

Challenges in teaching agriculture and fishery arts to Grade 7 students by non-agriculture and fishery arts faculty

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Abstract: This phenomenology research study delves into the challenges which non-AFA faculty encounter when they are assigned to teach Agriculture and Fishery Arts to Grade 7 students. The researcher conducted semi structured interviews with 5 non-AFA faculty in two public secondary schools and used qualitative research design. Thematic analysis showed that the participants struggled with adequate resources for practical lessons, a lack of diverse technical skills like crop production and designing engaging yet curriculum-conforming activities for the students. The teacher's lack of appropriate tools and facilities coupled with inadequate technical knowledge made teachers resort to theoretical instruction as the sole teaching method. Seeking self-directed learning, many teachers, however, showed great resilience in overcoming these challenges by collaborating with their peers. These findings imply that assigning non-specialist teachers suffering the quality of education unless the teachers have had adequate training and resources. The study suggests that AFA teaching can only be effective when the teachers possess the relevant expertise, adequate resources, and professional training. Hence, to improve the standard of technical and vocational educational programs classroom teachers' assignments need to incorporate alterations, so that their areas of expertise are in line with the teaching resources.

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Keywords: Challenges, Grade 7, Agriculture

Date Submitted: March 21, 2025

Date Accepted: March 30, 2025

Date Published: April 25, 2025

INTRODUCTION

In the past few years, In the Philippine education has undergone significant changes in terms of curriculum design, implementation, and improvement. One of these is the integration of holistic and skills-oriented learning in teaching, particularly the inclusive integration of Agriculture and Fishery arts in the transition of the Matatag Curriculum.

This shift in curriculum aligns with national goals and development for a sustainable livelihood that cultivates the competencies of students. However, in terms of educational change, the inclusion of agriculture and fishery in grade 7 warrants that TLE teachers will become agriculture and fishery teachers despite being non-specialists in the subject area.

Meanwhile, the Philippines is taking steps to include the agriculture and fishery arts in the curriculum, which is traditionally taught in some provinces where there is accessible

farmland. This subject area in TLE is commonly taught by specialized teachers who have extensive experience and skills in teaching the AFA. However, the curriculum must change. In that case, many teachers may have some hindrances and cause an educational burden among TLE teachers because this included subject area may now be taught by non-specialists in agriculture and fishery arts. This stresses the Department of Education's (DepEd) urgency to include the agriculture and fishing arts studies in the Technology and Livelihood Education (TLE) curriculum for both elementary and secondary school. By doing so, this curriculum will equip Filipino students to have broader knowledge and skills in sustainable development in agriculture and fishery, entrepreneurship, and agribusiness. This inclusion in the subject area in the TLE curriculum with compatible competencies for students is important for imparting skills and knowledge for livelihood education. Given this, agriculture and fishery arts can play a substantial role in Philippine education, even in the economy, across rural and urban schools. By this approach, it will prepare and equip the learners with the thorough expertise needed to become capable professionals.

Statement of the problem

This research aims to investigate the challenges faced by Non-AFA (Agriculture and Fishery Arts) TLE teachers teaching Agriculture and Fishery Arts in Grade 7 to develop an intervention program. The study seeks to answer the following questions:

1) What are the challenges encountered by Non-AFA Grade 7 TLE teachers in teaching Agriculture and Fishery Arts in terms of:

- 1.1) Technological knowledge on AFA tools and equipment and their utilization,
- 1.2) Pedagogical knowledge on AFA and its application,
- 1.3) Content knowledge on AFA?

2) How do Non-Agriculture and Fishery Arts Grade 7 TLE teachers manage these challenges?

3) What intervention program in teaching Agriculture and Fishery Arts for Non-AFA Grade 7 TLE teachers can be drawn based on the findings?

METHODOLOGY

Research design

This study employed a qualitative research design using a phenomenological approach. This design was chosen to capture the lived experiences of non-Agriculture and Fishery Arts (non-AFA) faculty who teach Agriculture and Fishery Arts (AFA) to Grade 7 students. Phenomenology enabled the researcher to delve into the perspectives, insights, and challenges of these teachers as they navigated teaching outside their field of expertise. This method provided a deeper understanding of the teachers' strategies, struggles, and the impact of their experiences on their instructional effectiveness and professional identity. The approach was well-suited to exploring the nuanced realities of non-specialist teachers within the context of curriculum change and instructional expectations.

Respondents and locale of the study

The participants of the study were five Grade 7 TLE teachers selected through purposive sampling. These teachers were currently assigned to teach Agriculture and Fishery Arts despite not having a specialization in the subject. All of them attended the Matatag Curriculum training for Grade 7. The study was conducted in two public secondary schools under the Schools Division of Quezon City, specifically Manuel A. Roxas High School and Ernesto Rondon High School. Two teachers were selected from Manuel A. Roxas High School, while three came from

Ernesto Rondon High School. These schools and participants were selected because they represented the realities of urban public school settings where non-AFA teachers are often tasked with teaching agriculture and fishery topics.

Research instrument

The primary data collection tool used in this study was a semi-structured interview guide. This format allowed the researcher to explore predetermined topics while also giving room for probing and follow-up questions to capture rich and detailed responses. The interview questions were open-ended, enabling participants to freely express their views and experiences. The instrument underwent content validation by three experts to ensure its relevance, clarity, and comprehensiveness. This approach helped ensure the credibility and trustworthiness of the data collected, allowing the researcher to gather in-depth insights into the experiences of the non-AFA teachers.

Data analyses procedure

Data analysis was conducted using multiple qualitative methods to ensure depth and accuracy. These included Word Frequency Analysis to identify recurring terms and themes, Thematic Analysis to discover patterns and categorize challenges, Content Analysis to systematically code and interpret the responses, and Phenomenological Analysis to understand the lived experiences of the participants. The use of ATLAS.ti software aided in organizing and analyzing the qualitative data efficiently. These combined methods provided a holistic view of the difficulties non-AFA teachers face and informed them the creation of an intervention program aimed at supporting them in teaching Agriculture and Fishery Arts.

FINDINGS

Problem No 1.1. Technological knowledge on AFA tools and equipment and their utilization

Technological use in AFA

This theme explores the barriers and difficulties encountered when adopting and implementing technology in AFA. Yet, two sub-themes are formed: (a) Access to tools and resources and (b) Challenges with technology.

Access to tools and resources

To improve the quality of their courses, teachers of Agriculture and Fishery Arts (AFA) use basic teaching aids such as projectors and videos from the internet, which are very useful. However, they know that these materials are not adequate to allow students to engage in real, hands-on learning. Their ability to capture real-life farming and fishing is automatic but not effective due to lack of modern tools. Teachers expressed concerns regarding this situation along with their desire to have better access to modern appliances. Below are their answers:

Participant 1 observed the huge gap in the availability of resources and availability of certain baseline tools stated:

"Usually, we use projectors for presentations, and sometimes we rely on videos from YouTube to show certain techniques or farming practices."

("Usually, gumagamit kami ng projector para sa mga presentations, at minsan naman umaasa kami sa mga videos sa YouTube para ipakita ang ilang techniques o mga farming practices.")

Building on this concern, Participant 2 stressed the possibility of using new mobile applications and other multimedia applications in the classroom.

“We are only limited to basic tools and equipment such as PowerPoint presentations and instructional videos from YouTube. I only wish that we have more advanced equipment for the students to get a more hands on approach onto how we teach them about farming and fishing techniques.”

(“We rely on basic tools lang, like PowerPoint presentations and some video tutorials from YouTube. Pero sana meron din kaming mga updated equipment, para mas realistic ang experience ng mga bata sa pagtuturo ng farming at fishing techniques.”)

Similarly, Participant 5 echoed this sentiment, highlighting access to more advanced tools such as simulation software and virtual reality software.

“I only wish that we had simulation software or virtual reality tools to show students what the real scenario looks like.”

(“Sana lang may access kami sa simulation software or kahit virtual reality tools para mas ma-visualize ng students ang real-world AFA scenarios.”)

These responses collectively reveal the varying degrees of resource utilization and challenges faced by educators. Access to tools and resources for teaching is a critical aspect of modern education, particularly as digital technologies continue to evolve and reshape pedagogical practices. The effectiveness of these tools largely depends on their design and the extent to which they facilitate active learning and engagement among students. Research indicates that many digital resources currently available in educational settings tend to prioritize the transmission of information rather than fostering interactive learning experiences. Some non-expert teachers faced different challenges when it comes to technological knowledge. Teaching tools and resources access is critical to modern education (Maziane, 2023) as digital technologies develop and transform pedagogical practices. And this holds true with many digital resources which are used to transfer information and not stimulate interaction to learn and therefore do not help students acquire new skills in learning autonomously (Maziane, 2023).

Teachers of Agriculture and Fishery Arts (AFA) rely on basic teaching tools such as projectors and online videos to support their lessons. While these resources help demonstrate concepts, they are not enough to provide students with real hands-on learning experiences. Teachers recognize the need for more modern tools to better engage students and improve the quality of instruction.

Some teachers shared that they mainly use PowerPoint presentations and YouTube videos to explain farming and fishing techniques. Others expressed a desire for more advanced technology, such as mobile applications, simulation software, and virtual reality tools, to create more immersive and realistic learning experiences. These tools could help students understand real-world farming and fishing scenarios better.

These responses highlight a gap in available teaching resources. While digital tools are valuable in modern education, they should not only deliver information but also encourage active learning. Many current resources focus on presenting information rather than allowing students to interact and develop skills through practice. Access to better teaching tools would help both teachers and students gain a deeper understanding of AFA concepts and practical applications.

Challenges with technology

While technology is an important resource for teaching Agriculture and Fishery Arts (AFA), its usefulness is still a concern. Many teachers experience technological problems that block their lessons, and this hinders their teaching as well as the learning experience for the students. The most common of them are poor access to the internet and working devices, which too many teachers depend on. These complaints include:

Participant 1 described disruptions caused by intermittent internet connections:

"When the internet is intermittent, and we have an online video where we need a demonstration, we have no choice but to stop the lecture."

("Oo, may mga pagkakataon na hindi talaga nakakatulong yung technology. For example, kapag unstable ang internet, tapos kailangan namin ng online video or demonstration, humihinto yung discussion.")

Building on this challenge, Participant 2 explained how they adapted when technology failed during class:

"Yes, there was a time when the projector broke down during class. I had to show the slides on my phone, not ideal but at least the lesson could go on."

("Oo, minsan nasira yung projector habang nagkklase. I had to show the slides sa cellphone ko, which wasn't ideal, pero at least nakapagpatuloy ang lesson.")

Technology plays a crucial role in teaching Agriculture and Fishery Arts (AFA), but teachers often face challenges that disrupt their lessons. Many struggles with unreliable internet access and malfunctioning devices, which affect both teaching and student learning. Some teachers shared their experiences with these difficulties. One teacher mentioned that when the internet connection becomes unstable, lessons that rely on online videos must stop, disrupting the flow of discussion. Another teacher recalled an instance when a projector broke down, forcing them to show lesson slides on a phone solution that was not ideal but allowed the lesson to continue.

Resource barriers in teaching

From this theme, two sub-themes are formed: (a) Resource limitations and (b) Outdated equipment.

Resource limitations

Due to the absence of sufficient instruments, students are unable to take part fully in practical exercises which inhibit the development of their skills. Moreover, the absence of advanced simulation technology constrains their ability to interact meaningfully with real world agricultural and fishery environments. The experienced teachers have the following responses: Participant 2 noted that limited tools made it difficult to conduct hands-on activities:

"Because there are so few tools, students don't get to have hands-on experience and have to share, which slows down the learning process."

"Dahil kaunti lang ang tools naming, minsan hindi na nakakapag hands-on learning at kailangan maishare, kaya mabagal ang learning process"

Agreeing with this concern but offering a different perspective, Participant 5 pointed out the lack of simulation tools to replicate real-world scenarios:

"I usually use presentations and share online resources. I just wish we had simulation software or even virtual reality tools so students could see real AFA scenarios."

("Usually, I use presentations and share online resources. Sana lang may access kami sa simulation software or kahit virtual reality tools para mas ma-visualize ng students ang realworld AFA scenarios.")

This following statements of the response highlights with lack of resources of teaching agriculture and fishery can hinder the teaching mood of teaching and students learning. On the other hand, one prominent strategy is the use of discussion-based teaching methods, which have been shown to foster a more interactive learning environment. Umar and Daniel Umar & Daniel (2023) found that the Discussion methods encourage active learning in the classroom as professional and students interact while exchanging ideas promoting the effectiveness of the teacher and engagement of the learner. This is further supported by Tomsikova et al.

(Tomsikova et al., 2019), This sentiment is further supported by Daniel et al., who notes that the absence of resources and equipment in Technical and Vocational Education and Training (TVET) programs leads to limited knowledge and skills among agricultural graduates (Daniel et al., 2022).

Outdated equipment

In teaching Agriculture and Fishery Arts (AFA) one challenge comes from equipment – mostly students come with obsolete equipment, so they are unable to learn what is relevant to the industry. There is a gap between students and the more educated developed world. The advanced agricultural and fisheries technologies must be met by the proper education tools and equipment from the schools. Unfortunately, many of them continue to use primitive materials, which cuts off the students' access to learning advanced techniques and practices. That's the point of the participant who, as other observers, pointed out the necessity of making available tools for good practical training in industry training.

Participant 4 apprehension included how the students were not able to be practiced with tools that meet the needs of today's industry:

"A number of our tools are out of date, so students don't appreciate agricultural practices that are needed in the industry today."

("Yung iba sa mga tools namin ay luma na, kaya hindi natututo ang mga student's ng mga modern agricultural practices na mahalaga sa industriya ngayon.")

The shortage of up-to-date equipment in agricultural education is known to be one of the barriers in achieving the teaching and learning processes. It has been shown in research that the lack of tools and equipment which is seen by the teachers as inadequate aids them in teaching agricultural mechanics. McCubbins et al. suggest that the instructional tools consideration is also important as their absence makes it impossible for teachers to implement effective practices in the classroom, hence both teacher competence and resources are essential (McCubbins et al., 2017). In spite of those hurdles, there is increasing awareness that the ways how students are taught must change so that they meet the current demands of education.

Teaching challenges in AFA

This theme focused on the challenges in teaching AFA by the non-AFA teachers. However, three sub-themes are formed: (a) Familiarity with tools, concerns, and (b) Time constraints.

Familiarity with tools

Being informed about tools of For Agriculture and Fishery Arts (AFA) teaching pedagogy suggests that students must understand agricultural as well as fishing tools. Nonetheless, acquiring the skills and techniques to operate the equipment for practical lessons is quite challenging for a general teacher. Teachers also need to work with self-study materials in the absence of some form of their training or adequate experience, which by itself is often insufficient to achieve confident and effective technology usage. These rationalizations for lies comprise the following:

Participant 1 shared how they often had to self-learn to teach students effectively:

"I have to learn them on my own before I can teach them to the students." ("Kailangan ko mag-aral muna bago ako mag turo sa mga students ko")

Agreeing with the challenge, Participant 2 expressed the importance of studying tools beforehand to maintain confidence in class:

"Most of the time I have to learn on my own but that's not always enough to feel confident using the equipment."

("Kadalasan, self-study ang paraan ko para matuto, pero hindi laging sapat iyon para maging confident sa paggamit ng equipment.")

The topic of familiarity of teachers with tools in teaching agriculture is quite broad in nature as it relates with technology, professional development and pedagogy. According to research, many agricultural educators are unable to fully utilize the available technologies in their work or practice of teaching. The incorporation of technology in agricultural education is more than skills; it is about the application and the degree of effectiveness. For example, Wells (2020) explains the issues of teachers' understanding of technologies and their application should be considered from various angles including, social, perceiving values of them, the adequacy of the teacher's self-perception and the effective use of the technologies for teaching purposes (Wells, 2020). Consider the comments of Aminu et al. (2021) asserting that the high development cost, poor training and low self-efficacy among educators are constraining factors to the uptake of modern instructional tools and technologies. In addition, points to a lack of self-confidence and knowledge on the mechanisms of technology use as major barriers experienced by teachers (Suparjan, 2021). Notably, the familiarity of teachers with tools and equipment in agricultural education is a complex phenomenon that includes perceptions of adequacy, technology, and teacher competence and adequacy in teaching and learning.

Time constraints

Explanations for AFA are often ungrounded and sometimes impossible to provide catering creativity. Such gaps need to be filled by undefined solutions and guidelines, which are detrimental to the classroom setting. With the above said, time management issues in a classroom tend to pose the most severe constraints because students may be ready to participate, but teachers who do not know how to use new formats always have fixed course schedules. A lack of new materials, some classes become more theoretical than practical due to not fully prepared instructors, which affects learning outcomes and student motivation. These are the answers:

Participant 1 explained how their lack of familiarity caused lessons to become more theoretical than practical:

"Yes, I do realize that there are times that when my lack of knowledge about the equipment causes delays. Sometimes, a situation instead led to some lectures rather than hands-on learning because I couldn't demonstrate certain things. So, this means practical lesson gets lost, which is pretty much of a very important aspect of AFA."

("Yes, may mga pagkakataon na nagiging sanhi ng delay yung kakulangan ko sa kaalaman sa gamit. Minsan, instead of a hands-on activity, nagiging lecture na lang kasi hindi ko kaya i-demo. Nawawalan tuloy ng practical component ang lesson, which is important in AFA.")

Time constraints represent a significant barrier to effective teaching across various educational contexts. According to Livy (2021), numerous studies have highlighted how these constraints impede teachers' ability to innovate and adapt their teaching practices. Participants reported that attempts at adjusting to new tools prolonged the overall disruptions caused to the lesson plan. Other than the direct impact on their teaching practices, such time deficits also have an impact on how much parents integrate technology into education. In their work, Huang et al. (2022) evidence that massive workload and time pressures are fundamental constraints on how teachers use technology in their classes. This is especially so in the era following the Covid-19 pandemic where technology has been increasingly encouraged by the authorities to use but many teachers are time poor (Huang et al., 2022). Added to this the problem of technology integration is the fact that teachers are required to teach a large amount of material content in a very short time and are thus unable to focus on innovative ways of execution (Farrugia & Trakulphadetkrai, 2020; Yang et al., 2021).

Problem 1.2 Pedagogical knowledge and its utilization

Adapting teaching strategies

This theme focused on the difficulties experienced by the teachers in the implementation of AFA in its theoretical and practical aspects. The sub-theme (a) Balancing theory and (b) Practical and Hands-On Teaching brings out the challenges of addressing both aspects of the subject among many students – reading understanding it and the doing aspects.

Balancing theory and practice

Finding the proper balance between theoretical and practical aspects of Agriculture and Fishery Arts (AFA) poses a significant problem in teaching AFA. Theory provides crucial background information, but application is essential in skill and knowledge development. Meanwhile, for instructors who tend to focus more on theory, lesson delivery that incorporates practical components can be problematic. This issue stems from the fact that most teachers given the responsibility to deliver AFA are not trained in agriculture or any fishery related discipline. Hence, they tend to stick more with formal lectures where they do not have to actively engage hands-on with the students. Contained within our replies:

Participant 1 spoke about their challenges in relating theories to practice:

“Sometimes I find this difficult, as I would like to have substantial theoretical knowledge as well, but there are also activities that can help make learning AFA more hands on.”

(“Nakakalito minsan dahil gusto ko sanang magbigay ng sapat na kaalaman sa theory, pero kailangan din ng hands-on para maging mas kapaki-pakinabang ang pag-aaral ng AFA.”)

Agreeing with this challenge, Participant 2 mentions their tendency to rely on theory because it is more known to them:

“I tend to Theorise a lot because that is what I am used to, but I understand that AFA is more hands on in activities for a clear understanding.”

(“Ang hirap talaga i-balance. Madalas nagfo-focus ako sa theory kasi yun yung familiar ako, pero alam kong mas kailangan ng AFA yung hands-on activities para mas maintindihan nila.”)

The shift from theory to practical application and vice versa is a common pedagogical challenge in multiple fields, especially health care, engineering, and technical education and training. Theory and practice should be synthesized in order for the students to be adequately equipped to address the demands of their areas of specialization.

It is recognized that graduates are better prepared for the labor market if a vocational program is created that combines practical training with theoretical courses (Subiyantoro, 2023). It's worth noting that the incorporation of practical skills in the educational setting is an absolute necessity, and this view is equally upheld by the results of different research which call for a curriculum that comprises both content and practice components (Yando, 2024). Moreover, with respect to the significance of educators in the learning process, Yao and Li state that educators can be responsible for the level of learning that is a prerequisite for the acquisition of both the theory and practice (Yao & Li, 2023).

Classroom dynamics

This theme dealt with the problems teachers encounter in the organization of classroom activities, and in this case, during the group work and open-air sessions in Agriculture and Fishery Arts (AFA). One sub-theme arose: (a) Managing Group Activities.

Managing group activities

In AFA education, students need to perform group work within AFA issue because it is the only way to bridge the gap between theory and practice. These activities enable students to understand more fully the agricultural and fishery processes as well as collaboration and problem solving. But as teachers noted, appropriate supervision can be a problem due to student distractions, safety concerns, and having to monitor many groups at the same time outdoors.

These include the following responses:

Participant 2 shared their experience with outdoor group management challenges:

“Outdoor activities are more demanding in regards with the regulations. Since the students are physically more active, they end up easily distracted.”

(“Mas mahirap i-manage kapag outdoors na. Madaming distractions kasi mas active ang mga students, kaya minsan hindi sila focused.”)

Building on this, Participant 1 gave also a description of the instructed group endeavor and supervision this time with an emphasis of safety:

“There’s a need for supervision, because it’s a specific objective, and rather than Learning, it’s better that everyone is ‘safe.’”

(“Kailangan bantayan ng mabuti bawat grupo para siguradong ligtas sila at may natututunan.”)

According to claims, teachers who value joint practices manage to prevail the context where the staff can have fruitful conversations concerning the instructional designs and learners’ needs (Patrick, 2022). This assistance being part of the collaborative culture is important to the collaborative projects that teachers get enough time and efforts to take group activities seriously (Rigby et al., 2020). Teachers’ effective management of group work has many facets such as planning and preparation, dealing with professional growth, teamwork among tutors, and appropriate management. Aspects such as these help teachers to enhance a working context which increases the level of students’ participation in activities. an environment where teachers can engage in meaningful discussions about instructional strategies and student learning (Patrick, 2022). This support is essential for sustaining collaborative efforts and ensuring that teachers have the time and resources needed to effectively manage group activities (Rigby et al., 2020).

Designing effective learning strategies

This theme explores the challenges and strategies involved in creating lesson plans for Agriculture and Fishery Arts (AFA). Two sub-themes emerged: (a) Using creative methods to engage students and (b) Adjusting Teaching Strategies for New Contexts.

Using creative methods to engage students

When engaging students in Agriculture and Fishery Arts (AFA), teachers have to come up with creative and innovative ways to teach so that the lessons are easy to comprehend and relate to everyday life. Teachers usually modify their strategies to cater to the diverse skills and learning patterns of the students. In these are important self-observations:

Participant 4 shared the different strategies to make the lesson easier to learn.

“I just what I said earlier I used to differentiate my approaches for STE and regular sections, ensuring the activities are suited to their levels. Designing inclusive learning activities and materials that cater to all students is no easy task, especially since the instructions in class often must be generic.”

(“What I said earlier is that I have STE class iniiba and regular sections iniiba ko yung atake kasi yung level ng bata yun yung inaabot ko yun talaga struggle ko. Paano ako mag

rerevise ng activities yun yung struggle ko ang pag dedesign ng learning activities Learning materials and at the same time kasi inclusive sila eh yung instruction mo sa klase iisa generic siya.”)

By doing so, Participant 5 discussed their approach to engaging students through creative lesson design: “Personally, I find it helpful to integrate creativity into my lessons. For example, I design PowerPoint presentations and use tools like flowcharts and graphic organizers to provide students with a clear overview of the lessons. This works especially well for my higher sections, where I adjust my approach to match their understanding. I tailor my strategies for each section to ensure that they can grasp the lesson better.”

(“Actually, sa akin nakatulong talaga siya inintegrate ko talaga siya nandyan designing in PowerPoint lesson ko may mga instances din na not all ah. Iba kasi ang atake ko per section kasi in my first place may hawak din ako ng higher section sa higher section so paano ko siya iniintegrate sa pag overview ng lesson ginagamitan ko sila ng concept of flowcharting using graphic organizers kaya para mas nakikita nila yung overview ng lesson.”)

This answer also demonstrates how new approaches such as models, graphical features and tools can assist in the understanding of complicated topics as well as fostering interest among students especially in a course which has a practical application aspect. The use of visual aids in the classroom has been researched widely and shown to be helpful in students’ understanding of the material in many fields. Visual aids which are comprised of drawing, pictures, moving pictures and others are important tools that assist learners in comprehending and remembering challenging information. Research shows that the use of visual aids has a profound effect on learners’ motivation and engagement levels which in return enhances academic outcomes. Comprehension and retention are not the only activities enhanced, learning becomes easier and real life applicable through the use of visual aids. Gboyega noted, for instance, that a well-structured learning environment which incorporates effective materials, visual presentations in this case, enables students to apply theoretical concepts learned in the classroom to practice and as a result, better understand the subject matter (Gboyega, 2021). This is echoed by Zainuddin, who pointed out that lessons containing an experience more cognate to the students’ ones tend to increase their interest in the subjects (Zainuddin, 2023). Moreover, the early introduction of visual aids in primary education is a holistic practice that improves the process of learning through better understanding, memory, and interest in the lesson. Different research studies provide empirical support for enhancing teaching approaches by integrating visual aids because it fits different learning styles and encourages critical thinking skills. Considering that teachers are looking for better ways of teaching, the use of visuals is still one of the most effective in helping children learn.

Adjusting teaching strategies for new contexts

Teachers tend to struggle with adjusting in new classrooms and with new curricula especially when there is a change in grade or subject. Teachers have to adjust how they teach to suit the learning and developmental needs of the children. This is particularly challenging for people who are teaching away from their subjects. The reasons are:

Participant 4 discussed their adaptation process:

“Because this is my first time handling this, I’m still adjusting since my major is ICT, and I’ve been teaching Grade 10 students. Now, I’m handling Grade 7, which is a big adjustment. In Grade 10, the way you give instructions is simpler, but with Grade 7, you need to break down every detail.”

(“Kasi first time ko mag handle nito Kaya medyo nangangapa pa ako kasi ang major ko ay ict and Grade 10 students pa, kaya ngayon napunta ako sa grade 7, sobrang adjustment sa Grade 10 kasi ang way of instructions mo ay madali lang eh kaya pagdating sa grade 7

hinimayhimay mo yung mga details kasi pag binigyan mo sila ng isang instructions parang tulala pa sila eh Kaya kailangan mo ihimay.”)

In Contrast, Participant 3 provided a contrasting perspective, focusing on using pre-made materials:

“Here, we already have a ready-made lesson plan, and we also discuss the definitions of terms. Before diving into the main topic, we discuss the definitions first and connect them to the lesson.”

(“Dito naman kase may ready-made lesson plan na at may mga definition of terms. So bago kame pumunta sa main topic yung mga definition of terms dinidiscuss muna namin.”)

Differentiation is a pedagogical strategy that allows educators to vary their approach based on student’s needs and abilities. Indeed, there are students who have different levels of readiness, interests, and learning profiles and therefore a one soccer- fits-all approach cannot be employed. For example, Bhandari points out that teachers have to use a variety of teaching techniques to address the different requirements of the learners and thus create an inclusive environment (Bhandari, 2023). This is further supported by Magableh and Abdullah who found that using a differentiated approach leads to better outputs by the students and helps to deal with the diversity in a classroom efficiently (Magableh & Abdullah, 2020). Underscores their effectiveness in fostering an inclusive and dynamic learning environment.

Student engagement

The theme of Student Engagement is an AFA focus as it encompasses the methods that teachers implement into the class to make students actively participate in the learning process.: (a) RealWorld Applications and (b) Interactive Learning Methods. Teachers emphasized linking some lessons to real life situations and using group work within the class. Four participants contributed to this theme.

Real-world applications

Perhaps the most important one is why teachers and students need to perform exercises with a real-world context using AFA is so that students are motivated. Teachers make sure that the students are taught theoretical material which is relevant to the real life they encounter every day. By drawing their clear benefits and applications, this connection serves the purpose of explaining abstract concepts. Other students are helped by teachers when they relate and link what they have been taught to outside world situations. Responses that were evaluated are as follows:

Participant 1 starts by highlighting their approach of linking lesson materials to real-life situations, saying,

"I try to connect the material to real-world scenarios that are relevant to their lives."

Building on this, Participant 3 further emphasizes the value of personal experience:

"I let students share experiences and apply topics at home in simple ways."

In similar mood, Participant 4 further emphasizes the value of personal experience:

"I tend to make learning fun and connect lessons to things they already know."

Making connections between the lessons and real-world situations is of great benefit for the students as such an approach makes them more involved and helps them understand their learning better. It has been found that learners relate poorly to the concepts taught when teachers do not include examples from real-world situations in their lessons since this gives the learners practicality to their learning experience. For example, Montesdeoca argues that preservice math teachers may find it difficult to capture children’s attention with math tasks that address the real world unless they have been taught active pedagogical methods that stem from contextual learning (Montesdeoca, 2023). It means that the components like project-based orientation

must be included into preparation of students to the teaching profession. In the same vein, Morley and Jamil argue that the education sector needs to change its strategy for education in tertiary institutions by focusing on application-based learning which can go a long way in improving the students' skills in self-learning and their employability (Morley & Jamil, 2020). Such findings are also consistent with Sulaiman, who emphasizes that students' participation increases or improves when the learning process is situated in their particular social context such that they have usable knowledge (Sulaiman, 2024).

Interactive learning methods

Students' imagination and participation can be improved through active learning strategies like group brainstorming and group discussions. These are more student-centered and allow for engagement where students are free to express themselves, share their ideas, reason, and work together. These techniques provide a chance for collaboration and free expression, increasing one's ability to solve problems and learn more holistically. Here is what they said: Participant 2 shares their strategy:

"I let my students group themselves and brainstorm about the importance of each lesson."

In similar, Participant 3 highlights the importance of group involvement, adding, "I encourage learners to participate in group discussions and brainstorming."

Following up on this, Participant 5 takes it a step further by elaborating:

"Brainstorming activities help encourage students to share their ideas."

One of the functions of interactive methods, particularly group brainstorming and discussions, is to enhance the learning process of students. These methods are designed in such a way that students are able to participate in class activities and group work, which increases critical thinking. The success of such interactive strategies is, however, supported by a number of studies which point out improved student learning outcomes as a result of using these strategies.

For example, in their assessment, Panjaitan et al. observe the discussion activities enable students to engage worksheets with their peers thereby providing feedback and solving problems together, which eventually improves their learning outcomes (Panjaitan et al., 2020). Likewise, in the study conducted by Rahayu et al, it was found that group investigation method in groups fosters goal-oriented interactions which are necessary for group success in learning (Rahayu et al., 2020). This is in accordance with cognitive learning models of Piaget for example, which contemplates that people actively take part in the learning process (Rahayu et al., 2020). Furthermore, active learning in large groups is very important. Kustyarini observes that from her study, students who are vociferous and defend their opinions in discussions improve their learning performance (Kustyarini, 2020). On the other hand, there is evidence that when students in small groups discuss an issue, their understanding of the topic and their ability to communicate about it are improved relative to rote learning (Sukino, 2024). The more animated the discussion, the more interested the learners are in the material and the better they understand it and remember it.

Regular use of small group discussions in teaching enables students to achieve better results and improve their performance. For instance, a research study conducted in the field of nursing education indicated that students' performance increased when they were involved in small group discussions ("Implementation of the Small Group Discussion Method in the Learning Process with the Results of Nurse Competency Test in Akademi Keperawatan Sehat Binjai 2019", 2021).

*Problem 1.3 Content knowledge**Preparation for teaching AFA*

The issue of how teachers get ready to teach AFA that they have never taught before was the focus of this theme. Two one-themes emerged: (a) Thorough preparation through research. The discussion revolved around some of the strategies which were employed during the preparation phase with extreme focus on the content that was novel to the teachers and the grade level or topic for which the instruction was meant. This theme received contributions from a total of five participants.

Thorough preparation through research

In teaching Agriculture and Fishery Arts (AFA), teachers have mentioned that they spend a lot of time preparing and studying for the actual instruction. Sometimes, teachers are so busy collecting information that they completely skip out on consultations where they sit down with more experienced colleagues to study materials. Their self-description is offered as follows:

Participant 1 began by explaining their preparation process, emphasizing the importance of research and seeking help from more experienced teachers to ensure they can provide students with the necessary knowledge:

“I start by researching. I read materials online, watch instructional videos, and sometimes ask for help from other teachers with experience in AFA. I have to prepare so at least I could share the enough knowledge to the students”

(“Nagbabasa ako ng materials online, nanonood ng instructional videos, at minsan humihingi ng tulong mula sa ibang guro na may experience sa AFA. Pinaghahandaan ko talaga nang mabuti para at least may sapat akong kaalaman na maibabahagi sa students.”)

On a parallel note, Participant 2 affirmed the need to embrace multi-faceted approaches in order to meet the shortage of knowledge:

“I research a lot online, looking for credible sources about the topic. Sometimes, I also watch videos to learn the correct procedures, especially for topics like planting techniques that I haven't done before.”

(“I research a lot online, looking for credible sources about the topic. Minsan, nanonood din ako ng videos para makuha ang tamang procedure, especially sa mga topics like planting techniques na hindi ko pa nagagawa before.”)

However, Participant 5 compared their emotional and cognitive outlook while preparing with that of students, indicating an intention to develop together with the learners:

“Yes, that’s right. I do a lot of searching, reading, and studying. It’s like I’m also a student myself.”

(“Yun nga I do searching nagsesearch ako, nagbabasa. nag-aaral para din ako ng estudyante muna.”)

Teachers’ preparedness for lessons is an integral part of his lesson and teaching effectiveness, that is why the practice of lesson study has come into prominence in improving this preparedness. Lesson study is a form of professional development that includes joint lesson planning, teaching and observation, and subsequent discussion, which promotes understanding of teaching and learning. Evidence points out that this joint effort is not only beneficial for the teacher in improving her practices but also to the institution in terms of professional development culture as an impetus measure of all its departments. One of the major advantages of lesson study is its potential for improving teachers’ planning and preparation activities and behaviors. Orhan and Beyhan Orhan & Beyhan (2021) note that the lesson study process inspires teachers to think deeply and plan in an organized manner regarding their preparation for the teaching job. This enables teachers to share ideas and methods and in turn improve their

planning and teaching of lessons. Martin et al. (2023) are of the same opinion that conversations and contemplation about how the lesson went foster some understanding of the experiences which allays the planning of the lesson.

Difficult topics in AFA

This subject emphasized how practical engagement, such as farming skills, fishery exercises, or handling of tools came out very clearly as some of the most difficult areas to teach. The absence of practice and unavailability of equipment made things worse. Two sub-themes emerged: (a) Complexity of practical examples and (b) Resource limitations for practical demonstrations.

Complexity of practical examples

For example, the more challenging hands-on practical illustrations in Agriculture and Fishery Arts (AFA) create a major teaching and learning problem, especially in cases when the teacher has to cover sophisticated topics that require real-life hands-on skills. Even more exacerbating is the situation where teachers have insufficient training experience in the content areas, which makes it difficult for them to perform relevant practical demonstrations. Shared experienced provides us with the following insights:

Participant 1 described their struggle with practical topics:

“Topics about specific farming techniques and fishery practices are the hardest because I don’t have a background in them. For example, proper soil preparation or handling of tools—these aren’t things I know firsthand, so it’s difficult to give relatable examples for the students” (“Yung mga topics na tungkol sa specific farming techniques at fishery practices ang mahirap kasi wala akong background dito. Halimbawa, yung proper soil preparation or handling of tools, hindi ko talaga alam firsthand kaya hirap akong magbigay ng mga halimbawa na relatable sa students.”)

Following this, Participant 5 elaborated on this theme, specifically mentioning the difficulty of teaching animal breeding:

“Breeding animals is really difficult to teach.” (“Breed animals yung difficult to teach.”)

Ibrahim and Yew emphasize that many teacher training institutions inadequately prepare teachers, resulting in a lack of necessary subject matter knowledge and pedagogical skills, which ultimately hampers effective teaching (Ibrahim & Yew, 2023). It is also critical for example the teachers’ self-efficacy is related to the degree of their subject matter achievement. Serriawati explains it on the grounds that they may encounter various experiences and avail support which may lower or raise teachers’ confidence on their capabilities therefore, there is need of continuous professional growths and mentorships so as to improve teachers’ selfefficacy and subject matter mastery (Serriawati, 2020).

Resource limitations for practical demonstrations

Hands-on lessons are often a problem for teachers who do not have sufficient equipment or space. As with Fishery Arts or Agriculture subjects, high levels of skills are often required to teach these subjects to students. These students cannot be practically trained without the resources available, so teachers are forced to use theoretical teaching which is out of place as students will face problems when practical application is required. The ultimate source of ineffectiveness in teaching these skills is the absence of facilities and other required teaching materials.

Participant 4 expressed the challenge of teaching practical examples, particularly when discussing hazards, due to the lack of available resources:

"Theories are easy to discuss, but when it comes to practical examples, like hazards, it's challenging because there are no available resources."

(Yung theories Madali lang silang discuss pero pagdating na sa practical katulad ng example ng yung mga hazard Madali lang ituro and theory. Pero pagdating na sa mga example parang walang mga available na ganito.)

For hands-on demonstrations, making sure that everyone at the back gets a clear view of the demonstration becomes a challenge. Schlafer et al. note even in small groups, seeing a clear view of the performed treatment may prove difficult and as a result, fails to deliver the learning experience intended (Schlafer et al., 2021). This limitation has provoked the educators to look for new strategies, for instance, video-supported demonstrations wherein clear images can be used and used more than once. However, this claim cannot go unchallenged as there is still debate on the extent of effectiveness of each form with some preferring the live form as they feel the results are more impressive regarding learning as it adds a new dimension of contact (Maqbulatullah, 2021).

Designing effective learning strategies

This theme explores the challenges and strategies involved in creating lesson plans for Agriculture and Fishery Arts (AFA). Two sub-themes emerged: (a) Struggles with technical terms and (b) Using creative methods to engage students.

Struggles with technical terms

Teachers have often faced immense problems while developing lessons for learners who had little to no Knowledge in Agriculture and Fishery Arts subjects. Due to lack of background knowledge, students found it hard to comprehend advanced ideas which meant that teachers had to put in additional work to clarify and explain ideas further. Things got worse when it became clear that the jargon and specialist skills were too much for the students and the teachers, which was very frustrating and completely stalled learning. The following are some of the challenges stated:

Participant 4 described their experience when facing content that seems foreign to them:

"One challenge, for example when I have to make sense of technical content with complex terminologies that I am not used to, the content or even the topic isn't familiar to me."

("Ang challenge is kapag may mga content o topic ako na hindi ako familiar just like yung mga terminologies na malalalim unawain.")

To Support this idea, Participant 1 explained how understanding the deep terminologies could be a challenge for teachers:

"Sometimes, it's hard to understand the technical terms, especially in agriculture and fishery. There are specific terminologies and practices that I'm not well-versed in, so I really need to study them thoroughly." ("Minsan mahirap intindihin ang mga technical terms, lalo na sa agriculture at fishery. May mga specific na terminologies at practices na hindi ko masyadong kabisado, kaya kailangan ko talagang pag-aralan ng mabuti.")

Similarly, Participant 2 shared a comparable experience:

"It's quite challenging when the terms are too technical. Concepts I initially thought were simple sometimes turn out to have layers of complexity, especially with farming techniques or fish species I'm not well-versed in."

("Medyo mahirap pag masyadong technical ang terms. Yung mga bagay na akala ko simpleng konsepto, minsan pala, may mga layers ng komplikasyon, lalo na sa mga farming techniques or fish species na hindi ko kabisado.")

Adds with the new angle, Participant 5 elaborated on this issue by pointing out the challenges of teaching specific animal breeds:

“But for me, I find it difficult when we talk about the breeds of animals. Some students don’t know what certain animals or breeds look like, and I also don’t know some of the breeds, especially those not locally produced or raised in our country.”

(“Para sa akin parang ang hirap kasi yung iba nga hindi talaga nila alam yung itsura ng ibang animals or ng lahi ako din hindi ko rin alam yung ibang mga breed ng animals. Hindi locally produced, hindi locally rasied sa atin or local breed sa bansa natin.”)

(“Kaya minsan, kailangan ko pa talagang mag-research at maghanap ng extra resources para lang makabuo ng lesson plan na tama at akma sa students.”)

These responses center-depth comprehension of teachers and their struggles with the multifarious terminology which suggests enhancement of resources, development, and even training so that they are well-versed in the subject matter. Thereby, one of the answers to this task is the creation of multi-faceted approaches, for example, the use of game elements strategy or contextualized classes or vocabulary teaching (Ramadani et al., 2020). These authors supported their findings with the results from several studies stating that the combination of context-based and assistive interaction can be more effective in learning new words and using them in practice (Muhammad et al., 2022). However, the function of teachers as facilitators in learning new words and usage is equally indispensable. It is not sufficient for educators to have knowledge of specialized language; it is necessary that they also design learning situations that arouse students’ interest to acquire the vocabulary that is pertinent to the sphere of their study (Bilgiç, 2023). This includes learning how to cope with the specialized language and how to use it in the most appropriate way through several teaching strategies (Gürsoy, 2022).

Problem 2. How Do Non-Agriculture and Fishery Arts Grade 7 TLE Teachers Manage These Challenges?

Handling challenges without specialization

The theme of Handling Challenges without Specialization highlights the experience of AFA teachers in teaching the subject without formal specialization. Two sub-sub-themes emerged (a) Adaptability and Resourcefulness and (b) Collaboration and Mentorship. Teachers articulated their efforts in self-taught, working with colleagues, and seeking help as a means of addressing some challenges of AFA teaching. Insights from five participants contributed to this theme.

Adaptability and resourcefulness

Teachers developed their own resources by refining their research capabilities to capture relevant information in different aspects of Agriculture and Fishery Arts (AFA). They made use of the internet, journals, instructional videos, and even agricultural handbooks to improve their background knowledge and lesson delivery. Even with no training, their effort to learn motivated them to satisfy the requirements of teaching AFA as best as they could. These are the perspectives put together:

Participant 1 explained their approach by stating:

"I make sure to thoroughly research and learn about the topics to be discussed."

Similarly, Participant 2 highlighted their self-directed learning efforts: "The only thing I have to do as a teacher is learn through observation and seeking internet sources."

Also, Participant 4 shared their approach:

"I study lessons, watch videos, and collaborate with other teachers." Lastly, Participant 5 echoed this sentiment, emphasizing preparation:

"Studying deeper into the lessons helps me deliver them effectively."

Kruczek-Popiel's statement integrates various aspects including non-traditional and traditional teaching resources. The emphasis is on usage of new methods and materials in learning. Her statement highlights the significance of diversity in teaching tools and mentioned the importance of adaptation: After using textbooks, video and the internet at the same time, I noticed that learners frequently become bored with instructional materials. Adaptive learning materials in the classroom foster educators and students to achieve both educational objectives. How can a teacher begin to teach his learners with such boredom? Where should a teacher begin and what kind of resources he should utilize? Thus, the concepts of resourcefulness and adaptation come together, adaptation covers the core necessities of boredom since being adaptive allows one to encounter new approaches, but resources are needed in when being adaptive. Such transitions clearly require proper resources for creativity in one's learning environment. Many teachers either have a negative perception of using different approaches or do not have any materials." (Kruczek-Popiel, 2020)

Also, the role of teachers as reasons material towards their particular teaching situations has to be emphasized. In Nouichi's view, there are such materials which can be incorporated in the textbooks, but they have to be rewritten and re-evaluated with the above targets in mind (Nouichi, 2022). Karatepe and Civelek support this view and further maintain that teachers' perceptions of material adaptation in respect to their teaching of pragmatics is a serious problem, and that this provides an opening to expose deficiencies in teacher training institutions regarding material adaptation (Karatepe & Civelek, 2021).

For example, many teachers have underscored the importance of self-directed learning after their initial training. Some said that they try to understand the subject matter through reading or videos. Participant 1 put it clearly, saying, "I make sure to thoroughly research and learn about the topics to be discussed." In the same way, Participant 5 said, "Studying deeper into the lessons helps me deliver them effectively," illustrating that mastery of content ignores self-doubt.

Collaboration and mentorship

Teachers dealing with the complication of teaching subjects out of their specialization relied on collaboration and mentorship. Teachers utilized their colleagues, which enabled them to receive and offer ideas, teaching methods, and tips for dealing with unknown contents. Getting help from more seasoned professionals closed the gaps in content knowledge and gave practical answers to real problems. Also, teachers learned through collaboration that it was easier to plan lessons with other teachers since they could use other people's skills to complement their own. Teachers learned how to do a lot through mentorship, including aspects of their careers, which made them feel more confident regarding their teaching practice.

Participant 4 shared:

"I seek mentorship and plan ahead of time with my co-teachers."

Likewise, Participant 3 emphasized the importance of external guidance: "Consult with experts or professionals in agriculture and fishery arts for guidance."

Also, Participant 5 highlighted collaborations is a big help:

"Collaborative expertise with co-teachers helps us share strategies and techniques."

The dynamics of teaching can be greatly enhanced by encouraging inter and intra teacher collaborations and teachers mentoring each other. Participation in peer mentoring has turned out to be an effective way of providing both professional and work emotional support to teachers. Studies suggest that through peer mentoring work experienced teachers could support new teachers who came in together and lack work experience (Santos-Rico, 2024; Mokoena,

2024). One of the highlights of engaging in peer mentoring is that teachers can create a conducive space where they speak freely and reflect. This is crucial for new teachers who have to contend with trying to fit in with the school culture while meeting the different requirements within the class. Research indicates that peer support mentoring enables new teachers to adjust to such needs by providing adequate training as well as enhancing the teacher's feeling of being a part of the school (Santos-Rico, 2024; Mokoena, 2024). In addition, because peer mentoring is fundamentally relationships built on reciprocity, the mentor and the mentee are both enabled to participate in problem solving processes which in turn shape their identities and their teaching practices (Frankel et al., 2021).

The concept of peer mentoring and its influence on academic achievements is further corroborated by several claims based on the improvement of such outcomes. For example, transformed peer mentoring approaches appear to have a synergistic effect on student performance by supplementing various instructional techniques (Pilot et al., 2023). Moreover, peer mentoring is not only advantageous to the students who receive mentorship but also helps the mentors to improve in many ways as they assume more roles and reflective activities (Pilot et al., 2023; Zoraya et al., 2021).

Support and resources utilized

A major theme emerged in discussing the factors and supports and resources that teachers use to be able to teach AFA better. Two sub-themes emerged: (a) Reliance on External Resources and (b) Practical Learning Methods. Teachers talked about their use of textbooks, videos, and even doing some practical activities to further understand the concepts of AFA. This theme will be enriched by the contributions of four participants.

Reliance on external resources

Within the framework of Agriculture and Fishery Arts (AFA), teachers are ready to point out that having a variety of accessible educational materials is vital especially for people who have limited background knowledge in the topic. The responding teachers illustrate how these resources, for example textbooks, videos, and even online lessons, help them enhance not only their content understanding but also their teaching skills. These are the prepared statements:

Participant 2 stated:

"Textbooks in other countries and watching videos help me as an inexperienced teacher."

Building on this idea, Participant 3 emphasized the value of teaching guides, lesson plans, and other educational materials from reputable sources to support their teaching:

"Access teaching guides, lesson plans, and educational materials from reputable resources."

Meanwhile, Participant 5 echoed the importance of utilizing various resources, emphasizing e-modules, old textbooks, and videos to better understand and teach AFA lessons: "E-modules, old textbooks, and videos clearly help me understand AFA lessons."

The context of the described phenomena and the recent invasion of such terms as learning resources is the context of the deployment of additional efforts to improve the teaching or education process in general. It has been shown that the use of external resources such as digital course materials, interactive course activities, or inviting outside specialists creates new opportunities for interactivity and accessibility in education. For example, Feng argues that the creation of educational digital resources fits the trends of information technology in professional education, and it helps to develop all-inclusive environment able to satisfy various students' needs and promote continuing education (Feng, 2024). Huang et al. further substantiates this assertion, arguing that the commercialization of teaching through the Internet

and interactive methods of teaching focusing on learning resources can help to deal with some of the drawbacks of conventional educational systems (Huang et al., 2023).

Besides, external resource preparation goes beyond simply using digital materials and working with experts. It may also include quality-related processes within the broader educational ecosystem. As Ozeki (2023) has noted, the interaction of internal quality assurance practices and external quality assurance practices is critical to the sustenance of educational standards in higher education. This dual model allows educational institutions to assess and enhance their competencies and relevance in the sector while meeting the parameters of their external constituencies. The need for external quality assurance has also been highlighted by Mochtar and San who maintain that the application of both internal and external quality assurance processes is imperative to meet the academic requirements of the learning institution and the enhancement of learning outcomes of students (Mochtar & San, 2020).

Practical learning methods

The application of practical AFA tools and methodologies by students, along with traditional classroom-based instruction, has been pointed out to allow AFA practitioners to gain exposure as well. It is still important that both students and teachers are able to effectively use the tools, developing a more active approach to learning. Also, Workshops and practical sessions conducted in the AFA classroom are enabling teachers to become more familiar with AFA methods which greatly benefits students as they offer a wider variety of activities in the classroom. Below are the important insights:

Participant 1 highlights the importance of learning through hands-on experience, saying,

"I focus on learning through practice and hands-on experience."

Expanding on this point, Participant 3 adds that attending workshops and hands-on training sessions is also crucial:

"Attending workshops and hands-on training sessions is essential."

Taking this further, Participant 5 shares a practical approach, noting how bringing tools from home for students can enhance their learning experience:

"Bringing available tools at home for students helps them learn effectively."

The task of preparing teachers for inclusive practice is undoubtedly a challenge. The study carried out by Triviño-Amigo et al. (2022) discusses for example the challenges faced by pre-service teachers, and in doing so stresses the need for practical learning approaches. Well and good, but what does this have to do with competencies. And this brings us to the next statement, issued by the same cohort, this one more oriented towards the teacher in the classroom. According to the findings so far, Alhashem et al., this notes that practice in workshops is urgent. It is not enough to express aspiration to integrate all forms of technology in every school, barriers at the classroom level need to be targeted first. The findings also indicate that while supervisors will express a positive attitude towards technology and aid through a survey, focus group discussions – and interviews, at least in our case – underscore their application TPACK and the Centre Level more often than applying it at their classrooms.

Additional support and training

The theme of Additional Support and Training Teachers' professional development was another theme captured and focused on their need for organized help and material resources to be current in their AFA teaching. Two sub-themes emerged: (a) Demand for Structured Support and (b) Updated Teaching Materials.

Demand for structured support

Teachers noted the importance of participating in workshops and seminars which help teachers boost their confidence and competence on teaching topics within Agriculture and Fishery Arts (AFA). These organized structures assist teachers to get refresher courses, practical knowledge, and innovative techniques which they can use to teach their students.

Involvement in these types of programs enables educators to cope with the challenges of AFA subjects. In addition, it offers some value for teachers because they can network, learn from each other, and learn from experts. Finally, the support that is offered is helping teachers to prepare effective lessons which will produce good results from the students. As guided by the participants, here are the analysis exposes several important details:

Participant 1 emphasized the value of hands-on experience stated:

"Attending more hands-on workshops would help me become more familiar with tools and techniques."

Building on this, Participant 2 pointed out the need for additional support noted: "Free training for teachers is needed to help address stress and anxiety in teaching." Further reinforcing this idea, Participant 5 shared:

"Seminars and workshops before implementing new curricula would be helpful."

All through the Program, teachers were encouraged to take part in workshops, seminars, and training programs to boost their self-assurance and competence in AFA. The significance of workshops, seminars, and training programs in boosting the confidence and skills of teachers in agriculture and fishery has been established in several studies. Such educational programs are necessary for the growth of teachers' profession because they help teachers obtain extra skills and competencies that are crucial for teaching and relating with students.

Teachers in agriculture need to go through extra training sessions, as research and theoretical facts inside a classroom can only go so far. In this context, it has been highlighted that school-based agricultural education (SBAE) requires a lot of effort on the part of the teachers which in turn aids students to be productive on an agricultural level. Trainings, workshops, and other such betterment programs allow the teacher to teach with extra facts (Barry et al., 2020). Similarly, Ifeanyi-Obi suggests that teachers or faculty members should have access to new research and knowledge so they can learn and incorporate it into their daily routine, thus keeping things interesting. She believes the teacher can easily achieve this by attending such workshops and conferences (Ifeanyi-obi, 2023). Furthermore, agriculture and teaching store both psychological and emotional factors. Presenting in support of the above point,

Norris has noted that the overall atmosphere and tone of the classroom impacts the student. There are a lot of students in the classroom who find it difficult to express themselves which causes issues with engagement back in the classroom (Norris, 2024). This problem Davidson et al. noted reduces the ability of students to perform when they stated that isolating the weaknesses of a teacher or delivering them their modules can facilitate the teachers through depressed avenues Menneng et al., 2022.

Updated teaching materials

Teachers emphasized how much extra AFA resources such as books and notes, as well as a new syllabus, can increase their productivity in Agriculture and Fishery Arts AFA teaching. It shows that there is a growing need to improve agricultural and fishery practices and technology education resource materials to keep pace with rapid developments. Relevant materials enable teachers to give students real world knowledge that will equip them for these professions. To help combat this, educators need to alter the instructional tools by inserting contemporary methods and inventions so that students can receive a greater scope of knowledge. These

changes ultimately make students aware of how to survive and be productive in a fast-paced environment. These are the detailed perspectives:

Participant 1 shared:

"Access to more current and diverse teaching materials would help me stay up to date."

In Similar, Participant 5 suggested:

"DepEd should provide resources and training for new programs before implementation."

Participant 2 agreed, adding:

"The Department of Education should equip teachers with knowledge, skills, and tools for teaching AFA."

The modernization and development of contemporary teaching aids in education cannot be overlooked, especially in the era of advanced technology and ever-changing learning needs. Nuranisa, for example, points out that teaching materials should evolve in line with the changes in technology, the needs of society and educational competencies which make them relevant in today's world. (Nuranisa, 2023). This observation is supported by Mahdizadeh et al. who point out that the updating of educational content is necessary so that health professionals can reach and educate patients which shows that this principle can be used in greater concepts (Mahdizadeh et al., 2020). Also, one should not even underestimate the teaching materials in the whole process of teaching and learning. Nuryati explains that teaching aids are useful in achieving the goals of education and affect the performance of a child. (Nuryati, 2023). This is complemented by Zhou et al., who say that there is a lack of traditional textbooks that could meet modern requirements for education and therefore there is a need for manual oriented teaching aids which would outline processes and their applications. (Zhou et al., 2023).

Problem 3. What Intervention Program in Teaching Agriculture and Fishery Arts for Non-AFA Grade 7 TLE Teachers can be Drawn Based on the Findings?

Assessing the content and teaching needs of non-specialist teachers is essential to ensuring the quality of Agriculture and Fishery Arts (AFA) education. Many teachers assigned to teach AFA lack proper training, making it challenging to deliver lessons effectively and engage students. Identifying these gaps allows for targeted professional development, strengthening both pedagogical and content knowledge. Building awareness and support among teachers, school management, and industry stakeholders is crucial to sustaining educational improvements. Enhancing teachers' mastery of agricultural and fisheries content through continuous training improves the quality of lessons and fosters student interest. Equipping teachers with practical skills and integrating technology into instruction help modernize AFA education, making learning more engaging and relevant to industry practices. Access to updated instructional materials and modern facilities supports experiential learning, better preparing students for real-world careers. Encouraging collaboration and mentorship among teachers promotes professional growth and the sharing of best practices. Shifting towards more active, hands-on learning strategies also boosts student motivation and critical thinking. Regular evaluation of educational programs ensures continuous improvement, while developing long-term sustainability strategies secures the lasting impact of reforms. Ultimately, improving the competencies of AFA teachers, strengthening support systems, and providing necessary resources will better equip students for future success in agriculture and fisheries, contributing to national development goals.

CONCLUSIONS AND RECOMMENDATIONS

The research shows that non-specialist teachers face serious challenges teaching Agriculture and Fishery Arts (AFA), which requires practical experience beyond theory. The main problems

identified are deficiencies in content knowledge, technological knowledge, and pedagogy, all of which affect lesson delivery and student performance. Non-specialist teachers struggle with modern agricultural concepts and lack practical experience, limiting students' appreciation of agriculture and fishery skills. Technological knowledge is also a major barrier, as agriculture now relies heavily on precision farming, digital farm management, and automated facilities, but teachers often lack training and resources. Schools themselves also lack adequate materials and infrastructure, forcing teachers to rely on outdated teaching methods. Despite these challenges, non-specialist teachers try to compensate by using general methods, collaborating with colleagues, and self-learning, but these are not enough. The study calls for systemic solutions, including capacity-building programs, professional development, and partnerships with agricultural institutions like the Department of Agriculture. Improving teacher training, resource availability, and curriculum development is crucial to better prepare students for agricultural opportunities, sustain the agricultural industry, and equip learners for the future.

It is recommended that schools prioritize the purchase of updated and appropriate instructional materials. Localized modules and multimedia presentations can greatly enhance lesson delivery by making content more relevant and engaging. To promote experiential and interactive learning, schools should establish mini-farms within the campus and provide e-learning tools and simulation facilities. Additionally, implementing a mentoring program, where Agriculture and Fishery Arts specialists work alongside non-specialist teachers, would strengthen lesson delivery and activities through direct participation. In terms of pedagogy, teaching must go beyond theory by adopting real-world, contextualized strategies such as project-based learning, inquiry-based learning, and sociocultural approaches. Activities like establishing school gardens, raising poultry, and organizing visits to local farms can help learners connect classroom lessons to real-life experiences and develop critical thinking skills. Policymakers are also encouraged to reform the curriculum to match the competencies of non-specialist teachers, providing them with professional, user-friendly instructional materials. Building teachers' confidence is crucial, and can be supported through incentive programs, additional certification points, further training, and recognition of their efforts. Regular feedback sessions and targeted support interventions should also be part of the system to address instructional challenges effectively. To ensure sustainability, schools must establish monitoring and evaluation systems that include class observations, student achievement data, and teacher feedback. By addressing these needs comprehensively, the quality of Agriculture and Fishery Arts education can be greatly improved, leading to more engaged students and inspiring future careers in agriculture and fisheries, thus supporting the long-term growth of the sector.

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