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The learning competencies of the grade 12 students in organic agricultural production through hands-on experiences

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Abstract

The study examined the learning competencies of Grade 12 students in Organic Agricultural Production through hands-on experiences in public secondary schools in Libon East District, Division of Albay, during School Year 2025–2026. It specifically determined the extent of teachers' hands-on teaching practices, the level of students' competencies in terms of Basic, Common, Core, and Elective Competencies, the significant difference between teaching practices and student competencies, and the intervention measures that may be proposed based on the findings. A descriptive-evaluative survey method was used with eighty-six (86) Grade 12 student-respondents from Matara High School, Malabiga High School, and Libon Agro-Industrial High School. Data were gathered using a validated questionnaire and analyzed using frequency distribution, weighted mean, Five-Point Rating Scale, and Analysis of Variance (ANOVA) or F-test.

Findings revealed that teachers' hands-on teaching practices were generally much practiced, particularly in crop production, organic fertilizer preparation, demonstrations, farm immersions, experiments, and project-based learning, while technology integration, simulations, peer teaching, and record-keeping were moderately practiced. The test of difference showed no significant difference between students' competencies and teaching practices, as the computed F-value was lower than the critical value at 0.05 level of significance, leading to the acceptance of the null hypothesis. Based on the results, intervention measures were proposed to enhance instructional practices and improve students' competencies in Organic Agricultural Production. The study concluded that hands-on teaching practices and students' competencies are generally aligned, with areas for improvement identified in specialized and technical skills.

Keywords: Students' learning Competencies; Hands-On Experiences; Organic Agricultural Production; Descriptive-evaluative survey method

1. Introduction

The Department of Education integrates agriculture-related competencies through the Senior High School Technical-Vocational-Livelihood (TVL) track, particularly under the agriculture specialization. Anchored on Republic Act No. 10533 or the Enhanced Basic Education Act of 2013 and Republic Act No. 7796, also known as the TESDA Act of 1994, the K to 12 program emphasizes outcome-based and skills-oriented learning. These policies aim to prepare learners for higher education, employment, and entrepreneurship by equipping them with relevant competencies aligned with industry demands.

A critical component of Technical and Livelihood Education (TLE), particularly in agriculture, is hands-on practical learning. Effective instruction in agricultural education requires the integration of theoretical knowledge with actual field experiences to ensure deeper understanding and skill acquisition. Sanchez (2023) emphasized that many TLE

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teachers consider hands-on activities essential because learners tend to better understand and retain knowledge through actual practice rather than purely lecture-based instruction.

However, based on classroom observations, challenges remain in translating theoretical learning into actual student performance. Many learners struggle to independently apply skills learned during lectures when performing practical tasks, indicating gaps in competency development. This concern highlights the need to further examine how hands-on experiences influence the learning competencies of students in Organic Agricultural Production.

In response to this gap, the present study focuses on assessing the learning competencies of Grade 12 students in Organic Agricultural Production through hands-on experiences. The findings are expected to provide empirical evidence that can guide the enhancement of instructional strategies, curriculum design, and learning interventions in agricultural education. This study also aligns with the United Nations Sustainable Development Goals (SDGs), particularly SDG 4: Quality Education and SDG 2: Zero Hunger. By promoting experiential learning in organic agriculture, students are equipped with relevant skills that support sustainable farming practices, food security, and environmental protection. This contributes to the development of future agricultural practitioners who are capable of addressing both local and global challenges in food production systems. Furthermore, the study is anchored on the Strengthened Senior High School (SSHS) Program of the Department of Education, which will be fully implemented in School Year 2026–2027. This enhanced curriculum emphasizes competency-based, flexible, and industry-aligned education that prioritizes experiential learning and technical skill development. In this context, the study supports the goal of producing skilled, work-ready, and environmentally responsible graduates in the field of agriculture.

Ultimately, this research is significant in identifying factors that influence students' competency development, such as access to resources and engagement in hands-on activities. The results will serve as a basis for improving teaching strategies and learning materials in Agricultural, thereby empowering learners to become competent, productive, and environmentally conscious individuals.

1.1. Statement of the Problem

The study aimed to explore the learning competencies of the Grade 12 students' in Organic Agricultural Production through hands on experiences in the public secondary schools, Libon East District, Division of Albay for SY 2025-2026. Specifically, it sought answers to the following queries:

What is the extent of hands-on teaching practices employed by the teachers in Organic Agricultural Production?

What is the level of students' competencies in organic agricultural production through the use of hands-on learning along:

- Basic Competencies,
- Common Competencies,
- Core Competencies, and
- Elective Competencies?
- What is the significant difference between the level of students' competency and the hands-on teaching practices?
- What measures can be proposed based from the findings of the study?

1.2. Scope and Delimitation

The main thrust of the study was to explore the learning competencies of the Grade 12 students in Organic Agricultural Production through hands on experiences in the public secondary schools, Libon East District, Division of Albay for SY 2025-2026. It further looked into the extent the hands-on teaching practices were employed by the teachers to improve the learning competencies of the Grade 12 students in Organic Agricultural Production; and the level of students' competencies in organic agricultural production through the use of hands-on learning along: Basic Competencies, Common Competencies, Core Competencies, and Elective Competencies.

The research is typically limited to Grade 12 students enrolled in specific senior high schools offering the Technical-Vocational-Livelihood (TVL) track within Libon District, Division of Albay.

The respondents of the study were consisted of eighty-six (86) Grade 12 students distributed as follows: 29 SHS at Matara High School, 24 Malabiga High School, and 33 at Libon Agro Industrial High School in Libon District, Division of Albay for School Year 2025-2026:

2. Materials and Methods

2.1. Research Design

The researcher employed the descriptive-evaluative method in this study. This method is designed to gather information about existing conditions and describe the nature of situations as they occur during the time of the investigation. It also explores the causes and characteristics of particular phenomena. Through the use of a descriptive survey, the researcher was able to obtain relevant information needed to answer the questions presented in the study. The descriptive survey method is commonly considered a fact-finding and information-gathering approach with corresponding analytical interpretation of data.

Descriptive statistics were utilized to summarize and present the basic features of the data gathered from the respondents. These statistical measures provide simple summaries of the sample and the variables under study and serve as the foundation for quantitative data analysis. According to Kaur et al. (2019), descriptive research involves the collection of data to answer questions concerning the current status of a phenomenon or condition being investigated. This method enables researchers to organize and simplify large amounts of data into meaningful and understandable forms.

The study also incorporated evaluative aspects to assess the effectiveness and outcomes of the variables being examined. Bautista (2020) explained that the evaluative method provides a means of judging actions, processes, and activities based on established values, criteria, and standards. It also helps determine areas for improvement and guides decision-making toward achieving better outcomes. The descriptive-evaluative method was deemed appropriate for this study since it allowed the researcher to determine and assess the learning competencies of Grade 12 students in Organic Agricultural Production through hands-on experiences in public secondary schools in Libon East District, Division of Albay, during the School Year 2025–2026

2.2. Respondents of the Study

The respondents of the study consisted of eighty-six (86) Grade 12 students distributed as follows: 29 students from Matara High School, 24 students from Malabiga High School, and 33 students from Libon Agro-Industrial High School in Libon East District, Division of Albay, during the School Year 2025–2026.

2.3. Data Gathering Tools

The main instrument used in gathering the data was a questionnaire-checklist. This was supplemented by unstructured interviews, library research, and internet-based sources. It should be noted that the researcher utilized different types of research instruments in the conduct of the study. This approach was supported by Piccione (2018), who contended that the use of multiple tools in data collection, commonly referred to as triangulation, strengthens the results generated by each instrument. This further implied that gaps identified through one research tool could be verified and supported by information obtained from other instruments.

Questionnaire. In this study, the primary data were collected through the use of questionnaires. McMillan (2017) defined a questionnaire as a written document containing statements or questions designed to obtain respondents' perceptions, attitudes, beliefs, values, perspectives, and other relevant characteristics. Questionnaires are widely used in research because they provide an efficient means of gathering information related to various research problems. Although the term "questionnaire" suggests a set of questions, a typical questionnaire often contains both statements and questions, particularly when the researcher intends to determine the extent to which respondents possess certain attitudes or perspectives. The primary objective of a questionnaire is to gather factual information and opinions regarding a particular phenomenon from individuals who are knowledgeable about the issue being investigated. Due to their practicality and effectiveness, questionnaires remain one of the most commonly utilized research instruments.

Preparation of the Questionnaire. The questionnaire was prepared after an extensive review of related studies that served as the basis for its development. These studies guided the researcher in constructing the instrument. The questionnaire was designed following the criteria set by Fox (2016), which include clarity of language, specificity of content, singleness of purpose, linguistic completeness, grammatical consistency, freedom from assumption, freedom from suggestion, and reasonable time required for completion. The draft questionnaire was submitted to the

researcher's adviser and the Dean of the Graduate School and Research for review and critiquing. Suggestions and recommendations for improvement were incorporated accordingly. After approval, the revised version was reproduced and prepared for a dry run.

Validation of the Questionnaire. A trial run of the questionnaire was conducted to determine the appropriateness of language used in each item and to ensure the clarity of directions. The pilot testing helped identify issues such as vagueness of wording, unclear instructions, and duplication of ideas in some items. The time required to accomplish the questionnaire was also evaluated using the following adjectival ratings: too long, long, just enough, and short. Suggestions and recommendations were considered in the revision of the questionnaire. After revising the questions, ten (10) copies were produced subject to dry run and to be distributed among the jurors. The respondents were instructed to attach their comments on each question. Items with comments were either revised or improve after dry-run.

Administration and Retrieval of the Questionnaire. A permit to conduct the study was secured from the Schools Division Supervisor of Libon District, Division of Albay. The distribution and retrieval of the questionnaires were personally undertaken by the researcher to ensure proper administration and higher response rate.

Library Technique. The library technique was likewise utilized in order to gather pertinent information from books, journals and other existing document-based researches. Likewise, the researcher also gathered information available in the internet to gather significant data which shows bearing to the research.

Interview. An unstructured interview was also conducted, as deemed necessary, to substantiate the data gathered from the questionnaire. An interview guide was prepared to elicit the needed information from the respondents. The results of the interviews contributed significantly to the interpretation of the data.

3. Results and Discussion

3.1. The Extent of Hands-On Teaching Practices Employed by Teachers in Organic Agricultural Production

Students' learning outcomes are greatly influenced by the caliber of instructional practices. Active, experiential learning techniques are used in hands-on teaching methods to engage students' cognitive, emotional, and psychomotor domains while they learn by doing.

Table 1 The Extent of Hands-On Teaching Practices Employed by Teachers in Organic Agricultural Production

Indicators	WM	VI	Rank
Demonstration of organic farming techniques, including composting, seed planting, and natural pest control.	4.17	MuP	3
Laboratory or garden experiments, such as testing soil quality, fertilizer effects, and plant growth.	4.12	MuP	5.5
Field visits and farm immersions to observe real-world organic farming practices.	4.13	MuP	4
Practical crop production activities, including planting, maintaining, and harvesting crops.	4.19	MuP	1
Preparation and application of organic fertilizers and pesticides.	4.18	MuP	2
Project-based learning activities, such as creating mini organic gardens and producing compost.	4.12	MuP	5.5
Peer teaching and group work to collaboratively learn and practice agricultural techniques.	3.39	MoP	9
Record-keeping and analysis of crop growth, yields, and experimental data.	3.35	MoP	10
Simulation exercises to practice farm management decision-making.	3.58	MuP	8
Integration of technology to monitor crops and plan farm layouts using apps or software.	3.61	MuP	7
Average Weighted Mean	3.88	MuP	

Legend: 4.20-5.00 – Very Much Practiced (VMP); 3.40-4.19 – Much Practiced (MuP); 2.60-3.39 – Moderately Practiced (MoP) ; 1.80-2.59 – Fairly Practiced (FP);1.00-1.79 – Not Practiced (NP)

These techniques are essential for encouraging inquiry and raising students' interest and achievement. In this study, the extent the hands-on teaching hands-on teaching practices employed by the teachers to improve the learning competencies of the Grade 12 students in Organic Agricultural Production can be viewed in Table 1.

Table 1 shows that most of the given indicators obtained verbal rating of much practiced, they were: Practical crop production activities, including planting, maintaining, and harvesting crops (4.19); Preparation and application of organic fertilizers and pesticides (4.18); Demonstration of organic farming techniques, including composting, seed planting, and natural pest control (4.17); Field visits and farm immersions to observe real-world organic farming practices (4.13); Laboratory or garden experiments, such as testing soil quality, fertilizer effects, and plant growth (4.12); Project-based learning activities, such as creating mini organic gardens and producing compost (4.12); Integration of technology to monitor crops and plan farm layouts using apps or software (3.61), and; Simulation exercises to practice farm management decision-making (3.58). On the other hand, verbally treated as moderately practiced were: Peer teaching and group work to collaboratively learn and practice agricultural techniques (3.39), and; Record-keeping and analysis of crop growth, yields, and experimental data (3.35). Delving deeper into the figures, it can be stated that the students involved in this study acknowledged the fact that the teachers tried its level best to provide their students with innovative and efficacious teaching practices. In short, teachers have the strengths and weaknesses that they must be concern of. That is to capitalize on their strong points while do something to enhance their weaker points.

As pointed out by Soriano (2024)[1], to ensure that students are ready for the challenges of real-world farming, teachers must improve their practical instruction or practices in Organic Agricultural Production to close the knowledge gap between theory and practice. Hands-on training is crucial for gaining skills in managing soil health, producing organic concoctions, and rearing livestock as agriculture gets more complex. It was suggested in the study conducted by De Vera (2023)[2] that the teachers should undergo training as capacity-building programs to equip teachers with the necessary skills and knowledge to effectively teach organic agriculture in schools. Obviously, this formal training significantly enhances teachers' competence in delivering specialized agricultural content. Without sufficient training, teachers may face challenges in adopting updated practices, which can limit their effectiveness in promoting sustainable farming concepts to students.

3.2. The Level of Students' Competencies in Organic Agricultural Production through the Use of Hands-On Learning

In this section of the study presents the level of students' competencies in organic agricultural production through the use of hands-on learning along: Basic Competencies, Common Competencies, Core Competencies, and Elective Competencies. The succeeding discussions revealed the information gathered:

Table 2 The Level of Students' Competencies in Organic Agricultural Production through the Use of Hands-On Learning along Basic Competencies

Indicators	WM	VI	Rank
1. Participating effectively in workplace communication.	4.13	MuC	3.5
2. Working collaboratively within a team environment.	4.15	MuC	1
3. Demonstrating professionalism.	4.13	MuC	3.5
4. Developing career decisions.	4.10	MuC	6
5. Developing life decisions.	4.12	MuC	5
6. Practicing health and safety procedures.	4.14	MuC	2
7. Contributing to a safe workplace.	4.00	MuC	8
8. Exercising entrepreneurial skills in the workplace.	4.05	MuC	7
Average Weighted Mean	4.10	MuC	

Legend: 4.20-5.00 – Very Much Competent (VMC); 3.40-4.19 – Much Competent (MuC); 2.60-3.39 – Moderately Competent (MoC) ; 1.80-2.59 – Fairly Competent (FC);1.00-1.79 – Not Competent (NC)

Basic Competencies. Basic competencies for senior high school students in Organic Agricultural Production (NC II) focus on workplace safety, applying quality standards, maintaining tools, and basic math calculations. These

competencies are designed to equip students with hands-on skills to prepare them for careers in the organic industry. The level of students' competencies in organic agricultural production through the use of hands-on learning along Basic Competencies can be reaped in Table 2.

Table 2 shows that all the indicators have transmuted rating of much competent. Arranged in a descending order, they were: Working collaboratively within a team environment (4.15); Practicing health and safety procedures (4.14); Participating effectively in workplace communication (4.13); Demonstrating professionalism (4.13); Developing life decisions (4.12); Developing career decisions (4.10); Exercising entrepreneurial skills in the workplace (4.05), and; Contributing to a safe workplace (4.00). With this result, the researcher developed an impression that already prepared for the core tasks in Organic Agricultural Production. These foundational skills ensure students that they can safely and effectively work in farm environments.

According to Quijano-Pagutayao (2024)[3], developing these skills is essential to building a "future-ready" workforce capable of making agriculture a more profitable, sustainable, and environmentally conscious industry. Likewise, Martinez (2022)[4] asserted that a hands-on approach is crucial for competency acquisition and promotes active learning, which would allow students to gain competence and confidence throughout their learning process. This is found to be in line with Caplan's (2021)[5] assertion that students must have real-world experiences throughout in order to build their talents.

Common Competencies. The common competencies for agriculture students focus on foundational technical and safety skills essential for farm operations. These competencies are frequently developed through experiential learning approaches, combining theoretical knowledge with practical, hands-on farming activities The level of students' competencies in organic agricultural production through the use of hands-on learning along Common Competencies can be found in Table 3.

Table 3 The Level of Students' Competencies in Organic Agricultural Production through the Use of Hands-On Learning along Common Competencies

Indicators	**WM**	**VI**	**Rank**
Applying safety measures in various farm operations.	3.70	MuC	1
Performing necessary estimations for farm tasks.	3.61	MuC	4
Performing necessary calculations for farm tasks.	3.62	MuC	3
Developing knowledge related to the organic agriculture industry.	3.67	MuC	2
Updating knowledge related to the organic agriculture industry.	3.55	MuC	5
Maintaining accurate and systematic records of farm activities.	3.38	MoC	6
7. Using farm tools and equipment.	3.35	MoC	7
Average Weighted Mean	3.55	MuC	

Table 3 shows that the indicators with descriptive equivalent of much competent were: Applying safety measures in various farm operations (3.7); Developing knowledge related to the organic agriculture industry (3.67); Performing necessary calculations for farm tasks (3.62); Performing necessary estimations for farm tasks (3.61), and; Updating knowledge related to the organic agriculture industry (3.55). Meanwhile, the indicators with verbal description of moderately competent were: Maintaining accurate and systematic records of farm activities (3.38), and; Using farm tools and equipment (3.35). With these findings, it is evident that the Senior High School students were equipped with competencies designed to prepare them for technical, operational roles in the agricultural industry, yet need to enhance more. The mentioned findings were substantiated by the honest responses of the students during the interview that they still need to further improve along this line They firmly believed that their competency and skills can be more enhanced through constant practice.

The aforementioned findings were parallel to the study of Santiago et al. (2020)[6] who determined that practical teaching of agricultural science in high schools was greatly hindered by the non-existence or lack of funds, school gardens, educational trips, educational plots and well-equipped laboratories. They found that frequent use of the lecture method by teachers, inadequate teaching and learning materials, tools, equipment, laboratories, school farms and gardens, difficulty in planning field trips, poorly motivated teachers and a poor attitude of students towards agriculture have

been responsible for the poor teaching and learning of agriculture. In a study on resources as determinants of students' academic performance in agriculture in secondary schools in the Philippines, Castroverde (2021)[7] found that the schools with laboratories, classrooms, farms, libraries and adequate textbooks had higher mean scores compared to schools without them.

Core Competencies. These are the essential skills, knowledge, and attitudes required to successfully cultivate crops, including land preparation, planting, maintenance, pest management, and harvesting. These competencies ensure efficient farm operations, high yields, and adherence to safety and quality standards. The level of students' competencies in organic agricultural production through the use of hands-on learning along Core Competencies can be seen in Table 4.

Table 4 The Level of Students' Competencies in Organic Agricultural Production through the Use of Hands-On Learning along Core Competencies

Indicators	**WM**	**VI**	**Rank**
Producing organic vegetables.	3.38	MoC	4
Producing organic fruits.	3.37	MoC	5
Producing organic crops.	3.39	MoC	3
Raising organic chickens.	3.77	MuC	2
Producing organic fertilizers.	3.79	MuC	1
Producing concoctions, and extracts.	3.35	MoC	6
Average Weighted Mean	3.51	MuC	

Table 4 reveals the following indicators treated as much competent: Producing organic fertilizers (3.79), and raising organic chickens (3.78). And the indicators considered as moderately competent were: Producing organic crops (3.39); Producing organic vegetables (3.38); Producing organic fruits (3.37), and; Producing concoctions, and extracts (3.35). These quantitative results implied that the students involved in the present study had already earned skills along these mentioned competencies, but they still have to exert more effort for them to become more competent. This can be so due to a combination of high labor and financial needs, technical difficulties, and, in certain situations, a lack of infrastructure or educational assistance, students involved in agricultural crop production frequently encounter major obstacles when raising organic crops and poultry. Particularly when transitioning from conventional farming practices, organic farming is typically more labor-intensive and requires specific expertise that is difficult to master.

It was emphasized by De Luna and Valerio (2022)[8] the barriers behind such lack of competence were due to lack of comprehensive, practical training on organic agriculture within many agricultural curricula; schools may lack the necessary facilities, such as composters, biopesticide labs, or specialized fencing for organic livestock; and some students perceived agriculture, especially intensive manual work, as a low-status or "poor man's job," reducing their enthusiasm and effort in projects. To improve these outcomes, there is a need for targeted training, improved access to organic inputs, and curriculum integration that emphasizes hands-on, sustainable, and organic farming techniques.

Elective Competencies. These are specialized, optional skill sets that students can choose to acquire beyond the mandatory core, basic, and common competencies. These competencies are designed to allow flexibility in the training program, enabling students to tailor their education to local industry needs, such as specific crop types or advanced techniques. Contained in Table 5 is the level of students' competencies in organic agricultural production through the use of hands-on learning along Elective Competencies.

Table 5 The Level of Students' Competencies in Organic Agricultural Production through the Use of Hands-On Learning along Elective Competencies

Indicators	WM	VI	Rank
Raising organic hogs.	3.36	MoC	1
Raising organic small ruminants.	3.31	MoC	3
Raising organic goats and sheep.	3.33	MoC	2
Raising organic rabbits.	3.30	MoC	4
Average Weighted Mean	3.33	MoC	

Table 5 shows all the given indicators were qualitatively treated as moderately competent. Specifically, they were: Raising organic hogs (3.36); Raising organic goats and sheep (3.33); Raising organic small ruminants (3.31), and; Raising organic rabbits (3.30). The quantitative results indicated that there is still room for development in these areas of concern. It should be noted that it is quite important for the students to demonstrate their understanding of basic concepts and underlying theories before its real application. It was confirmed by Navarro and Santos (2021)[9] that due to complicated, knowledge-intensive nature of organic farming, the high labor needs, and the restricted availability of some resources make it extremely difficult for students to become proficient in the production of organic animals, including hogs, rabbits, goats, sheep, and others. Organic farming, in contrast to traditional farming, forbids the use of synthetic chemicals, therefore students must learn sophisticated, natural substitutes for nutrition and health management. Additionally, the research work of Alteza (2022)[10] showed that many agriculture students have limited awareness and foundational knowledge of organic agriculture technology, leading to poor results in competency assessments.

4. Summary of Results of the Level of Students' Competencies in Organic Agricultural Production

Future farming methods and viewpoints are greatly influenced by agricultural education, especially at the secondary school level. Teachers of agricultural science are the main information providers, shaping students' perceptions of and attitudes toward sustainable farming practices. Future farmers, consumers, and agricultural professionals will be greatly influenced by their understanding of organic agriculture concepts, attitudes toward ecological practices, and instructional methods.

Consequently, this research seeks to explore the learning competencies of the Grade 12 students in Organic Agricultural Production through hands on experiences in the public secondary schools, Libon East District, Division of Albay for SY 2025-2026. Specifically, it tackled on the level of students' competencies in organic agricultural production through the use of hands-on learning along: Basic Competencies, Common Competencies, Core Competencies, and Elective Competencies. Table 6 depicted the summary of results.

Table 6 The Summary of Results of the Level of Students' Competencies in Organic Agricultural Production through the Use of Hands-On Learning

Indicators	WM	VI	Rank
Basic Competencies	4.10	MuC	1
Common Competencies	3.55	MuC	6
Core Competencies	3.51	MuC	3
Elective Competencies	3.33	MoC	2
Average Weighted Mean	3.62	MuC	

Table 6 shows that the level of students' competencies in organic agricultural production through the use of hands-on learning along Basic Competencies (4.10), Common Competencies (3.55), and Core Competencies (3.51) obtained qualitative rating of much competent, while Elective Competencies (3.33) have equivalent description of moderately competent. These quantitative results indicated that the students had gained knowledge and skills along Organic Agricultural Production. However, the results likewise suggested that there is still a need to further strengthen its

learning competencies. Strengthening the students' competency level could mean arming them with skills for employment. After all, the primary objective of technical and vocational education instruction in the K–12 Basic Education Program is to equip students with the theoretical and practical skills necessary to succeed in the workforce. In order to meet the demands of the labor market, students are expected to possess the information required in their respective fields.

Relatively, the study of Flores and Garcia (2020)[11] disclosed that the students are often found to be competent in foundational skills, such as using farm tools and applying basic safety measures, but they may face challenges in more advanced areas such as farm business planning, precise calculation of fertilizer formulations, or specialized disease diagnosis. Similarly, the research work of Andres and Tan (2019)[12] indicated that while students often demonstrate moderate to high levels of skills in practical areas—such as preparing organic fertilizers, concoctions, and planting vegetables—there are often gaps in entrepreneurial skills, marketing, and the technical knowledge required for specialized livestock production.

Overall, students trained in organic agriculture production often exit with satisfactory to high levels of practical ability, though continuous, specialized training is required for them to meet the full range of industry standards in commercial organic farming. In finality, for students to become highly competent, adequate resources such as land, equipment, and materials are essential for the integration of practical skills in agriculture education. Schools should have access to land for practical learning and farmers should be encouraged to donate equipment and materials for use in the classroom. Collaboration between schools, farmers, and the local community and the government. Government should provide adequate support to schools in terms of funding and technical assistance for the integration of practical skills in agriculture education.

5. Learning Package in Organic Agriculture Production

The Learning Package in Organic Agriculture Production is a comprehensive output of the study designed to enhance both teaching effectiveness and student competence in the field of organic agriculture. This package outlines a set of strategic actions and interventions aimed at improving teachers' instructional quality, classroom performance, and subject-matter expertise, while simultaneously strengthening students' practical skills, knowledge, and overall readiness for real-world organic farming practices. At its core, the package emphasizes the adoption of immersive and experience-based learning approaches. Instead of relying solely on traditional lectures, teachers are encouraged to integrate hands-on activities, fieldwork, and problem-based learning into their lessons. This allows students to actively engage in organic farming processes such as soil preparation, composting, pest management, and crop production, leading to deeper understanding and skill development.

Another key component is the establishment of on-campus demonstration farms. These demo farms serve as living laboratories where students can directly apply theoretical knowledge in a controlled, supervised environment. They provide opportunities for experimentation, observation, and continuous practice, helping bridge the gap between classroom instruction and actual agricultural work.

The package also highlights the importance of building strong partnerships with local organic farms and practitioners. Through these collaborations, students can participate in internships, farm visits, and mentorship programs. This exposure enables them to learn current industry practices, understand real-world challenges, and develop professional networks that can support their future careers.

6. Conclusion

In the light of the findings, the following conclusions were drawn:

- The hands-on teaching practices are much employed by the teachers to improve the learning competencies of the Grade 12 students in Organic Agricultural Production.
- The level of students' competencies in organic agricultural production through the use of hands-on learning along Basic Competencies, Common Competencies, and Core Competencies (3.51) obtained qualitative rating of much competent, while Elective Competencies have equivalent description of moderately competent.
- There is no significant difference between the level of students' competency and the hands-on teaching practices.
- The Measures are proposed to enhance the hands-on teaching practices of teachers and to improve the students' competence in organic production.

Compliance with ethical standards

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Disclosure of conflict of interest

I declare that I have no conflicts of interest related to this research. I have no personal or financial relationships that could influence my work.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] Soriano, M. (2024). Reflective teaching in sustainability education: Insights from secondary schools. *Journal of Teacher Development, 8*(1), 33–42.

[2] De Vera, R. (2023). Enhancing sustainability education through in-service teacher training. *Journal of Environmental Education Research, 34*(7), 201–214.

[3] Quijano-Pagutayao, A. S. (2024). Youth's psychosocial characteristics in agriculture: The case of Bukidnon, Philippines. Journal of International Agricultural and Extension Education, 25(5), 102–114.

[4] Martinez, A. (2019). The essence of technology and livelihood education. http://udyong.net/teachers/the-essence-technology-and-livelihoodeducation

[5] Caplan, P. (2020). Food, health and identity. Routledge.

[6] Santiago, D., et al. (2020). Integration of organic farming concepts in secondary schools: Issues and challenges. Philippine Journal of Agricultural Extension, 18(5), 45–62

[7] Castroverde, F. (2021). Teaching and learning resources as determinants of students' academic performance in secondary agriculture in Rachuonyo North Sub-County, Kenya. International Journal of Advanced Research, 53(11), 577–587.

[8] De Luna, S., & Valerio, A. (2022). Barriers in the integration of organic agriculture in secondary education. International Journal of Agricultural Education, 12(3), 22–34.

[9] Navarro, C., & Santos, G. (2021). Organic farming: Sustainable agriculture in practice. Outlook on Agriculture, 46(8), 89–94.

[10] Alteza, A. (2022). Experiential learning approaches in organic agriculture education. Asian Journal of Education, 18(3), 88–102.

[11] Flores, M. and Garcia, L. (2020). Curriculum challenges in promoting sustainable agriculture at the secondary level. Philippine Journal of Curriculum Studies,10(2).

[12] Andres, R. and Tan, L. (2019). Stduents' competencies and confidence in adopting sustainable agriculture practices. Philippine Journal of Agricultural Education, 15(4).