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AGRICULTURE ENGAGEMENT OF PUBLIC SECONDARY SCHOOL TEACHERS IN CALABANGA DISTRICT: DRIVING FORCES, ISSUES, AND CHALLENGES

RAMIL LUNA BADURIA
Teacher III
Quipayo National High School
ramil.baduria@deped.gov.ph

CHARLIE P. NACARIO, PhD
Professor VI
Central Bicol State University of Agriculture
charlie.nacario@cbsua.edu.ph

ABSTRACT

This study assessed the agriculture engagement of public secondary school teachers in Calabanga District. Specifically, it determined their level of engagement in terms of animal production, crop production, fisheries, agribusiness, and agricultural engineering, identified the driving forces, issues, and challenges in their agriculture engagement, and determined the relationship of driving forces, issues, and challenges to the agriculture engagement of teachers. Descriptive and correlational research methods were employed in the study using random sampling. The respondents were the 203 public secondary school teachers in the district derived from the total number of teachers using the confidence level of 95% and confidence interval. The study used a survey questionnaire comprised of assessing their agricultural engagement and identifying the driving forces, issues, and challenges. The data were statistically treated using frequency, percentage, mean, and Pearson r. Data revealed that the level of agriculture engagement of the respondents is slightly engaged. Also, findings revealed that driving forces, issues and challenges encountered by the teachers. The test of

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association furtherly revealed that these driving forces, issues, and challenges are associated to the teachers' level of agriculture engagement.

Keywords: *Agriculture engagement, driving forces, issues, challenges*

INTRODUCTION

Asia's agricultural education status remains a critical area influenced by various driving forces. It faces numerous challenges, and the engagement of secondary school teachers in agriculture has become a multifaceted issue. According to the Asian Development Bank (2021), the region's agricultural sector is undergoing significant transformations due to changing demand, shifting demographics, and environmental challenges. As the platform of agriculture changes over time, interests of various sectors seem to decline from agriculture.

In Nacario's study (2023), he concluded that the current policies, programs, and plans for the internationalization of agriculture education were insufficient and inadequate to merit global recognition of internationalized educational institutions. This draws the need to improve the agricultural endeavor programs in the local setting. Well-formulated agricultural plans and policies are essential for promoting sustainable, productive, and inclusive agricultural systems. They help address the complex challenges faced by the sector, ensuring its long-term viability and contribution to national and global food security and economic development. As our country is agricultural, the local economy depends on the current state of agriculture. As the

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study also implies, educational institutions are significant in improving the country's agriculture status.

In the recently released data of the Philippine Statistics Authority (2022), the economic performance for agriculture increased by 5.7% growth in the Gross Domestic Product, the Gross Value Added (GVA) in Agriculture, Forestry, and Fishing share 9.6% in the GDP, a decline by -0.3%. Further, agriculture and fisheries' production value decreased by -1.7% in 2021. As shown, there is somehow a decline in agricultural production in the country. This could also be related to the decrease in interest of the people involved in the sector.

In addition, the weakening of the agricultural sector is not only due to a decrease in farmers and the decline in farmlands but also due to the limited resources accounting for agricultural teaching and learning that hinder the locals from adapting to the changing needs of agriculture. Continuous depredation in income and efforts in the agricultural sector caused next-generation farmers to be disheartened and pursue careers unrelated to agriculture instead.

Calabanga District is a municipality geographically located approximately between 13040' to 13047' north latitude and 123007' to 123022' east longitude and is part of the 3rd Congressional District of the Province of Camarines Sur. Calabanga is a 1st class municipality with an approximate total area of 163.84 sq. km. (16,384 has.). It constitutes 3.1% of the province's land area (Municipality of Calabanga, 2022). Data shows that based on the census of population and housing of the Philippine Statistics Authority in 2020, the district has a

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population 88, 906, which is 4.30 percent of the total population of Camarines Sur and an estimated population density of 543 inhabitants per square meter.

An article published on the Municipality of Calabanga's official website reported that approximately 50 percent of the total land area is used for agriculture. Agriculture has always been a crucial factor in the economic growth of a country, accounting for 4-25 percent of the Global Gross Development Product. The land use is dominated by crop production such as rice, corn, coconut, abaca, sugarcane, and other diversified root crops. The physical constraints relative to agricultural development revealed that the five most crucial physical land limitations were considered for the project area: moderate to severe erosion, steep slope, mild to severe flooding, poor drainage, and severe salinity (lgucalabanga.com, 2023). The data on the municipality indicates that Calabanga has an agri-based economy. Promoting an agri-based economy is vital for ensuring food security, driving economic growth, and supporting sustainable development. It creates jobs, generates income, and contributes to the overall well-being of the population. By investing in agriculture, countries can achieve long-term economic stability, environmental sustainability, and social cohesion. With its maximum land area used for agriculture and fisheries, it is imperative that the educational institutions also consider its growth and development.

A study by Lubigan (2018) examined the impact of pedagogical competence and technical knowledge on integrating core academics in secondary agricultural education. The study revealed that these factors significantly influenced teachers' ability to incorporate reading into their curriculum. Furthermore, pedagogical competence was a crucial determinant of teachers' proficiency in integrating writing and math. This underscores the need for agricultural educators to develop effective teaching strategies instrumental in integrating reading, writing, and math. Hence, teacher training in agricultural education should adopt a multidimensional approach encompassing various disciplines to engage learners in adapting the proper integration of subjects in the agriculture curriculum.

DepEd Order No. 36, Series of 2015, which focuses on establishing rural farm schools, highlighted the importance of agriculture as a sector. Former Secretary Leonor M. Briones discussed the relationship between agriculture and education. It was noted that the role of agriculture, the production of food, the provision of employment, and the sustenance of our people to agriculture is given so much more importance and attention. "No country, no human being can survive without food, and our food comes from the agricultural sector, and our food is grown by our farmers, our peasants, our workers who are also products of our own educational system," As they are considered best influences on the career options of the youth, are significant on the factors that could engage students in agriculture. They are the ones who primarily deliver knowledge, skills, and attitudes to the learners.

The role of teachers in agriculture development is very important. As they are teachers of awareness, teachers play a vital role in educating students about agriculture, its importance, and its impact on the economy, environment, and society. This foundational knowledge can inspire students to pursue careers in agriculture or support agricultural initiatives. Further, the teachers are integral to skills development. By incorporating agricultural education into the curriculum, teachers can equip students with practical skills and knowledge related to farming,

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agribusiness, and sustainable practices. This prepares students for future careers and contributes to a skilled agricultural workforce. Engaging teachers in agriculture can foster a culture of innovation and research within schools. Teachers can guide students in conducting agricultural research projects, developing new farming techniques, and exploring technological advancements in agriculture.

However, decline in agricultural involvement and campaigns in schools is observed. Due to the rapid development of technology, interest to the field declined and those who involved also decrease. In educational settings, the students have been affected by this change as they are not now particular of what is happening in the agricultural setting.

As teachers play a significant role in honing students and contributing to nation-building, it is also essential to consider how these teachers may influence the youth in agriculture. The lack of interest among students, the decline of the sector in all urban and rural areas, and the depreciation of income from practicing agriculture must be addressed. This study, if not may contribute, will provide insights on the status of agriculture and the basic education sector. The results of this study may assist the researcher and other stakeholders to participate in the country's agriculture development.

This study aims to assess the agriculture engagement of public secondary school teachers in Calabanga District for the School Year 2023 – 2024. Specifically, it sought to: 1) determine their level of engagement in terms of animal production, crop production, fisheries, agribusiness, and agricultural engineering; 2) identify the driving forces, issues, and

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challenges in their agriculture engagement; and 3) determine the relationship of driving forces, issues, and challenges to the agriculture engagement of teachers.

MATERIALS AND METHODS

Research Design

This study employed descriptive-correlational research design. The descriptive-correlational design of research was used to determine their level of agriculture engagement according to animal production, crop production, fisheries, agribusiness, and agricultural engineering. On the other hand, quantitative aspects of the research identified the driving forces, issues, and challenges encountered by the teachers in agriculture engagement. Correlation was observed on testing the relationship between the driving forces, issues, and challenges and the respondents' level of agriculture engagement.

Sample and Population

The research was undertaken in the public secondary schools of Calabanga District. There are 203 respondents in the study who were identified through random sampling. The total number of respondents was determined through confidence level of 95 and confidence interval. Informed consent is provided in each questionnaire. The respondents were guaranteed about the confidentiality of the study.

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Data Gathering Procedure

To obtain the necessary data, the researcher used specific data-gathering procedures. Generally, this used a researcher-made survey questionnaire administered to the respondents. The survey questionnaire underwent the process of validation.

The survey question includes two (2) parts. The first part of the survey assessed the level of agricultural engagement of the respondents in terms of animal production, crop production, agribusiness, fisheries, and agricultural engineering. Thus, the data will be collected for the first research objective. A checklist was provided to identify the driving forces, issues, and challenges based on the respondents. The obtained data from the first and second part of the survey was the object of correlation between driving forces, issues, and challenges and their level of agriculture engagement.

However, before administering the survey questionnaire, a letter of approval from the Public Schools District Supervisor of Calabanga District and the respective schools of the identified respondents was secured. Also, the ethics consent form for the respondents was provided and agreed upon, which specifies that the utmost confidentiality of their responses will be observed.

Data Analysis

Mean was used to determine the respondents' level of agriculture engagement. Percentage was used to identify their driving forces, issues, and challenges. Further, Pearson

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r was used to test the significant relationship of the significant relationship of the driving forces, issues, and challenges to their level of agriculture engagement.

RESULTS AND DISCUSSION

Level of Agriculture Engagement of Public Secondary School Teachers

The respondents were surveyed on their involvement in agriculture practices through their engagement with several indicators to different aspects.

Table 1. Level of engagement to agricultural activities

Indicators	Mean	VI	Rank
Animal Production	2.25	SE	1
Crop Production	2.20	SE	2
Agricultural Engineering	1.80	SE	3
Agribusiness	1.68	NE	4
Fisheries	1.52	NE	5
Over-All Mean	**1.89**	**SE**	

Legend:	1.00 – 1.75	Not Engaged (NE)	2.51 – 3.25	Engaged (E)
	1.76 – 2.50	Slightly Engaged (SE)	3.26 – 4.00	Highly Engaged (HE)

The respondents are slightly engaged in animal production (2.25) and crop and crop production (2.20), among other areas such as fisheries (1.52), agribusiness (1.68), and agricultural engineering (1.80). The overall mean of 1.89 indicates that the teachers are slightly engaged in agricultural activities.

Although, animal production is highest in rank, the teachers might find animal production to be a complex task of rearing and growing animals. This might also be affected

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by their regular working hours and the absence of appropriate facilities for such. Animal production requires complex activities that could be part of their everyday activity.

This shows the very minimal practice teachers in fisheries activities. It could be inferred that they really are not engaged in fisheries. However, the data on ownership and maintenance of fishponds or fisheries farms implies the presence of areas that are intended for the said agricultural discipline. Fisheries require technical skills that will let them grow fish and do further production. Thus, teachers may not focus on how to do fisheries; instead, they focus on simple tasks.

The data shows that teachers are slightly involved in agriculture. This supports the claims that the agricultural sector in the community has been declining. Even in schools, the results show that a limited number of schools in Calabanga are involved in agriculture. Moreover, the data indicates that the teachers are slightly engaged in agriculture. It implies the need for the promotion of agricultural activities in schools and communities. The teachers may be aware of the basics such as animal and crop production, but should be more aware of innovative aspects, such as agricultural engineering and agribusiness.

Driving Forces, Issues, and Challenges in Engaging Agriculture

The driving forces, issues, and challenges in agriculture engagement were surveyed to interpret results and discuss implications.

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Driving Forces. The primary driving forces are the enjoyment of the practice of agriculture during the pandemic (118, 58), the presence of a backyard lot that could be used for agricultural activities (109, 54), and that agriculture provides support and livelihood to households (102, 50). On the other hand, they also informed that attendance to related trainings to agriculture (32, 16) who considered the least driving forces in agriculture. It shows that the teachers enjoyed the practice of agriculture during the pandemic. The teachers are among those who have rested during the pandemic.

Table 2. Driving forces in agriculture engagement

Driving Forces	Frequency	Percentage	Rank
The practice of agriculture was enjoyed during the pandemic.	118	58	1
There is a presence of a backyard lot that could be used for agricultural activities.	109	54	2
Agriculture provides support and livelihoods to households.	102	50	3
The practice of agriculture could be shared with others.	90	44	4
There is a high demand for agricultural products.	85	42	5
There is an extra income from practicing agriculture.	81	40	6
There has been attendance to trainings related to agriculture.	32	16	7

As a result, some of them are involved in urban gardening or backyard farming. On the other hand, the least is on attendance at trainings. This means that the teachers only do

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what they know about agriculture. The training that may drive them to be involved in might be related to teaching or their specialization.

These driving forces in agriculture engagement could be considered as limited forces that may drive oneself to practice a particular aspect of agriculture. It could be inferred that the respondents may consider agriculture as a simple activity because they are limited to backyard farming alone. These respondents may have attended training, but it may not be enough to involve themselves in the practice.

Issues. The primary issues that they are facing are the limited land to be used for agricultural activities (122, 60), limited knowledge of agricultural practices (95, 47), and the threat of money waste (81, 40). On the other hand, they also cited as an issue is the lack of interest from society in practicing agriculture (50, 25).

Table 3. Issues in Agriculture Engagement

Issues	Frequency	Percentage	Rank
There is limited land to be used for agricultural activities.	122	60	1
There is limited knowledge of agricultural practices.	95	47	2
The threat of money waste is present.	81	40	3
There is limited support from external sectors to practice agriculture.	78	38	4
The campaign from the government sector is also limited.	62	31	5
The conflict between organic and conventional farming confuses practice.	54	27	6

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Society has a lack of interest in practicing agriculture.	50	25	7

It shows that the driving force also serves as an issue, specifically regarding the land to be used. While some respondents agreed on the presence of land to be used, it also served as an issue. Further, it could be inferred that the issue of money wastage is brought by how agriculture declines in the country. This is further supported by the issue of a lack of interest in society.

It further presents that the primary issue is the limitation on land for agricultural use. This issue is present not only among teachers but also in the entire country. It is the result of industrialization and the conversion of agricultural to commercial land. On the other hand, the lack of interest by the society to be involved in agriculture. It implicates the non-involvement of the society who is more focused on advancement in the technological sector.

Challenges. The primary challenge is the need for wider knowledge and technical practice for agricultural involvement (127, 63), expensive farming tools and materials limiting the practice of agriculture (115, 57), and the lack of hands-on experience (111, 55). On the other hand, they also cited the difficulty in understanding and practicing practical aspects related to agriculture as a challenge (54, 27). This challenge underscores the need for more comprehensive training and resources to support teachers in overcoming these obstacles.

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Table 4. Challenges in agriculture engagement

Indicators	Frequency	Percentage	Rank
There is a need for wider knowledge and technical practice for agricultural involvement.	127	63	1
Expensive farming tools and materials limit the practice of agriculture.	115	57	2
There is a lack of hands-on experience.	111	55	3
There is limited know-how in agribusiness that discourages practice.	109	54	4
There is a specialization of agricultural land for specific crops and purposes.	77	38	5
There is wide competition for agricultural products in the market.	68	33	6
There is difficulty in understanding and practicing practical aspects related to agriculture.	54	27	7

These challenges dictate the primary reason for the low level of agricultural engagement of public secondary school teachers. They consider agriculture to be a complex discipline that has resulted in a low level of engagement. It could also imply the need for intensifying the campaign for promoting the discipline in local context.

The primary challenge of the need for wider challenges in agriculture indicates the decline of awareness and practice in the agriculture sector. The present time is incomparable to the era when everyone practiced simple agriculture activities. Also, the hardships of understanding the practical aspects of agriculture support the challenges encountered by the public secondary school teachers.

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Relationship of Driving Forces, Issues, and Challenges to Level of Agriculture Engagement

This shows that for driving forces, the computed r-value is .253 which is greater than 0.021; for issues, the computed r-value is .151 which is greater than 0.011; and for challenges, the computed r-value is .267 which is greater than 0.018. This means that the driving forces, issues, and challenges are connected to the level of agricultural engagement of the teachers.

It further means that their connection may determine how one is involved in agriculture. It could be learned from the results that these driving forces, issues, and challenges are determinants of how one may be involved or not involved in agriculture.

Table 5. Relationship of the driving forces, issues, and challenges to the level of agriculture engagement.

	Agriculture Engagement	
	Correlation	**Significance**
Driving Forces	0.253	0.021
Issues	0.151	0.011
Challenges	0.267	0.018

Legend:

±0.90 – 1.00	Very High Correlation	±0.26 – 0.75	Moderate Correlation
±0.76 – 0.89	High Correlation	±0.00 – 0.25	Low Correlation

The results also show that the teachers are somehow affected by what they usually face in terms of agriculture engagement. This informs that the teachers are considering other important factors when involving themselves in various activities. It could also be implied that the teachers, aside from existing factors, may still consider affective factors before they are involved. These affective factors could include their personal interest in agriculture, their comfort level with the subject matter, and their perceived ability to successfully integrate agricultural concepts into their teaching. Moreover, the support and encouragement from their school administration and community may also play a crucial role in their willingness to engage more deeply with agricultural education. Therefore, addressing both practical and emotional aspects could enhance teachers' engagement and effectiveness in teaching agriculture.

CONCLUSION AND RECOMMENDATION

It is concluded that in School Year 2023 – 2024, the teachers are not directly involved in agricultural activities, which could have been the result of the decline in interest in schools in the agricultural sector. Further, the various internal and external driving forces, issues, and challenges may limit the agricultural engagement of the teachers. This draws an urgent need to address the issues and challenges. Thus, it is recommended that the Department of Education and the local government should collaborate in strengthening their campaign to heighten engagement of agriculture by integrating of special programs for agriculture, reinforcing farm courses in basic education, and partnerships of the public and private sectors. These challenges can also be addressed by both concerned agencies.

Consequently, the increase or decrease in the level of the teachers' agricultural engagement are affected by the driving forces, issues, and challenges. The teachers may have low involvement because of these encountered issues and challenges. It is also recommended that private and public organizations may take the lead in increasing the level of agricultural engagement by continuously providing input and resources to the schools and the community. On the part of the local government, they should conduct orientation on how to do innovative farming so that everyone can practice agriculture even without the present of large land for use.

Future researchers may identify a specific study that will target the issues and challenges in agriculture engagement so that they can be addressed specifically.

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