lack of resources, two (2) of them talks about topography, and only one (1) talks about safety. The following are the emerging themes under challenge.

3.2.1. Instruction delivery

According to [Manalo and De Vera \(2020\)](#), teachers have said that using the most appropriate pedagogy to assist the lesson in online distance learning presents a new difficulty. Participants stated that engaging in inquiry-based learning is difficult since it requires assistance in the early stages. Inquiry-based education is the foundation of experiential learning because it provides tasks that allow students to use their process skills while stimulating their curiosity.

One of the challenges we identified based on the teachers' responses is the delivery of instruction, which the Science teachers in this study had in teaching Science among high school students during the COVID-19 pandemic. These are the challenges they have to deliver a better learning experience to the students.

As a teacher who has students living in remote areas, it is important to gather your students in one place to easily deliver your instruction, but now, as participant number three (P3) said, *“Dito sa hard, teaching learners where it is difficult for me to reach out all the learners at home. (As for the hard part, teaching where it is difficult for me to reach out to all the learners at home)”*, some of the student's families cannot afford to buy cell phones, and it is hard to distribute their modules.

As participant number two (P2) said, *“You have to transport what they called “sapa” o “suba”, o sa Ilonggo pa tabukon mo na sya. Then there are lots of dogs. Yes, you have to overcome all of this. So just to provide better education to the students. And then, when we say naman so hard, I encountered the hardest challenge during the distribution of modules in their respective houses and the online class. (You must cross the brooks or creeks, encounter lots of dogs, and overcome all of this to provide better education to the students. And, so, when we say the hardest challenges, I have encountered were during the distribution of modules in their respective houses, and the online class)”*.

It is one of the difficulties for the teachers during the distribution of the modules; they have to go through a lot to deliver their instruction. About this, participant number five (P5) added that, *“reaching out to the learners is limited, and lastly, teaching and learning situation*

became a bit hard because I cannot be on the side of learners in doing and accomplishing their activities".

It means that they do not have enough time to be with their students, and they also have difficulty assessing their students.

Teaching, particularly Science, is difficult during this pandemic because the mode of learning changes. Past research has confirmed the important contribution made by teachers in creating a classroom environment or atmosphere conducive to Science learning. In particular, teachers make a major contribution toward creating a positive learning environment in Science classes through their interaction or communication with students. According to participant number four (P4), *"As a Science teacher, challenges during this pandemic is hard for me to deliver lessons to my students and secure their learnings towards the lessons. The most challenging situation during this time."*

In line with this, participant number six (P6) added that, *"Teaching Science is very difficult since wala ka sang matagaan sang example, wala ka sang pwede mamodel, wala sang live nga interaction nga nang instant pag may pamangkot ang bata makapamangkot siya sa imo directly, makasabat ka sa ila directly.* (Teaching Science is very difficult since you can't provide some example, models, and also live interaction whenever the students have a question where you can directly give answers)".

In dealing with their challenges, you will also understand how difficult it is for them to exert their knowledge on their students. Some topics need a deep understanding because you cannot expect students to understand the text or image in their modules just by looking at it. Some lessons require many examples, a real-life example to be exact so that it will stay in their minds.

In this case, Science teachers claimed that they are struggling to deliver the instructions (modules) to students because of various factors such as the number of students living in far-flung areas and dogs. They are also challenged to provide a practical example with real-time reactions. Thus, these teachers are challenged on how to deliver learning instructions even if their students are not on their side.

3.2.2. The authenticity of students' outputs

Because teachers were not trained in distant learning throughout their pre-service years, determining how to integrate various evaluation methodologies appears difficult. Because distant learning cannot give real-time assistance to teacher-facilitators when conducting examinations and producing outputs, the legitimacy and trustworthiness of students' responses may become an issue. Giving individualized feedback for students' work and formative exams is also important because it helps lead students' learning, but this appears impossible, especially for teachers with approximately 300 students in 6 classes. Summative examinations are also vulnerable to cheating and plagiarism, which defeats the aim of quality assessment.

The authenticity of Students' Outputs is one of the challenges that the Science teachers in this study had in teaching Science among high school students during the COVID-19 pandemic. Teachers cannot guarantee that their students are the ones who answer their modules and activity sheets.

The teaching and learning process assumes a different shape in times of crisis. With this, the teachers have difficulty ensuring the authenticity of their students' outputs. Participant number three (P3) said that, *"As I observed while checking the modules and activity sheets of my students, ang iban gina-copy nalang sa internet, gatinamad nalang gid, ang iban gani ginapasa nalang nga wala pa na answer.* (As I observed while checking the modules and

activity sheets of my students, others are only copying from the internet, they are timid, and others are just submitting their output with no answers)".

It is true because many students in every school used to get their answers on the internet and their parents sometimes answered their modules. In addition to this, participant number six (P6) tells us that, *"If the time comes nga mag deadline ka na, may ginpasa nga modules how sure are you nga teacher kung sila gid man ang naghimo sina, pwede nga ang kapitbahay, pwede nga ang parent, pwede nga ang ante, ang kuya. (If the deadline comes, how sure are you as a teacher are they the modules came from their answers? It could be their neighbor, parent, aunt, and brother)"*, because the teachers are not on their side to supervise them while conducting their task or activity, a variety of things could happen.

As participant number five (P5) said, *"I cannot always expect quality outputs since I am not there by their side in hands-on activities"*.

The Science teachers in this study revealed that one of the challenges in teaching Science during the COVID-19 pandemic is the authenticity of their student's outputs. They observed that most of the students' answers are copied from the internet. They are unsure if all of the output is done by themselves or someone else, thus low quality and authenticity of student's output.

3.2.3. Internet connectivity

Teachers rely on the internet for communication and use, yet reliability and speed are obstacles. The participants stated that an unreliable and slow internet connection hampers their duties and work. Signal disruption in various geographic locations adds to a situation beyond the teachers' control. Teachers are no exception to the sluggish internet connection, as they would miss out on important conversations if the internet went down during synchronous classes. The success of any online distance learning modality is strongly reliant on internet connectivity, as a failure can ruin the entire online learning experience.

Internet connectivity is the ability of individuals to connect to the internet using a computer, cellphone, and other devices, and how this becomes a challenge to Science teachers. This school had teaching Science among high school students during the COVID-19 pandemic. These are the challenges they have to give the students a better learning experience.

Due to the spread of the COVID-19 pandemic, there are many changes in the teaching-learning process. Science teachers have identified a challenge in communicating with the students because many do not have internet access. Participant number six (P6) said, *"Sang aton lugar diri sa T'boli, not all students are accessible sa internet, or most of them wala sila sang access sa internet specially may mga area kita diri nga wala sang internet connection even may gin install na diri bag-o lang nga Globe tower but then not all students are accessible. (Here at T'boli, not all students are accessible to the internet, or most of them do not have access to it, especially some areas doesn't have the internet connection at all, even though they install a Globe tower here in our area, not all the students accessible)"*, this statement leaves as the idea that not all the students, specifically those in remote areas have the internet access. They can have the information if the teachers visit them at home or someone will deliver a message to them.

In relation to this, participant number three (P3) added that, *"So those student na walang internet access, I am sending them a text message and sometimes tinatawagan so that no student will be left behind. (So those student with no internet connection, I am sending them a text message, and sometimes I call so that no student will be left behind)"*.

It means that to reach out to the student who does not have internet access, they send text messages and even call them so that everyone can catch up. Also, participant number one (P1) said that, *“So as for easy, mas madali lang naman maka-hanap ng suitable na mga activities para sa students. The hard part there is ‘yung mga students, hindi lahat sila merong internet connection. (So, it is easier to find suitable activities for the students. The hard there is for the students, not all have internet connection)”*, he said that the user of the internet connectivity can find a different activity that fits the students, and he added that every student has a different learning style. Some are good at visual and auditory, and some are kinaesthetic. However, the problem is that not everyone has access to the internet.

Participants in this study said they have to call their students because internet connectivity is very poor. Internet connectivity can also be because of the topography of the teachers and the students, resulting in a loss or no access to the internet. Some participants reveal that it is easier to find suitable activities, but internet connectivity stops them from doing so.

3.2.4. Lack of resources

Most participants agreed that preparing the equipment and tools for teaching in the new normal is critical. Distance schooling involves various equipment, including PCs, laptops, webcams, and internet modems. However, not all participants have comprehensive devices to allow remote learning teaching. The participants' common gadgets and tools are generally confined to laptops, desktops, and pocket WIFI. Electronic means and digital tools are now crucial for maintaining constant communication among students and professors, distributing educational materials, and accessing internet platforms (Sadeghi, 2019).

Lack of resources is one factor considered, challenged, and faced by Science teachers and high school students in times of pandemic because learning Science will require accurate resources, which will help students to understand difficult concepts and events in numerous disciplines of the said subject.

It is unlikely that there would be a lack of learning resources due to the pandemic's new educational system. In teaching Science in times of pandemic, Science teachers struggle with adjusting what lesson to be presented and taught, assessments and activities based only on the resources that students have. Participant number one (P1) stated that, *“As for the consideration, dapat i-reconsider mo tanan nga mga resources sang students since hindi sila pare-pareho sang resources dapat hindi man pare-pareho ang assessment kag activities nila. (As for the consideration, it is a must to reconsider all the resources and must not be the same assessment and activities)”*.

In relation to this, participant number two (P2) stated that, *“The availability of the materials in an online class. You cannot say kasi na, I want to teach this one I want to teach this one this lesson, especially if the material is not available. So, what are you going to do? (The availability of the materials in an online class. You cannot say, I want to teach this one I want to teach this one this lesson, especially if the material is not available. So, what are you going to do?)”*.

Regardless of how much you want to teach and learn your students, we cannot deny that there are things that will hinder it. We cannot dispute those students are not all in the same situation thus we should expect them to have different access to educational materials. It is a sad reality that we witness in someone's life, where participant number six (P6) mentioned that, *“Ang problema naman is hindi sila makaafford sang gadgets. So, hindi japon tanan nimo mareach out, so difficult d’yapon siya. (Another problem is that not everyone can afford gadgets, still we cannot reach out all of them)”*.

According to the participants in this study, they must be considerate of the resources in the learning ground. They claimed that instructions must be modified based on the availability of resources. Resources such as students' ownership of gadgets made it hard for the Science teachers to operate the class during the COVID-19 pandemic.

3.2.5. Topography

According to Mean (2021), the utilization of full-distance learning during a pandemic is also not supported by the students' and teachers' limited internet connection. As a result, pupils' topic mastery suffers a result of these restraints.

One challenge that Science teachers face is the topography (location) where they are assigned to teach. These Science high school teachers continue to resist because they are assigned to mountain areas.

Being assigned in mountain areas where they have to go through difficult paths, at the same time, they have limited resources like signals, internet connection, and other needs. Indeed, being a teacher is not just a job to teach because being a teacher, you have to be flexible and extend your service as able as you can. Participant number two (P2) stated that, *"We have to go out to distribute modules, and with those situations, during the distribution of their modules, we also considered the location, the transportation, and the climate because the location and the distance between the school and their homes are far from the site. So, we have to also consider that and also the climate. Sometimes climate is changing, sometimes sunny and then after an hour it will change due to the climate change"*.

Being assigned in a mountain area, Science teachers need to be strong and extend their patience to provide for the needs of the students. In this new normal, the saying no one left behind needs to be reinforced, but according to participant number three (P3), *"Pero meron talaga kasi nandito kami banda sa bukid kung baga. So marami kaming students na naninirahan sa farm area na walang internet connection. (We are in a mountain area, so there are students that are residing in farm areas where there is no internet connection)"*.

Because of this, it is another thing for a Science teacher to find ways to address this problem.

The respondents reveal that the change in the mode of teaching and learning during the pandemic causes additional responsibilities. In distributing modules, they have to go personally to their students who live far from the school and do not have access to the internet.

3.2.6. Safety

According to Lateef (2020), the classroom should become a place where teachers and students may freely express themselves without fear of being judged, as expressed in the idea of psychological safety because it serves as the foundation for effective learning. People are more open to progress and negotiating change when they feel safe and comfortable. This notion of a safe setting or climate is seen as a precondition or prerequisite for creativity and performance.

Safety in the workplace is already a critically important issue. In times of the COVID-19 pandemic, safety is considered a challenge for a Science high school teacher in delivering education.

It is undeniable that everyone, especially teachers, is on guard and ensuring safety, especially in times of pandemics. Teachers are horrified by what happened, and it is being published in the news worldwide. Therefore, they make every effort to prevent things that might cause illness and disease spread. As being the only Science teacher participant who

talks about safety, participant number two (P2) stated that, *"So, safety is always alangan naman na pupunta ka don na umuulan, so safety 'yun siya. Moreover, another one kapag may sakit ka you can't go out unsafe parin 'yun kasi transmission of viruses and such things. At sila naman ganon rin so safety again. (So, safety is always because you don't have to go there if it is raining, so that is safety, and another one is when you are sick, you cannot go there because that is unsafe as it is the transmission of the virus and such things. Moreover, the same goes for them (students))"*.

As this Science teacher endeavors to slow the spread of the virus while providing quality education to his students, he had to be careful in every action and situation he might encounter.

According to the participant of this study, safety must be put first into consideration, the fact that there's a lot of risks that might arise in giving materials like modules to students. Especially in this time of pandemic they cannot guarantee their safety.

3.3 Adaptive strategies

These are the interventions used in adjusting and adapting to the changes which decrease the anxiety and stressful experiences or situation that the Science teachers have undergone during the COVID-19 pandemic. This study reveals that out of six (6) total participants, four (4) of them talks about adaptability, four (4) of them talks about assistance acceptance, four (4) of them talks about flexibility and innovation, four (4) of them talks about personality or attitude, two (2) of them talks about Radio-Based Instruction and two (2) of them talks about time management. The following are the emerging themes under adaptive strategies.

3.3.1. Adaptability

Adaptability is a crucial quality for any teacher to possess. Instead of strict routines, effective teachers can adjust, alter, and modify teaching methodologies based on student accomplishment. In this phase, teachers are adapting and adjusting to the new teaching method to fulfill their obligation as Science educators.

Adaptability is a set of strategies that the Science teachers in this study had in teaching Science among high school students during the COVID-19 pandemic. Teachers make these strategies or interventions to teach students effectively.

As the COVID-19 pandemic started, the dilemma in the teaching-learning process, especially in Science education, teachers are learning to be equipped and adapt to the new normal. Participant number five (P5) said that, *"Ensuring that learning can happen despite the COVID-19 pandemic we are facing now served as the drive that motivated me to do my needed task. By having this mindset, I can assure the consistency of learning."*

It states the obvious setup in the teaching-learning process in this new normal. Participant number three (P3) added that, *"Adaption of online teaching. Kasi dati, hindi gani ginagamit ang online pero ngayon sa group chat pwede. (Adaption of online teaching, because before we are not using online, but now, we can do it through group chat)"*. This makes sense because of distance learning.

Also, participant number six (P6) added saying, *"So, gincondition ko ang akon nga sarili nga mag open more or mag engage more sa social media, mag-engage more on internet para mareach out ang mga bata. (So, I condition myself to be open more or to engage more on social media, to engage more on the internet so I can reach out to my students)"*.

His statement shows how Science teachers who are rarely engaged on the internet make adjustments just to reach out to their students. And participant number four (P4) added that,

"I much prefer to engage and strengthen myself in gadgets and social so that I can go with the new normal education".

Her statement somehow gives an eye-opener to every teacher that in this time of the pandemic, teachers must be knowledgeable enough in using gadgets to keep pace in this teaching-learning process.

This study reveals that the teachers are learning to be equipped and adapt to the new normal, especially in engaging themselves in digital skills like using technology products such as social media. It paves the way for them to reach out to the students and deliver the instruction.

3.3.2. Assistance acceptance

According to Okai-Ugbaje, Arzewejewaska, and Imran (2020), Collaboration is essential for everyone to have a positive learning experience. Parents become more active in offering help and support when they understand their children's needs, and teachers become more responsible for providing quality instruction to their students. Everyone is involved in the design of learning opportunities in this situation. Implementing a learning modality becomes organized and simple when everyone understands their roles and responsibilities as Science teachers.

Assistance Acceptance is a collection of adaptive tactics used by Science teachers in this study to educate Science to high school students during the COVID-19 pandemic. These are the strategies they made to keep pace in teaching Science.

As the pandemic worsens, it causes the normal teaching-learning process to halt, especially in Science education. Science teachers develop strategies to reach out to their students using different platforms, especially through chat or text. Participant number six (P6) said that, "*The same time makabalo man ko sang mga question kag difficulty sang mga bata sa pagtuin sang Science so siguro pinaagi sa group chats, pinaagi sa text, mareach out ko ang mga bata kag same to them, mareach out nila ako sa ila nga difficulty in learning Science. (At the same I can know the questions and difficulties of my students in learning Science. Maybe through group chats, text, I can reach them out, and they can also reach me out when they have difficulties in learning Science)*".

It means that the participant is very willing to know the student's viewpoints and difficulties and is willing to assist with the student's needs. In this way, he can come up with an idea or interventions that can also be helpful to his sworn duty. In connection to this, participant number four (P4) said that, "*I prefer to be more active in social media, so that every question, follow-up, and everything that students need, so I can assess them constantly.*"

These statements tell us that accepting Assistance is not only beneficial to students, but teachers can also benefit from it.

Participant number three (P3) also added that, "*To those students that have a concern in answering their modules, they are free to send the message, to ask questions and they are free to message/communicate to me as their teacher or subject teacher*".

Just like previous participants, she is willing to answer the student's concerns and assess what will be the best approach or intervention to do. Participant number two (P2) also added, "*Constant communication will help all of you to address the needs to address the questions to cater to those needs of the students*". The participants believe that constant communication is a must for students' inquiries.

The participants reveal that they have to accept assistance, could it be between teachers towards students or between teachers towards their peers. They imposed a welcoming environment and constant communication to collaborate on the best for students learning.

3.3.3. Flexibility and Innovation

Overall, innovative teaching is defined as the application of new technology and concept to handle teaching problems creatively, as opposed to the traditional knowledge-transfer and teacher-centered teaching patterns. In the realm of education, it is also known as student-centered teaching (Zhao & Xie, 2017). According to Tabor (2021), the challenges can be addressed, and the impact on the education sector is reduced if the flexible strategies are implemented effectively. In this way, Science teachers use different methods or strategies in a systematic way of teaching with the aim of education.

Flexibility and Innovation refer to a series of tactics used by the Science teachers in this study to teach Science to high school students during the COVID-19 pandemic. Teachers develop these tactics or interventions to instruct students.

As the pandemic intensifies, the typical teaching-learning process comes to a halt, particularly in Science education. Science teachers devise methods for communicating with their students. Participant number one (P1) said that, *"The adaptive strategies na na-come-up ko is being flexible and innovative. (The adaptive strategies that I came up is being flexible and innovative)"* which makes sense.

In connection to this, participant number five (P5) added that, *"The adaptive strategies I had with association with my experiences in teaching Science is that I became more flexible."*

His statement is somehow related to the previous participant wherein he's openly made himself flexible in responding to different learner abilities, needs, and interests.

Participants number two (P2) and six (P6) also come up with almost the same statement. According to Participant number two (P2), *"So, I already have that experience (Google Meet). Therefore, it is not hard for me to practice and apply my learnings in online classes naging madali siya for me to apply all of this. (So, I already have that experience (Google Meet). Therefore, it is not hard for me to practice and apply my learnings in an online class as it became easier to apply all of this)."*

In addition, he just finished his master's degree during the pandemic, which gives him some background to this online teaching platform. About this, Participant number six (P6) also added, *"Isa pud na nga adaptive strategy create sang online class, mga group video call ah. (One of the adaptive strategies is to create an online class and group video call)."*

It said this participant openly involved himself in online platforms to teach students. The participant also devised an innovative strategy wherein creating an online class and group video call to students.

Participants exposed that teaching Science during the COVID-19 pandemic made them learn to be flexible and innovative. One of these is to maximize the use of digital products such as online conferencing, as they have been exposed to these strategies. They modified parts of the assessments for students with high and low demand for access, respectively.

3.3.4. Personality or Attitude

Participants' positive well-being helps them deal with the challenges of the new normal education. They may continue to accomplish their duties and responsibilities despite the challenges of these trying times with the help of a positive mindset, self-confidence obtained from encouragement and inspiration, a healthy lifestyle, and stress reduction. Even outside of the classroom, teachers who cultivate a healthy environment and well-being among themselves can help children enhance their academic performance and advance socially and emotionally.

Personality or attitude is a set of adaptive strategies that the Science teachers in this study had in teaching Science among high school students during the COVID-19 pandemic. Teachers come up with these strategies which help reach out to their students.

The pandemic makes many differences in the teaching-learning process, especially in Science teaching. They are struggling to keep in touch with their students in a way that they come up with interventions. Participants have different viewpoints concerning their personality or attitude toward teaching Science. Participant number three (P3) said that, *"For me, be patient in preparing/printing modules and activity sheets and also be patient in checking student's output."*

This participant dealt with his patience in preparing the modules and activity sheets and checking students' output, which helped her to be free from stress. While participant number two (P2) states that, *"So as a teacher, you must be more critical and precise in facing all the challenges you have."*

In dealing with this situation, this participant said that in facing the challenges in teaching Science, you have to be more critical and precise. You have to give the necessary details for someone to understand exactly what you want to convey.

On the other hand, participant number six (P6) states that, *"Kag ikaw dapat hindi ka gid tamadon. (As a teacher, you must not get lazy)."*

He only means that as a Science teacher, you must be diligent in your duty, for teaching Science needs lots of supplements like figures, videos, and any other visual aids that students can see and help them learn. And participant number five (P5) also added, *"The adaptive strategies I had associated with the challenges in teaching Science during this time of pandemic is by having a strong and sound mind."*

In dealing with this situation, this participant considers having a strong and sound mind. In this way, she will be free from anxiety and still manage to teach students adequately.

According to this study's participants, they must be precise and critical in giving instructions. Teachers must also be patient in giving the instruction and materials by having a strong and sound mind. These Science teachers revealed that they must be in the teacher's character and function well by avoiding being timid.

3.3.5. Radio-based instruction

The radio station is sometimes utilized as a useful teaching medium for learners who live in rural areas. It is in line with the idea that many scholarly studies have demonstrated the value of radio-based instruction in student learning and development, as well as arguing for the need for a participatory approach to knowledge sharing and dissemination via new media, as pointed out by Ibrahim and Mishra (2016). Along with this, teachers also became radio artists, using their voices and guided by their lesson plans to convey their lessons to the most remote places where internet availability is limited. This kind of intervention is helpful in teaching and instructing Science education to students.

Radio-Based Instruction is a collection of adaptive strategies used by the Science teachers in this study to teach Science to high school students during the COVID-19 epidemic. Teachers devise these tactics to assist them in reaching out to their students.

The learning-teaching process is very difficult with the existence of the COVID-19 pandemic. With this, educational and local sectors develop Radio-Based Instruction to easily disseminate the learnings to the students. Participant number two (P2) states that, *"So, we are doing the radio base instruction kung hindi parin talaga siya makuha 'yung pag ano mo ng lesson mo. (So, we are doing the radio base instruction if you do not understand your lesson)."*

which is the sole purpose of the RBI. Also, about this, participant number six (P6) added saying, *“Radio-Based instruction pinaagi sina ang mga bata nga wala internet for sure makaabot na ang radio sa ila, isa pud na kadako nga bulig sa mga learners. (Radio-based instruction, with this the students who do not have the internet connection, for sure they can be reached out by the radio on and that can be a big help to the student).”* he believes that with the help of RBI, they can reach out to the students that cannot access the internet.

According to the participants, this is one of their specialized adaptive strategies in collaboration with the local government unit to deliver instructions to students through radio broadcast. All participants underwent radio-based instruction, as stated by the participants. One of their specialized adaptive strategies, in collaboration with the local government unit, is to deliver instructions to students through radio broadcast.

3.3.6. Time Management

In teaching science, teachers are obliged to prepare for a particular lesson. They need visual aids and activities that help students learn more about Sciences. In this, they must know how to make a sequence of their workload or to manage their time. Time management is essential for balancing home and work demands. It assists in completing tasks on time. It allows people to attend school, complete home activities, and regain energy through relaxation. Establishing routines through habits and practices on a set schedule allows them to use their time better. Furthermore, taking advantage of tools and technology to execute tasks such as output submission, score computation, written work checking, and instruction delivery provides comfort and ease.

Time management is a collection of adaptive strategies used by the Science teachers in this study to teach Science to high school students during the COVID-19 epidemic. Teachers devise these tactics to sequence their workloads.

Science teachers are struggling to manage their time, and it got worse when the pandemic came. Participant six (P6) came up with this statement about time management. He said that, *“Dapat may ara ka gid nga timeline, para ma-manage mo ang consistency nga dapat may ara ka, so dapat may ara ka man nga order of activities, may timeline ka. (You must have a timeline to manage the consistency, you must have the order of the activities, you must have a timeline).”*

It means that a Science educator must follow his/her timeline or order of activities so that they will become harmonious in behaving in everyday scenarios. While participant number two (2) said that, *“Simply have to prepare ahead of the time all the important or information and necessary to prepare and disseminate it ahead. (So, you have to prepare ahead, simply have to prepare ahead of the time all the important or necessary information to prepare and disseminate it ahead).”*

In dealing with every day's schedule, this participant used to prepare all the important information ahead of time to avoid hastiness.

Time management is also one of the essential adaptive strategies in times of COVID-19 pandemic in teaching Science. Participants said that they plan and set a schedule and order of activities. A schedule not only for preparations but also for visiting their students to evaluate the student's situation during pandemic learning.

4. CONCLUSION

The purpose of this phenomenological study is to discover and explore the situation of Science teachers in one of the national high schools in T'Boli, South Cotabato during distance learning in times of the COVID-19 pandemic. Thus, the identified themes are associated with the lived experiences, challenges, and adaptive strategies of Science teachers of the said institution through interviews. According to the results, the following conclusion is hereby drawn:

- (i) Three core themes are obtained from the lived experiences of Science teachers. The themes include building relations, call of duty, and instruction reconstruction. Building relation is a lived experience where the Science teachers learned that it is hard to make a more hands-on activity for students, hard to determine the communication cues, and hard to catch their attention during distance learning. The participants also experience to fulfill their call of duty, that despite the pandemic, they have to double their efforts and still respond to their functions. Science teachers have experienced reconstructing the instruction, including the transition from traditional teaching to the incorporation of technology.
- (ii) Six core themes are obtained in association with the challenges of Science teachers in teaching Science subjects. These are the authenticity of students' outputs, instruction delivery, internet connectivity, lack of resources, safety, and topography. Science teachers are challenged by the authenticity of students' outputs as they cannot guide the students in an in-person setting. Also, instruction delivery challenged them as they have to deliver the instructions (module) in a widespread area of students' residence. Two things to consider are the topography and internet connectivity. Climates and geographical complexity made it difficult for teachers to reach the students. This thus led to the compromised safety of teachers, which halts the delivery of instructions on time. As the students are embedded in the remote area, internet connectivity challenged the Science teachers to reach out to students for instructions, clarifications, and event announcements. Lack of resources is one of the challenging parts of giving instructions from both Science teachers' and students' points of view, as Science education requires more materials and resources.
- (iii) Six core themes were identified concerning Science teachers' adaptive strategies during the pandemic. These include adaptability, assistance acceptance, flexibility and innovation, personality or attitude, radio-based instruction, and time management. Science teachers are immersing their selves in technology, such as social media as a way of adaptability. Also, Science teachers are always open and accepting assistance to guide the students and even the parents and their peers to encourage students learning. They also incorporate flexibility especially in learning different fields as them, and innovation especially in maximizing the use of digital products. Science teachers are also possessing a positive personality and attitude toward their students, peers, parents, etc. They also learned to assimilate time management especially since they cannot know what the future holds, so they must prepare ahead of time. Specialized adaptive strategies were integrated among the Science teachers which are radio-based instruction. Radyo Katribu is a radio-based instruction initiated by the local education sector of the municipality and the local government unit to promote wider instruction delivery, as it needs minimum requirements and availability among the students.

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6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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