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Competencies of Technical Vocational Livelihood Teachers in Agriculture and Fishery Specializations in the Division of Laguna: A Basis for Capacity Enhancement Program

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Abstract

This study aimed to assess the competencies of Technical Vocational Livelihood teachers in Agriculture and Fishery Arts specializations particularly animal production (swine) and organic agriculture production including the problems encountered, coping mechanisms employed, differences in competency assessments among school heads, students, and teachers, and the relationship between problems encountered and coping mechanisms. A descriptive research design was utilized. Data was collected from 4 school heads, 6 TVL-AFA teachers, and 97 students using survey questionnaires supplemented by statistical tools such as weighted mean, ANOVA, and correlation analysis to determine differences and relationships among variables. Findings revealed that TVL-AFA teachers were generally perceived as very competent by school heads and students across all competencies while teachers rated themselves as competent in competency areas such as handling breeders, raising weanlings, producing finishers, producing organic vegetables, and producing organic fertilizer. The students rated TVL-AFA teachers as competent in raising organic chicken. Significant differences were found in competency assessments among the three groups. Teachers encountered high problems with resources and equipment while problems in instructional materials and training were moderately experienced. Despite these challenges, teachers frequently employed coping mechanisms particularly in instructional materials and resources and equipment. A significant relationship was identified between problems in training skills and coping mechanisms employed while other variables showed positive relationships but not statistically significant relationships. The study concludes that the teachers demonstrate adequate competency, gaps exist in industry exposure, training opportunities, and resource availability which affect instructional effectiveness. It is recommended that future research explore longitudinal studies on teacher competency development, the impact of industry immersion programs, and the effectiveness of targeted capacity enhancement initiatives in improving TVL-AFA teachers outcomes and aligning TVL-AFA instruction with industry standards.

Keywords: TVL-AFA Competencies, Teacher Competency Assessment, Coping Mechanisms

Introduction

Education plays a vital role in nation development particularly in developing countries like the Philippines where building human capital is a major factor in economic growth, food security, and social sustainability. The Philippine education system has changed over time to meet the needs of society, the job market, and the need to be competitive on a global market. The K to 12 Basic Education Program is one of the most important changes that have happened in the last several years. The Technical-Vocational-Livelihood (TVL) track in the Senior High School (SHS) curriculum is a big part of this transformation. It gives students the practical skills and industry-aligned competencies they need to get a job right away or start their own business. The Technical-Vocational-Livelihood (TVL) track is very important to prepare Filipino students ready for jobs, starting their own businesses, and other opportunities in the agricultural sector which is still one of the most important parts of the Philippine economy. Laguna is one of the agricultural provinces in the Philippines where it needs skilled TVL teachers to teach Agriculture and Fishery Arts (AFA) to the standards set by the Department of Education (DepEd), the Technical Education and Skills Development Authority (TESDA), and industry partners. Agriculture and Fishery Arts consist of different specializations such as animal production, aquaculture, crop production, food processing, horticulture, landscape installation

and maintenance, and organic agriculture production.

Even though there is already research on teacher competencies and TVL implementation, there is still a significant gap in relation to localized, specialization-focused assessments of Agriculture and Fishery Arts (AFA) teachers particularly in the Division of Laguna. Most studies concentrated on TVL as a whole and a combination of different specializations. This means that not enough emphasis is put on the specific technical and industry-related skills that AFA needs. Laguna has more schools offering AFA but there is not enough up-to-date and organized information about competencies of the teachers, certification status, exposure to the industry, problems encountered and coping mechanisms, and professional development needs. The lack of empirical, division-specific research hinders the development of sustainable, context-driven solutions that correspond with the evolving of agriculture and fishery practices, TESDA standards, and local industry requirements.

In addressing the identified gaps, this study proposed the development of a capacity enhancement program designed specifically for TVL-AFA teachers. The primary objective is to assess how effective teachers performed in different AFA specializations as well as where they are required to improve their technical skills, teaching methods, and align with the industry. It also examines the problems encountered and coping mechanisms of the teachers with specific training programs. The proposed intervention consists of competency-based training, working in the industry, and continuous professional development that follows TESDA standards and sustainable farming practices.

According to Abanador (2018), competencies are an outcome-based method for assessing teacher performance. It is the salient features of successful teachers without prescribing any specific instructional practices. It is useful for teacher training, licensure and professional development. Basal (2022) revealed that the TVL teachers are competent in their instructional delivery in terms of subject matter and pedagogical skills. However, Calanog (2021) stated that TVL teachers face the challenges with teaching approaches and strategies and ICT integration in the lesson. In addition, Soriano and Vargas (2021) found that the TVL teachers are moderately prepared in handling technical-vocational-livelihood track to teach Agriculture, Electronics, and Trade due to a few trainings provided by DepEd. Also, Husain (2019) mentioned that the SHS teachers had encountered challenges in the need of textbooks and other learning materials. While Villanueva (2018) reported that the teachers teaching TVL subjects were moderately competent on the different specializations of the TVL of the K to 12 curriculum based on the competencies standard set by Technical Educations Skills Development Authority. Hence, Villacorta and Arnado (2023) conducted a study that examined the instructional skills and competencies of teachers using the TVL track in a variety of specializations, such as AFA, Home Economics, Industrial Arts, and ICT. Although the study found that TVL teachers had excellent overall competency levels, it also identified several issues that directly affect teaching effectiveness such as resource limitations, limited industry connections, and difficulty creating assessments. However, this study was limited to an in-depth understanding of the requirements of AFA specialists by grouping AFA teachers with other TVL categories.

This study is strongly related to Sustainable Development Goal 4 resulting in equal access to quality education and opportunities for lifelong learning. It focused on the assessment of the competencies of TVL-AFA teachers which makes instruction more effective through training programs, improving the way lessons are delivered, and how students are ready to learn. This supports the objective of producing learners who are competent, skilled, and ready for the workforce which is the core of high-quality education.

The anticipated result of this study was the development of a contextualized and continuous enhancement program that focuses on the identified competency gaps of TVL-AFA teachers. The objective of this program is to help teachers become more effective in their jobs by improving their technical skills, teaching methods, and alignment with the industry. This will lead to improved education and higher achievement among students. In the long run, it helps to enhance the agricultural workforce and promote sustainable development goals that have to do with stable employment, quality education, and economic stability.

The study was conducted in a given specified timeframe and projected in school year 2025-2026 from January 2026 to March 2026 to ensure that the findings of the study contributed to uplifting the standards of TVL teachers in Agriculture and Fishery Arts specialization in public secondary schools in Division of Laguna.

Materials and Methods

Research Design

The study assessed the competencies of the TVL teachers in agriculture and fishery arts specializations in public secondary schools in Division of Laguna. It made use of descriptive research methods. The descriptive aspect allowed the researcher to describe the characteristics of individuals or groups of physical condition such as the profile of the TVL teachers and their competency, problems encountered, and coping mechanisms. Moreover, the study defined the significant difference in competency assessment among school heads, teachers, and students; and the significant relationship between the problems encountered and coping mechanisms. The study used this method in gathering data and information towards the enhancement program for TVL geared toward enhancing the professional performance of TVL teachers in the Division of Laguna.

Respondents of the Study

The population of the study consisted of public secondary schools' teachers who handle and teach TVL-AFA subjects particularly in animal production (swine), and organic agriculture production in the Division of Laguna. There were 4 school heads, 6 TVL teachers, and 97 students who assessed the competencies of the TVL-AFA teachers' respondents in animal production (swine), and organic agriculture production of this study.

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In selection of the respondents, Joint Delivery Voucher Program for Senior High School School Year 2025-2026

was the basis in selection of participant schools in this study. Inclusion criteria and qualifications observed by TVL teachers from senior high schools in public secondary schools served as respondents in this study.

Sampling Techniques

The study was used purposive sampling as sampling technique in which researchers purposely choose participants based on their characteristics, knowledge, experience, or other criteria. This sampling technique proves to be effective when only limited numbers of people can serve as primary data sources due to the nature of research design, aims, and objectives. The total enumeration was used in this study which is a type of purposive sampling technique that involves assessing the entire population of school heads, students and TVL teachers who offered their school the TVL-AFA specializations particularly in animal production(swine) and organic agriculture production in Division of Laguna which has a particular set of experience, knowledge, and skills.

Research Instrument

The primary tool was used in this study was the survey checklist questionnaire which adapted from the training regulation issued by the Technical Education and Skill Development Authority, and curriculum guide of animal production (swine) and organic agriculture production issued by the Department of Education to gather needed data for the study on the competencies of TVL teachers in Agriculture and Fishery Arts specializations. The researcher modified some statements from the adapted research instrument used in this study. In order to assess the questionnaire, it was validated and checked by the adviser, panel members, and statistician. The comments and suggestions were considered to improve the instruments and to ensure validity.

Data Gathering Procedure

The researcher secured a permit from the Schools Division Superintendent in the Division of Laguna. After the approval, the copies of the endorsement letter from the Office of the Schools Division Superintendent were distributed to the participant school together with the questionnaire for school heads, students, and TVL teachers in public secondary schools who offered agriculture and fishery arts specializations in the Division of Laguna. The researcher distributed the questionnaire through printed and google form which are most viable options for data collection. Unstructured interviews with the respondents were conducted to validate their responses in the questionnaire. The responses remained confidential; Data Privacy Act was strictly followed in the use of information given by the respondents. The respondents guided when they needed assistance related to the items given in the questionnaire.

Statistical Treatment of Data

Appropriate statistical measures were employed quantifying the data and answering the problems set in this study. The data from the questionnaire processed using descriptive and inferential statistics including frequency count and percentage, mean, One-way ANOVA, Pearson Product-Moment Correlation. The data was presented in tabular form.

The data gathered, tabulated, and analyzed for interpretation. The statistical tools will be used as follows:

Variables	Statistical Tools
Demographic profile of the school head, students, and TVL-AFA teachers' respondents	Frequency and Percentage
Level of Competencies of Technical Vocational Livelihood Teachers in Agriculture and Fishery Arts Specializations.	Weighted mean
Problems encountered and coping mechanisms employed by the respondents in teaching TVL-Agriculture and Fishery Arts specializations	Weighted mean
Difference in competency assessment in agriculture and fishery arts specialization among school heads, students, and teachers	One-way Anova
Relationship between the level of problem encountered and the coping mechanisms employed by the respondents	Pearson Product-Moment Correlation

Results and Discussion

Demographic Profile of the School Head Respondents

Table 1 presents the demographic profile of the school head respondents. Most of the respondents were Principal I (50%), followed by Head Teacher III (25%), and Principal II (25%). This means that most of the respondents are in mid-level leadership positions. Half of the respondents (50%) worked for 24 to 28 years while the other half (25%) worked for 14 to 18 years and 19 to 23 years which suggests that the group of school leaders is highly experienced. Most of the respondents (50%) specialized in Mathematics while fewer were in Animal Science (25%) and Physical Education (25%). This shows that they are mostly focused on academic disciplines. In terms of TVL-AFA teachers, one TVL-AFA teacher works at 75% of schools, and two work at 25% of schools. This shows that one TVL-AFA teacher teaches agriculture and fishery arts specialization for senior high schools due to small school size. Finally, the number of trainings attended shows that 75% of respondents had not attended any training relevant to TVL-AFA from 2023–2026 while only 25% attended two trainings. This shows that there is a need for more professional development.

The results imply that the school heads are generally competent which could be good for school management and instructional leadership. But the lack of necessary training shows that there are limits to how well AFA specialization can be put into action. This mismatch could influence how AFA specializations are delivered, new ideas are developed, and technical-vocational education is supported especially in areas related to agriculture.

These findings are supported by the study of Awodiji and Naicker (2024) that show that leadership effectiveness relies not solely on prior experience but also on ongoing training and development especially in response to changing educational requirements. Gabutan, *et al* (2024) also shows that teachers are more likely to be innovative and that schools work better when they have strong leaders and a supportive environment. However, Mendoza & De Jesus (2024) emphasized the gaps in training and specialization make it hard for school leaders to fully support program implementation highlighting the need for appropriate professional development and leadership practices suitable for the situation.

Table 1: Demographic profile of the school head respondents

Demographic Variables	Categories	Frequency	Percentage
Plantilla Position	Head Teacher III	1	25.00
	Principal I	2	50.00
	Principal II	1	25.00
Years in Service	14-18 years	1	25.00
	19-23 years	1	25.00
	24-28 years	2	50.00
Specialization	Animal Science	1	25.00
	Mathematics	2	50.00
	Physical Education	1	25.00
Number of TVL-AFA Teachers	1 TVL-AFA teacher	3	75.00
	2 TVL-AFA teachers	1	25.00
Number of Trainings Attended related to TVL-AFA (2023-2026)	0	3	75.00
	2	1	25.00
	Total	4	100.00

Legend: TVL-AFA means Technical-Vocational-Livelihood-Agriculture and Fishery Arts

Demographic Profile of TVL-AFA Student Respondent

The table 2 shows the demographic profile of the TVL-AFA student respondents. Most of the respondents were 17 years old (51.55%) followed by 18 years old (35.05%), and a small number were 19–21 years old. This means that the majority of the respondents are the right age for senior high school. There are slightly more males (53.61%) than females (46.39%) which suggests that both genders are participating in the TVL-AFA strand in almost equal numbers. More respondents were enrolled in Animal Production (Swine) with 52 where males made 59.62% of the total while Organic Agriculture Production with 45 where females consisted of 53.33% of the total. This trend could show how people think about gender roles or preferences in farming. Most of the parents or guardians of the respondents were farmers (43.30%) and fruit and vegetable vendors (22.68%) which means that majority of the respondents come from families that work in agriculture. Finally, the majority of the respondents resided within 501–1000 meters (29.90%) and 20–500 meters (18.56%) of school but most of the respondents travelled longer distances which might hinder attendance and participation.

These findings imply that the TVL-AFA specializations are intended for students within a suitable age group and attract both male and female students. However, there are minimal differences in specialization between male and female that need to be addressed through inclusive curriculum integration. Most of the families of the students have a strong agricultural background which potentially they already know much about farming which can help them learn by doing. But having students who travel longer distances could make it harder to be on time, stay awake, and stay engaged. Schools need to improve support systems such as flexible learning opportunities, and community-based learning which ensure that everyone has equal access and included.

The results aligned with the report of World Bank Group (2023) discussed making TVET programs more relevant and useful for students by matching them with their backgrounds and local business activities to improve job prospects.

Table 2: Demographic profile of TVL-AFA student respondents

Demographic Variables	Categories	Frequency	Percentage
Age	17 years old	50	51.55
	18 years old	34	35.05
	19 years old	9	9.28
	20 years old	3	3.09
	21 years old	1	1.03
Sex	Male	52	53.61
	Female	45	46.39
TVL-AFA Specialization	Animal Production (Swine)		
	Male	31	59.62
	Female	21	40.38
	Organic Agriculture Production		
	Male	21	46.67
	Female	24	53.33
Parent/Guardian Work/Profession	Caretaker	2	2.06
	Carpenter	1	1.03
	Construction Worker	9	9.29
	Driver	2	2.06
	Electrician	1	1.03
	Encoder	1	1.03
	Farmer	42	43.30
	Forester	1	1.03
	Fruit and Vegetable Vendor	22	22.68
	Junkshop	1	1.03
	Midwife	1	1.03
	Overseas Filipino Worker	14	14.43
Distance of Home to School(meters)	20 – 500 meters	18	18.56
	501-1000 meters	29	29.90
	1001-1500 meters	11	11.34
	1501-2000 meters	18	18.56
	2001-2500 meters	5	5.15
	2501-3000 meters	8	8.25
	3501-4000 meters	1	1.03
	4501-5000 meters	4	4.12
	5001-5500 meters	2	2.06
	5501-6000 meters	1	1.03
	Total	97	100.00

Legend: TVL-AFA means Technical-Vocational-Livelihood-Agriculture and Fishery Arts

Demographic Profile of TVL-AFA Teacher Respondents

The table 3 reveals the demographic profile of the TVL-AFA teacher respondents. Half (50%) of the respondents were between the ages of 27-33, 33.33% were between the ages of 48-54, and 16.67% are between the ages of 34-40. This shows that there are both new and experienced teachers. Most of the respondents were women (66.67%) and men 33.33%. The majority of the respondents (66.66%) were trained in Agriculture and Fishery Arts while the rest were trained in Animal Science and English. Half of the respondents had bachelor's degrees and half had master's degrees. Some teachers have TESDA National Certificates with Organic Agriculture NC II at 37.50% while others do not (12.50%). This shows that involvement in training varies. Most of the respondents who teach had taken a course in training methodology and most of the respondents (66.67%) had finished Training Methodology I. It is important to note that most of the respondents (83.33%) did not have any work experience in the industry and only one

(16.67%) reported limited experience. According to the salary distribution, most of the respondents (50%) earned between Php 31,705- Php 33,611. Lastly, the amount of time the respondents spent teaching in their area of expertise differs. Some of the respondents had only been doing it for two years while others have been doing it for eight years.

The results imply that teacher preparation in TVL-AFA must be improved by giving teachers more time in the field, requiring them to receive TESDA certification on a regular basis, and giving them professional development that is specific to their needs. It is very important for the quality of the TVL-AFA specialization that all teachers have the right NC II certifications for the subject they are teaching. Additionally, collaborations with industry sectors could provide teachers with practical experience and current standards of practice. Addressing these problems could make competency-based education work better and get students ready for jobs or starting their own businesses in the field of agriculture.

These findings are in line with the UNESCO-UNEVOC (2021) stressed that TVET teachers need to have both teaching skills and current industry experience to make sure that their lessons are useful. According to the World Bank (2020), teachers who have worked in the industry sector make it much easier for students to get jobs in technical education. Organization for Economic Co-Operation and Development (2023) also highlighted that teachers need to keep learning new skills and become certified to keep vocational programs high-quality and relevant. Darling-Hammond *et al*. (2020) also emphasized that teachers are more effective when they keep learning, focus on one subject, and use what they know in real life.

Table 3: Demographic profile of TVL-AFA teacher respondents

Demographic Variables	Categories	Frequency	Percentage
Age	27-33 years old	3	50.00
	34-40 years old	1	16.67
	48-54 years old	2	33.33
Sex	Male	2	33.33
	Female	4	66.67
Area of Specialization	Agriculture and Fishery Arts	4	66.66
	Animal Science	1	16.67
	English	1	16.67
Educational Attainment	Bachelor Degree	3	50.00
	Master Degree	3	50.00
Training Attended related to TVL-AFA (2023-2026)	TESDA National Certificate		
	Animal Production (Swine) NC II	2	25.00
	Animal Production (Poultry) NC II	1	12.50
	Food and Beverages Service NC II	1	12.50
	Organic Agriculture production NC II	3	37.50
	No TESDA Certificate	1	12.50
	TESDA Training Methodology		
	Training Methodology I	4	66.67
	No Training Methodology I	2	33.33
Industry Work Experience	Yes	1	16.67
	No	5	83.33
Salary Based on Salary Standardization Law 2026	Php 31,705.00 – Php 33, 611.00	3	50.00
	Php 33,947.00 – Php 35, 850.00	1	16.67
	Php 59,153.00 – Php 65, 132.00	2	33.33
Number of years teaching TVL Specialization	Agriculture and Fishery Arts		
	2 years	3	33.33
	8 years	2	22.23
	Animal Science		
	2 years	1	11.11
	26 years	1	11.11
	Crop Science		
	8 years	1	11.11
	Creative Writing and Creative Nonfiction		
	2 years	1	11.11
	Total	9	100.00

Legend: TVL-AFA means Technical-Vocational-Livelihood- Agriculture and Fishery Arts; The respondents have multiple responses in Training Attended related to TVL-AFA, and Number of years teaching TVL specializations.

Level of Competencies of Technical Vocational Livelihood Teachers in Agriculture and Fishery Arts Specializations.

The table 4 presents the level of competencies of technical vocational livelihood teachers in agriculture and fishery arts specializations. In animal production (Swine), the highest average weighted mean was obtained in all competencies including "Handle breeders," "Handle farrowing sows and suckling," "Raise weanlings," "Produce finishers," "Maintain healthy animal environment," and "Apply bio-security measures," rated an average weighted mean of 5.00 which interpreted as "Very Competent". The highest rated competency among TVL-AFA students and TVL-AFA teachers was "Apply bio-security measures" with an average weighted mean of 4.67, and 4.60, respectively, which was interpreted as "Very Competent". The results indicate that TVL-AFA teachers have a high level of technical skills in swine production particularly in maintaining animal health

and applying biosecurity protocols which are important in ensuring a quality of industry-standard agricultural instruction and safe livestock management. The findings demonstrate that teachers can convey practical skills and industry-relevant information required for effective agriculture instruction.

The findings of the study of Antera (2021) emphasized that the competencies of vocational teachers are linked to performance, practical knowledge and the capability to utilize professional skills in real work environments. Furthermore, Chotijah, *et al*. (2025) emphasized that vocational teachers with strong professional competencies are very important in ensuring quality learning and preparing students to meet industry demands.

Conversely, the lowest average weighted mean in animal production (swine) was "Handle breeders" with 4.41 which interpreted as "Very Competent" from the assessment of TVL-AFA students whereas TVL-AFA teachers assessed "Produce finishers" as lowest with an average weighted mean of 3.60 which means "Competent". Although the TVL-AFA teacher assessments are within the competent range, the lower averages as compared to the other areas show that there are areas where teachers need further improvement particularly regarding advanced swine production management and finishing procedures. This involves further immersion in industry, updated training and exposure to modern livestock production technologies to develop teacher expertise and competency in specific technical duties.

Supporting these findings, Calanog (2021) found that TLE teachers' competencies in terms of Agri-Fishery Arts were moderately expressed and they needed further training in terms of technical and instructional techniques to strengthen their professional skills. Similarly, Layfield (2002) highlighted the importance of continuous professional development programs for agricultural teachers to build and expand their competencies in technical instruction and modern industry practices.

In organic agriculture production, the highest average weighted mean from school heads in organic agriculture production was on "Produce Organic Fertilizer" and "Produce Organic Concoctions and Extractions" with an average weighted mean of 5.00 which are interpreted as "Very Competent". TVL-AFA students rated "Produce Organic Concoctions and Extractions" highest with an average weighted mean of 4.36 which means "Very Competent". TVL-AFA teachers rated "Raise Organic Chicken" highest with an average weighted mean of 4.47 which they interpreted as "Very Competent". The findings indicate that the teachers possess high skills in organic agriculture practices and sustainable farming methods. The findings show that teachers can apply ecologically sustainable agricultural techniques in the classroom and laboratory instruction to address the increased demand for organic and sustainable agriculture education.

The results of the study were connected to the study of Roberts, *et al*. (2006) stating that effective agricultural teachers should have competencies in instructional delivery, technical agriculture knowledge, and program administration to ensure positive agricultural learning experiences. Additionally, Harlin, *et al*. (2007) emphasized that the agricultural teachers need to have competency in the cognitive, psychomotor and affective domains to be able to teach modern agricultural concepts and practices.

Conversely, the lowest average weighted mean in organic agriculture production was recorded in "Raise Organic Chicken" with an average weighted mean of 4.18 which means "Competent" from TVL-AFA students and "Produce Organic Fertilizer" with average weighted mean of 4.13 which interpret as "Competent" from TVL-AFA teachers. This implies that TVL-AFA teachers are generally competent, but there are some problems in providing practical instruction on organic vegetable cultivation. The finding indicates that further training, improved facilities and exposure to new organic farming techniques are needed to improve the teachers' competencies in raising organic chicken, producing organic vegetables, and producing organic fertilizers.

Supporting these results, Rubani, *et al*.(2021) explained that the content knowledge and specialization of vocational teachers have a significant impact on their level of competencies in technical instruction. Moreover, Villareal, *et al*. (2024) stressed that agricultural teachers need to constantly enhance their technological, pedagogical, and content expertise to meet the needs of modern agricultural instruction.

Table 4: Level of competencies of technical vocational livelihood teachers in agriculture and fishery arts specializations

Agriculture and Fishery Arts Specializations	Competencies	School Heads		Students		Teachers	
		AWM	VI	AWM	VI	AWM	VI
Animal Production (Swine)	**Handle Breeders**	**5.00**	**VC**	**4.41**	**VC**	**3.67**	**C**
	Handle Farrowing Sows and Suckling.	5.00	VC	4.47	VC	4.33	VC
	Raise Weanlings	5.00	VC	4.50	VC	4.07	C
	Produce Finishers	5.00	VC	4.52	VC	3.60	C
	Maintain Healthy Animal Environment	5.00	VC	4.60	VC	4.33	VC
	Apply Bio-Security Measures	5.00	VC	4.67	VC	4.60	VC
Organic Agriculture Production	Raise Organic Chicken	4.50	VC	4.18	C	4.47	VC
	Produce Organic Vegetables	4.50	VC	4.30	VC	4.13	C
	Produce Organic Fertilizer	5.00	VC	4.28	VC	4.07	C
	Produce Organic Concoctions and Extractions	5.00	VC	4.36	VC	4.40	VC

Legend: AWM- Average Weighted Mean, VI- Verbal Interpretation, VC- Very Competent, C-Competent

Problems Encountered and Coping Mechanisms of the TVL-AFA Teachers in Teaching Agriculture and Fishery Arts Specializations

The table 5 reveals the problems encountered and coping mechanisms of the TVL-AFA teachers in teaching agriculture and fishery arts specializations. The results showed that among the problems encountered, the "Resources and Equipment" had the highest average weighted mean of 4.17 which was verbally interpreted as Encountered. This implies that the most common problem encountered by TVL-AFA teachers was the unavailability or limited access to tools, farm facilities, laboratory equipment,

and technology for instruction. The findings suggest that lack of resources can be a challenge to the effective delivery of competency-based agriculture instruction particularly in the implementation of hands-on and experiential learning activities that are needed in technical-vocational education. Since agriculture instruction is highly focused on hands-on application, the lack of equipment could hinder students' knowledge of agricultural competencies and limit the opportunity for industry-standard training.

The findings were supported by Garba (2025) emphasized the need for appropriate instructional resources and adequate training facilities to increase students' practical knowledge and skills development in training in agriculture. Furthermore, Villareal, *et al*. (2025) showed that modern vocational training needed advanced equipment, technology tools and industry-related learning settings to provide relevant and high-quality technical education.

On the other hand, the two problems encountered with the lowest average weighted mean were "Teacher Expertise" and "Training Skills" with an average weighted mean of 3.00 verbally interpreted as Moderately Encountered. While these concerns were only moderately encountered, the findings evidently highlight the need for continuing professional development and technical enhancement among TVL-AFA teachers. The findings suggest that some teachers could continue to lack advanced technical skills, current pedagogical approaches, or extensive industry exposure which are essential to teaching specialized agricultural subjects. Hence, continuous training programs, seminars and industry immersion activities are crucial in enhancing the technical expertise and instructional competencies of teachers.

Supporting the result, Albritton, *et al* (2020) determined the need for continuous improvement of technical competencies and instructional competencies of agricultural teachers to cope with changing agricultural technologies and the demands of teaching in the 21st century. Additionally, Coleman, *et al* (2020) showed that professional development programs greatly increase instructional methods, teacher competency, and classroom effectiveness in vocational education.

In terms of coping mechanisms, "Training Skills" obtained the highest average weighted mean of 4.40 followed by "Instructional Materials" with average weighted mean of 4.23 which both interpret as" Always" in relation to coping mechanisms. These results demonstrate that TVL-AFA teachers are engaged in training activities and utilize instructional materials to solve problems encountered in teaching agricultural and fishery arts. This means that even in limited resources, teachers show adaptability and responsiveness by improving their teaching skills and using different instructional strategies to continue the delivery of learning. The results also indicate that teachers perceived professional development and instructional innovation as effective methods to work with instructional limitations.

Supporting the findings, Villareal, *et al* (2025b) stated that vocational teachers who participate in continuous training and professional learning activities become more effective in integrating instructional methods, technological tools, and practical agricultural competencies into classroom instruction. Moreover, Weeks, *et al* (2020) highlighted that agricultural educators who proactively enhance their pedagogical and technological competencies are more prepared to respond to industry demands and strengthen students' employability skills.

Meanwhile, the lowest average weighted mean among coping mechanisms was "Field Sites and Industry Partners" with average weighted mean of 3.50 which was verbally interpreted as Frequently. This result implies that teachers frequently seek partnerships with farms, companies, and other stakeholders such partnerships are limited or difficult to sustain. These findings indicated the need for stronger collaborations between schools and the agriculture industry to facilitate work immersion, field exposure, and experiential learning opportunities for students and teachers. Industrial connections in TVL instruction are important because they provide actual learning contexts, current agricultural methods, and real industrial exposures.

Supporting the results, Deißinger, *et al* (2024) confirmed the idea that collaboration between schools and industry partners improves the quality of vocational education and assists in adjusting agricultural instruction to the needs of the labor market. Additionally, Voges, *et al* (2020) emphasized that collaboration between schools and industry partners improves the quality of vocational education and assists in adjusting agricultural instruction to the needs of the labor market.

Table 5: Problems encountered and coping mechanisms of the TVL-AFA teachers in teaching agriculture and fishery arts specializations

Instructional Support Factors	Problems Encountered		Coping Mechanisms	
	AWM	VI	AWM	VI
Resources and Equipment	4.17	E	3.77	F
Instructional Materials	3.30	E	4.23	A
Teacher Expertise	3.00	ME	3.57	F
Training Skills	3.00	ME	4.40	A
Field Sites and Industry Partners	3.43	E	3.50	F

Legend: AWM- Average Weighted Mean, VI- Verbal Interpretation, E-Encountered, ME-Moderately Encountered, A-Always, F-Frequently

Difference in Competency Assessments Among School Heads, Students, and Teachers in Agriculture and Fishery Arts Specializations

The table 6 presents the difference in competency assessments among school heads, students, and teachers in agriculture and fishery arts specializations. The results show that all competencies in both Animal Production (Swine) and Organic Agriculture Production obtained computed p-values lower than the 0.05 level of significance which indicates that there are significant differences in the competency assessments of the three groups of respondents. This implies that the assessments of the school heads, students, and teachers on the competencies of TVL-AFA teachers in agriculture and fishery arts specializations did not show similarities.

In animal production (swine), the highest F-value of 92.28 with a p-value of 0.000 was obtained for the competency "Produce Finishers" showing the largest difference in assessments among the respondents. This finding implies that teachers are aware of limitations in their practical competencies or lack of self-assurance in their finisher production competencies regardless of positive assessments from school heads and students. This difference indicates

gaps in exposure, expectations and knowledge of industry norms among the respondents.

The findings are backed by Saadvandi, *et al* (2024) revealed that self-assessment among vocational teachers is frequently more conservative as teachers are more aware of the technical requirements and industry needs of agricultural training. Competency-based agricultural instruction highlights the need for proper assessment and continuing professional development to remain up to date of changing agricultural practices.

For organic agriculture production, the competency "Produce Organic Fertilizer" reported the highest F-value of 93.97 with a p-value of 0.000, which indicates a very high difference in competency assessments among the respondents. This finding implies that teachers need more technical enhancements and training in organic agriculture production particularly for the application of sustainable and innovative agriculture practices. As organic agriculture continues to develop with the use of modern technology and environmental standards, teachers can attain the need for increased specialization and competency development.

The results were agreed by the study of Kaur, *et al* (2020) confirmed that the agricultural training institutions must continuously develop competency-based instruction to respond to the evolving needs of sustainable agriculture and industry demands.

Table 6: Difference in competency assessments among school heads, students, and teachers in agriculture and fishery arts specializations

Agriculture and Fishery Arts Specializations	Competencies	Respondents	N	Mean	F-value	p-value
Animal Production (Swine)	Handle Breeders	School Heads	2	5.00 A	37.52	0.000
		Students	52	4.41 B		
		Teachers	3	3.67 C		
	Handle Farrowing Sows and Suckling	School Heads	2	5.00 A	15.83	0.000
		Students	52	4.67 B		
		Teachers	3	4.33 B		
	Raise Weanlings	School Heads	2	5.00 A	38.85	0.000
		Students	52	4.49 B		
		Teachers	3	4.07 C		
	Produce Finishers	School Heads	2	5.00 A	92.28	0.000
		Students	52	4.52 B		
		Teachers	3	3.60 C		
	Maintain Healthy Animal Environment	School Heads	2	5.00 A	9.76	0.003
		Students	52	4.60 B		
		Teachers	3	4.33 B		
	Apply Bio-security Measures	School Heads	2	5.00 A	27.73	0.000
		Students	52	4.67 B		
		Teachers	3	4.60 B		
Organic Agriculture Production	Raise Organic Chicken	School Heads	2	4.50 A	7.81	0.007
		Students	45	4.18 A		
		Teachers	3	4.47 B		
	Produce Organic Vegetables	School Heads	2	4.50 A	11.48	0.002
		Students	45	4.30 B		
		Teachers	3	4.13 B		
	Produce Organic Fertilizer	School Heads	2	5.00 A	93.97	0.000
		Students	45	4.29 B		
		Teachers	3	4.07 C		
	Produce Organic Concoctions and Extracts	School Heads	2	5.00 A	21.26	0.000
		Students	45	4.36 B		
		Teachers	3	4.40 B		

In a category means that do not share a letter are significantly different at $\alpha = 0.05$ by Fisher LSD.

Relationship Between the Problems Encountered and the Coping Mechanisms Employed by the TVL-AFA Teacher Respondents

The table 7 shows the relationship between the problems encountered and the coping mechanisms employed by the TVL-AFA teacher respondents. The findings showed that the relationships for Resources and Equipment ($r = 0.808$, $p = 0.098$) and Instructional Materials ($r = 0.839$, $p = 0.076$) indicated very strong positive relationships. This suggested that as problems increase, teachers tend to use more coping strategies. However, these relationships are not statistically significant because the p-values are greater than 0.05 which means that the hypothesis is accepted for these variables. Likewise, Field Sites and Industry Partners ($r = 0.159$, $p = 0.779$) exhibited very weak positive relationships leading to the acceptance of the hypothesis due to a non-significant p-value. Conversely, Teacher Expertise ($r = -0.373$, $p = 0.537$) exhibits weak negative relationship suggesting that higher challenges are linked to lower coping strategies employed even if this finding is also not statistically significant thus hypothesis for this variable is accepted. Training Skills ($r = -0.927$, $p = 0.024$) shows a very strong negative relationship that is statistically significant because the p-value is less than 0.05. This means that the hypothesis for this variable is rejected. This indicates that as problems related to training skills increase, the coping mechanisms employed decrease which means that the teacher feels less capable of responding effectively when their training skills are insufficient.

The findings imply that teachers are proactive in dealing with problems linked to resources and instructional materials as shown by the strong positive relationship. However, an absence of statistical significance indicates that these coping mechanisms are not effective among

respondents. The most important result is the strong negative relationship between training skills and coping methods. This shows that teachers who lack proper training have difficulties dealing with problems that arise in the classroom. It shows how important it is to have programs that create capacity building programs, targeted training, and professional development initiatives that focus on improving technical and teaching skills of TVL-AFA teachers. Also, the weak and non-significant relationship in other areas shows that external factors such as institutional support, resource availability, and access to industrial partnerships influence coping mechanisms. The capacity of teachers to handle situations effectively could be improved by collaborating with external stakeholders and accessibility to field-based learning environments.

The results are related to the study of Darling-Hammond, *et al* (2020) asserting that effective coping mechanisms and instructional effectiveness are significantly correlated with continuous professional development and availability to relevant training opportunities. Teachers who do not have enough training have difficulty using the right strategies in challenging teaching situations. In addition, UNESCO (2021) also stated that competency-based training is important in TVET programs because it provides teachers with the abilities needed to handle a wide range of teaching problems. The strong negative correlation observed in training skills supports this study showing that inadequate training makes it difficult for teachers to adapt. Likewise, the Organization for Economic Co-Operation and Development (2023) also indicated that having sufficient resources and teaching materials makes it more convenient for teachers to deal with problems which supports the positive relationships shown in this study. The study also stated that these coping mechanisms could not be effective for a long time if they lack support from the system. Furthermore, Schleicher (2020) showed that teacher resilience and flexibility depend on both their own skills and the support structures set up at their school. This explains the reason some relationships in this study even had strong relationships that had no statistical significance.

Table 7: Relationship between the problems encountered and the coping mechanisms employed by the TVL-AFA teacher respondents

Instructional Support Factors	Problems Encountered vs Coping Mechanism		
	Pearson (r)	Interpretation	p-value
Resources and Equipment	0.808	Very Strong Positive	0.098
Instructional Materials	0.839	Very Strong Positive	0.076
Teacher Expertise	-0.373	Weak Negative	0.537
Training Skills	-0.927	Very Strong Negative	0.024
Field Sites and Industry Partners	0.159	Very Weak Positive	0.779

Legend: Significant at p-value <0.05

Proposed Capacity Enhancement Program for Competency Needs of TVL-AFA Teachers in Division of Laguna

The table 8 shows a proposed capacity enhancement program for competency needs of TVL-AFA teachers in the Division of Laguna. It is an indicated program to enhance the competencies of TVL-AFA teachers in the Division of Laguna based on their own assessments and the outcomes of student assessment.

The proposed enhancement program requires a developmental strategy instead of a remedial. The objective is to support teachers advance from being "competent" to "Very competent" or "expert" teachers. The program provides the TVL-AFA teachers with the most up-to-date technical knowledge, practical skills, and adaptable strategies needed to teach effectively and remain relevant in the industry by integrating hands-on training, seminars, and performance-based assessments. This initiative should contribute to improved teaching, enhanced learning experiences for students, and a stronger relationship between TVL-AFA schools and the needs of the agriculture and fisheries industries.

Table 8: Proposed capacity enhancement program for competency needs of TVL-AFA teachers in Division of Laguna

Competency Area	Objectives	Activities	Person Involved	Expected Outcome
Handle Breeders	Improve competency in breeding management and reproductive techniques	• Training on artificial insemination and heat detection • Case-based learning on breeder health monitoring	Teachers, Veterinary Experts	Enhanced breeding management skills
Raise Weanlings	Strengthen skills in weanling care and environmental management	• Workshop on feeding systems and housing • Problem-based learning scenarios	Teachers, Agricultural Trainers	Sustained and improved competency in weanling management
Produce Finishers	Enhance advanced skills in finisher production and post-production practices	• Hands-on training on feeding systems and growth management •Demonstration on fermentation and finishing techniques • Farm immersion	TVL-AFA Teachers, DA Experts, TESDA Trainers	Teachers reach Very Competent level in finisher production
Raise Organic Chicken	Improve brooding management and feeding practices	• Training on poultry care and organic feeding • Simulation and demonstration	Teachers, Poultry Experts	Improved competency in organic poultry production
Produce Organic Vegetables	Enhance skills in nursery establishment, fertilization, and pest management	• Hands-on training in nursery and transplanting • Organic pest control demonstration	Teachers, LGU Agriculture Office	Improved practical vegetable production skills
Produce Organic Fertilizer	Improve composting process and quality control	• Training on C/N ratio, compost turning, and monitoring • Demonstration of organic fertilizer production	Teachers, Organic Agriculture Experts	Improved efficiency and quality in compost production

Conclusion

Based on the findings of the study, the following conclusions are drawn in relation to the seven objectives of the research:

The results show that the teachers have relevant educational backgrounds but limited exposure to the industry, school heads focused on managerial responsibilities but minimal involvement in TVL-AFA-related training. Conversely, most of the students have backgrounds related to agriculture. These findings show that there is a gap in ongoing professional development and real-world industry interaction required to improve instructional delivery, basic knowledge and context experience.

School heads and students perceived TVL-AFA teachers as very competent in both Organic Agriculture and Animal Production (Swine). However, teachers rated themselves as competent particularly when it comes to difficult and technical competencies such as production procedures, record-keeping, and breeding management. This indicates that even with strong external assessments, there is an internal awareness of skill limitations.

TVL-AFA teachers encounter moderate to high level problems in terms of equipment and resources, training materials, field site and industry partner, and training skills. These findings indicate that technical limitations significantly affect the effective delivery of competency-based instruction.

Teachers demonstrate moderate to consistent use of coping mechanisms such as self-directed learning, peer collaboration, and material improvisation. These strategies allow teachers to continue teaching in spite of any challenges demonstrating adaptability and determination in dealing with challenges in the classroom.

The competency assessments of school heads, students, and teachers in both organic agriculture production and animal production(swine) show statistically significant differences. This demonstrates that different groups have different assessment standards and perspectives assessing the competencies of the teachers; school heads rated the highest assessment followed by students while teachers scored the lowest self-assessment.

The results indicate that most problems exhibit no statistically significant relationship with coping mechanisms; nonetheless, strong positive relationships imply that teachers increase their coping mechanisms as problems increase. There is a significant relationship between problems with training skills and coping mechanisms. This means that as training skills become more difficult, the ability of the teachers to deal with these problems becomes less effective. This shows an important gap in teaching ability that requires standards to be improved immediately.

Future researchers may conduct similar studies with large populations, different regions, and additional variables such as students' performance, instructional effectiveness, and institutional support system to further validate and strengthen the findings of this study. And test the significant relationship between the demographic profile and the competency assessment of school heads, TVL-AFA students, and TVL-AFA teachers to further validate and strengthen the findings of this study.

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