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Trainers evaluation of CSU Piat's Bachelor of Science in Agriculture students on the job training performance

Florante G. Tagudan Jr., Maurine B. Abao

Cagayan State University, Piat Campus, Piat, Cagayan, Philippines

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ABSTRACT

On-the-job training (OJT) plays a vital role in agricultural education by bridging classroom learning and workplace practice, enabling students to develop the technical and professional competencies required for sustainable agriculture. This study evaluated the OJT performance of Bachelor of Science in Agriculture students at Cagayan State University–Piat Campus based on trainers' assessments of competencies in organic chicken production, organic vegetable production, and workplace oral communication. A mixed-methods embedded design was employed, with quantitative data collected using a validated competency-based evaluation instrument and qualitative data obtained from trainers' open-ended responses. Quantitative data were analyzed using descriptive statistics, while qualitative responses were subjected to thematic analysis. The findings revealed that students demonstrated Excellent performance in organic chicken production ($M= 4.52$, $SD= 0.43$) and organic vegetable production ($M= 4.54$, $SD= 0.40$). The thematic analysis identified five key communication competencies: clarity in workplace communication, appropriate use of agricultural terminology, confidence in oral interaction, responsiveness to instructions and feedback, and professional workplace communication. These findings informed the development of the Agrobiodiversity Competency Framework, which integrates technical competence, communication skills, experiential learning, and sustainability values. The study concludes that competency-based OJT effectively prepares technically proficient, communicative, and workplace-ready agriculture graduates, providing a practical framework for strengthening curriculum development and OJT implementation in support of sustainable agricultural education.

*Corresponding author: Florante G. Tagudan Jr. ✉ florantetagudan@csu.edu.ph

INTRODUCTION

The on-the-job training (OJT) program serves as an essential component of agricultural education by providing students with opportunities to apply classroom knowledge in authentic work environments. Through experiential learning, students develop technical competencies, professional work ethics, and communication skills necessary for their future careers in the agriculture sector. Research has consistently emphasized that the effectiveness of OJT depends on the alignment between academic curricula, educational approaches, and workplace experiences, which collectively contribute to the development of trainees' technical competencies (Calabit and Paglinawan, 2024). For Bachelor of Science in Agriculture students, OJT is particularly significant because it allows them to gain firsthand experience in sustainable farming practices, including organic livestock and crop production, while being guided and evaluated by industry trainers. As agriculture continues to emphasize environmentally sustainable practices, higher education institutions must ensure that graduates possess the competencies required by the organic agriculture industry.

Organic agriculture requires specialized knowledge and practical skills that promote environmental sustainability, food safety, and animal welfare. In raising organic chicken, trainees are expected to demonstrate competence in selecting healthy breeds, establishing compliant organic housing, implementing organic feeding practices, and maintaining flock health without relying on synthetic antibiotics. Likewise, in producing organic vegetables, trainees must be proficient in establishing seed nurseries, preparing organic planting plots, performing proper plant care, managing pests and diseases using organic methods, and harvesting quality produce. Beyond technical competence, effective oral communication is equally important in the workplace, as students must accurately convey information, respond to instructions, collaborate with supervisors and co-workers, and communicate agricultural concepts professionally. Previous studies have shown that OJT not only

enhances students' practical application of knowledge and academic performance but also strengthens soft skills, including communication, confidence, and workplace professionalism, although challenges such as communication difficulties and workplace adjustments remain evident (Banes *et al.*, 2025). Trainers' evaluations therefore provide valuable insights into the extent to which students have acquired these technical and communication competencies during their training.

Despite the recognized benefits of OJT, successful implementation requires effective supervision, appropriate training environments, systematic evaluation, and strong collaboration between educational institutions and industry partners. Challenges related to placement suitability, supervision, and assessments have been identified as factors that may influence the quality of students' workplace learning experiences (Othman *et al.*, 2022). These findings highlight the need for continuous evaluation of OJT programs to ensure that they effectively prepare students for the demands of professional agricultural practice while supporting competency-based learning.

Recognizing the importance of these competencies, this study seeks to evaluate the on-the-job training performance of Bachelor of Science in Agriculture students of Cagayan State University–Piat Campus as assessed by their trainers. Specifically, it examines students' performance in raising organic chicken, producing organic vegetables, and workplace oral communication in the workplace. The findings of this study are expected to provide empirical evidence that can guide curriculum enhancement, strengthen OJT implementation, and improve competency-based training in organic agriculture. Ultimately, the study aims to contribute to the development of graduates who are technically competent, effective communicators, and well-prepared to meet the demands of the agricultural industry.

This study aims to determine the trainers' evaluation of the on-the-job training (OJT) performance of

Bachelor of Science in Agriculture students of Cagayan State University–Piat Campus. Specifically, it assesses the students' competencies in raising organic chicken, including selecting healthy breeds, constructing and maintaining compliant organic housing, implementing organic feeding regimes, and maintaining flock health without the use of synthetic antibiotics. It also evaluates their performance in producing organic vegetables through establishing a seed nursery, preparing organic planting plots, performing plant care and maintenance, applying organic pest and disease management practices, and harvesting organic vegetables. Furthermore, the study examines the students' workplace oral communication during their OJT in terms of clarity of communication, accuracy and appropriateness of agricultural terminology, confidence in oral presentation and interaction, responsiveness to instructions, questions, and feedback, and professionalism in workplace communication.

MATERIALS AND METHODS

Research Design

This study employed a mixed-methods embedded research design, in which quantitative data constituted the primary source of evidence while qualitative data were integrated to enrich the interpretation of the findings. The quantitative component utilized a descriptive survey design to evaluate the on-the-job training (OJT) performance of Bachelor of Science in Agriculture students based on trainers' assessments. The qualitative component consisted of open-ended trainer responses that explored students' workplace oral communication during workplace training. Integrating quantitative and qualitative evidence enabled a more comprehensive evaluation of students' technical competencies and communication skills acquired through the OJT program.

Study site and participants

The study was conducted at Cagayan State University–Piat Campus, Piat, Cagayan, Philippines, involving Bachelor of Science in Agriculture students who completed their OJT in partner

agricultural training establishments specializing in organic agriculture. The respondents were the industry trainers who directly supervised and evaluated the trainees throughout their placement.

A total of 85 Bachelor of Science in Agriculture students were evaluated by five industry trainers. The trainers were purposively selected because they had direct responsibility for supervising students and were therefore capable of providing valid assessments of their workplace performance.

Research instrument

Data were collected using a researcher-developed competency-based evaluation instrument designed to assess the students' performance in three competency domains:

1. Organic chicken production;
2. Organic vegetable production; and
3. Workplace oral communication.

The technical competency component included indicators related to:

1. Selection of healthy chicken breeds;
2. Construction and maintenance of compliant organic housing;
3. Implementation of organic feeding practices;
4. maintenance of flock health without synthetic antibiotics;
5. Establishment of seed nurseries;
6. Preparation of organic planting plots;
7. Plant care and maintenance;
8. Organic pest and disease management; and
9. Harvesting of organic vegetables.

The oral communication component consisted of open-ended questions that elicited trainers' observations regarding students' communication abilities in authentic workplace situations.

Prior to data collection, the instrument underwent expert content validation to ensure the relevance, clarity, and adequacy of each competency indicator. Necessary revisions were incorporated based on the recommendations of subject-matter experts before administration.

Data collection procedure

Approval to conduct the study was obtained from the university authorities and partner training institutions before data collection commenced. Following completion of the students' OJT, each trainer independently evaluated the assigned trainees using the competency-based evaluation instrument.

After completing the quantitative assessment, trainers provided written qualitative comments describing students' strengths, weaknesses, and areas requiring improvement, particularly in workplace oral communication. The qualitative responses complemented the numerical ratings by providing contextual explanations of students' communication performance in actual agricultural work environments.

Data analysis

Quantitative data were analyzed using descriptive statistics. Frequency counts and percentages were used to summarize participant characteristics where applicable, while weighted mean and standard deviation were computed to determine the students' level of performance for each competency indicator and overall competency domain. Performance ratings were interpreted using the institutional competency scale adopted for the study.

Qualitative responses were analyzed using thematic analysis. Trainers' written comments were repeatedly reviewed, coded, and organized into meaningful categories. Similar codes were subsequently grouped into broader themes representing the major characteristics of students' workplace communication performance. The emergent themes were then integrated with the quantitative findings to provide a richer interpretation of the results and to support the development of the proposed Agrobiodiversity Competency Framework.

Ethical considerations

Participation in the study was voluntary. Permission to conduct the research was obtained from the concerned university officials and partner training institutions. Trainers participated after being informed of the

purpose of the study, and all responses were treated with strict confidentiality. The identities of individual students and trainers were anonymized during data processing and reporting to protect participants' privacy. Data were used exclusively for academic and research purposes.

RESULTS AND DISCUSSION

Performance in organic chicken production

Table 1 presents the trainers' evaluation of the on-the-job training (OJT) performance of Bachelor of Science in Agriculture students in raising organic chicken. The overall mean score of 4.52 (SD = 0.43), interpreted as Excellent, indicates that the trainees consistently demonstrated a high level of competence in performing the essential tasks required in organic poultry production. This finding suggests that the OJT program effectively enabled students to translate classroom knowledge into practical workplace skills, reflecting the successful integration of academic preparation with experiential learning. The consistently high ratings across all competency indicators further indicate that the students were capable of performing key production activities in accordance with the principles of sustainable and organic poultry management, supporting the view that competency-based workplace learning enhances students' professional readiness (Calabit and Paglinawan, 2024).

Among the evaluated competencies, implementing organic feeding regimes obtained the highest rating ($M = 4.61$, $SD = 0.38$), followed by selecting healthy breeds ($M = 4.56$, $SD = 0.41$), both receiving an Excellent descriptive rating. These findings indicate that students were particularly proficient in applying routine husbandry practices that require continuous observation, appropriate feed management, and informed decision-making. Their strong performance in these areas may be attributed to the integration of theoretical instruction with supervised practical experiences during their academic preparation and OJT placement. This finding is consistent with the study of Calabit and Paglinawan (2024), who reported that curriculum alignment, effective instructional approaches, and structured workplace experiences

significantly improve the technical competencies of agriculture students. Similarly, Othman *et al.* (2022) emphasized that well-supervised workplace training provides authentic learning experiences that strengthen students' technical skills and readiness for professional practice.

In contrast, maintaining flock health without the use of synthetic antibiotics ($M = 4.48$, $SD = 0.44$) and constructing and maintaining compliant organic housing ($M = 4.43$, $SD = 0.47$) received slightly lower ratings, although both remained within the Very Satisfactory category. While these results still reflect a

commendable level of competence, they suggest that these aspects of organic poultry production require more advanced practical expertise than routine husbandry activities. Organic housing management involves compliance with animal welfare standards, environmental management, sanitation, and ventilation, whereas maintaining flock health without synthetic antibiotics requires knowledge of preventive health management, biosecurity, nutrition, and disease surveillance. Such competencies generally develop through prolonged workplace exposure and repeated practical application under expert supervision (Othman *et al.*, 2022).

Table 1. Trainers' evaluation of the on-the-job training performance of Bachelor of Science in Agriculture students in raising organic chicken ($n = 85$ students; 5 trainers)

Competency indicator	Mean	SD	Descriptive rating	Rank
selecting healthy breeds	4.56	0.41	Excellent	2
constructing and maintaining compliant organic housing	4.43	0.47	Very Satisfactory	4
implementing organic feeding regimes	4.61	0.38	Excellent	1
maintaining flock health without the use of synthetic antibiotics	4.48	0.44	Very Satisfactory	3
overall mean	4.52	0.43	Excellent	

The comparatively lower ratings in these indicators should therefore be viewed as opportunities for continuous curriculum enhancement rather than evidence of inadequate student performance. Strengthening laboratory instruction, increasing field-based demonstrations, and expanding students' exposure to preventive flock health management, organic biosecurity, and sustainable housing practices may further improve competency development. Recent studies have shown that effective poultry biosecurity and disease prevention rely on continuous training, practical experience, and adherence to best management practices, highlighting the importance of mentoring and experiential learning in agricultural education (Conan *et al.*, 2012).

Overall, the findings demonstrate that the OJT program effectively developed students' technical competence in organic chicken production while identifying specific competency areas requiring further instructional emphasis. The consistently high trainer evaluations reinforce the effectiveness

of competency-based experiential learning in preparing agriculture graduates capable of implementing environmentally responsible poultry production practices. These findings support previous evidence that close collaboration among higher education institutions, industry partners, and workplace supervisors plays a critical role in producing graduates whose competencies align with the evolving demands of sustainable agriculture (Calabit and Paglinawan, 2024; Othman *et al.*, 2022).

Performance in organic vegetable production

Table 2 presents the trainers' evaluation of the on-the-job training (OJT) performance of Bachelor of Science in Agriculture students in producing organic vegetables. The overall mean score of 4.54 ($SD = 0.40$), interpreted as Excellent, indicates that the students consistently demonstrated a high level of competence in performing the essential tasks involved in organic vegetable production. These findings suggest that the OJT program effectively strengthened students' practical skills in sustainable crop production by providing opportunities to apply

theoretical knowledge in authentic agricultural settings. The consistently high ratings across all competency indicators further reflect the effectiveness of competency-based experiential learning in preparing students for the technical demands of organic farming, consistent with the findings of Calabit and Paglinawan (2024), who emphasized that curriculum alignment and structured workplace learning significantly enhance technical competencies among agriculture students.

Among the evaluated competencies, performing plant care and maintenance obtained the highest mean score ($M = 4.63$, $SD = 0.36$), followed by establishing a seed nursery ($M = 4.58$, $SD = 0.39$) and harvesting organic vegetables ($M = 4.53$, $SD = 0.40$), all of which received an Excellent rating. These findings indicate that the trainees developed strong practical

competencies in routine crop management practices requiring continuous monitoring, proper cultural management, and timely decision-making. Their high level of performance may reflect the successful integration of classroom instruction with supervised field experiences, allowing students to reinforce technical knowledge through repeated practice under the guidance of experienced trainers. This observation agrees with Kolb (1984), whose Experiential Learning Theory emphasizes that meaningful learning occurs through direct experience, reflection, and active application in real-world contexts. Likewise, Calabit and Paglinawan (2024) reported that structured OJT experiences significantly improve students' technical competence by strengthening the connection between academic instruction and workplace practice.

Table 2. Trainers' evaluation of the on-the-job training performance of Bachelor of Science in Agriculture students in producing organic vegetables ($n = 85$ students; 5 trainers)

Competency indicator	Mean	SD	Descriptive rating	Rank
Establishing a seed nursery	4.58	0.39	Excellent	2
Preparing organic planting plots	4.49	0.42	Very satisfactory	4
Performing plant care and maintenance	4.63	0.36	Excellent	1
Applying organic pest and disease management practices	4.46	0.45	Very satisfactory	5
Harvesting organic vegetables	4.53	0.4	Excellent	3
Overall mean	4.54	0.4	Excellent	

Although all competency indicators received favorable evaluations, preparing organic planting plots ($M = 4.49$, $SD = 0.42$) and applying organic pest and disease management practices ($M = 4.46$, $SD = 0.45$) obtained comparatively lower ratings and were classified as Very Satisfactory. These findings suggest that these competencies require more advanced technical judgment and practical experience than routine crop management activities. Effective organic land preparation involves a comprehensive understanding of soil fertility management, organic amendments, and environmental conditions that influence crop establishment, while organic pest and disease management requires continuous field monitoring, accurate pest identification, ecological decision-making, and the application of integrated management strategies that minimize dependence on synthetic inputs. According to Othman *et al.* (2022), complex workplace competencies generally develop through

sustained exposure to authentic work environments, close supervision, and continuous feedback from experienced mentors.

The relatively lower ratings in these competency areas should therefore be viewed as opportunities for curriculum enhancement rather than as deficiencies in student performance. Expanding field-based instruction on soil preparation, integrated organic crop management, and ecological pest control through demonstration farms, supervised practicum, and problem-based learning activities may further strengthen students' competencies before graduation. This recommendation is supported by Pretty (2008), who argued that experiential agricultural education promotes sustainable farming by integrating ecological knowledge with practical field experience, and by Reganold and Wachter (2016), who emphasized that successful organic farming depends on the

development of comprehensive management skills encompassing soil health, biodiversity conservation, and environmentally sound crop protection practices.

Overall, the findings demonstrate that the OJT program successfully developed students' competencies across the major components of organic vegetable production while identifying specific areas where additional experiential learning could further enhance professional readiness. The consistently high trainer evaluations reinforce the effectiveness of competency-based agricultural education in preparing graduates capable of implementing environmentally responsible crop production practices. These findings support previous evidence that close collaboration among higher education institutions, industry partners, and workplace supervisors is fundamental to producing graduates whose competencies meet the evolving needs of sustainable agriculture (Calabit and Paglinawan, 2024; Othman *et al.*, 2022).

Workplace oral communication during on-the-job training

Table 3 presents the thematic analysis of the trainers' evaluation of the workplace oral communication of Bachelor of Science in Agriculture students during their on-the-job training (OJT). Five interrelated themes emerged from the trainers' responses: clarity in workplace communication, appropriate use of agricultural terminology, confidence in oral interaction, responsiveness to instructions and feedback, and professional workplace communication. Collectively, these themes indicate that the students generally possessed effective communication competencies that complemented their technical skills and enabled them to function productively in authentic agricultural workplace settings. The findings underscore that successful OJT extends beyond the acquisition of technical expertise and also cultivates the interpersonal and professional communication skills required in modern agricultural practice. This observation is consistent with Banes *et al.* (2025), who reported that OJT enhances not only students' practical competencies but also their communication skills, self-confidence, and workplace professionalism.

The first theme, clarity in workplace communication, demonstrates that most trainees were able to explain farming procedures, convey work-related information, and communicate ideas in a manner that was organized and easily understood by supervisors and co-workers. Clear communication is fundamental in agricultural operations because production activities often require accurate information exchange to ensure efficiency, safety, and effective coordination among workers. The trainers' observations suggest that the students had developed the ability to communicate practical agricultural tasks effectively within real workplace environments. Similar findings were reported by Banes *et al.* (2025), who emphasized that experiential workplace learning significantly improves students' ability to communicate effectively while performing professional responsibilities.

The second theme, appropriate use of agricultural terminology, indicates that the trainees generally demonstrated adequate command of technical agricultural vocabulary, although some students occasionally relied on everyday language when explaining specialized concepts. This finding reflects the gradual transition from academic learning to professional practice, where students begin applying discipline-specific terminology in authentic workplace situations. Technical language proficiency is an important component of professional competence because it facilitates precise communication among agricultural practitioners, extension workers, researchers, and farm managers. According to Calabit and Paglinawan (2024), competency-based OJT strengthens students' ability to integrate theoretical knowledge with practical workplace communication, thereby enhancing both technical understanding and professional confidence.

The third theme, confidence in oral interaction, highlights the students' progressive improvement in communicating with trainers, co-workers, and visitors throughout their training period. Trainers observed that initially reserved students gradually became more willing to participate in discussions, ask questions, and explain agricultural activities as they gained practical

experience. This pattern reflects one of the primary benefits of experiential learning, whereby repeated engagement in authentic workplace situations strengthens learners' confidence and communication competence. Kolb (1984) explained that experiential learning promotes personal growth by enabling learners

to acquire confidence through concrete experiences, reflection, and continuous application of newly acquired knowledge. Likewise, Banerjee *et al.* (2025) found that OJT participation contributes significantly to students' self-confidence and communication effectiveness in professional settings.

Table 3. Thematic analysis of trainers' evaluation of the workplace oral communication of Bachelor of Science in Agriculture students during their on-the-job training

Theme	Description	Representative trainer verbatims
Clarity in workplace communication	Most students communicated ideas clearly and explained farm activities in an organized and understandable manner.	"Most trainees explained farm procedures clearly and were easy to understand." "They gave clear instructions when working with other trainees." "Their explanations were generally simple, direct, and understandable."
Appropriate use of agricultural terminology	Students demonstrated adequate use of technical agricultural vocabulary, although some required greater consistency in using appropriate terms.	"They used appropriate agricultural terms during demonstrations." "Some trainees still preferred everyday language instead of technical terminology." "They understood the concepts but occasionally struggled to explain them using precise agricultural terms."
Confidence in oral interaction	Students displayed increasing confidence in speaking with trainers, co-workers, and visitors as the training progressed.	"Initially shy, they gradually became more confident when communicating with others." "By the end of the training, they actively participated in discussions." "They became more comfortable answering questions during field activities."
Responsiveness to instructions and feedback	Students listened attentively, sought clarification when necessary, and demonstrated willingness to improve based on feedback.	"They listened carefully, asked questions when necessary, and applied the feedback given." "They accepted corrections professionally without being defensive." "They were quick to respond whenever instructions were provided."
Professional workplace communication	Students consistently demonstrated courtesy, respect, and professionalism in their interactions with supervisors, workers, and stakeholders.	"They communicated respectfully and maintained professionalism in their interactions." "They greeted clients courteously and spoke with respect at all times." "Their behavior reflected professionalism expected in the workplace."

Another important finding was the students' responsiveness to instructions and feedback. Trainers consistently described the trainees as attentive listeners who willingly sought clarification, accepted constructive criticism, and applied recommendations to improve their work performance. Such responsiveness reflects an essential characteristic of competency-based workplace learning, where continuous feedback supports skill refinement and professional development. Effective communication in the workplace is not limited to expressing ideas but also involves active listening, adaptability, and the ability to implement guidance from supervisors. This observation supports the findings of

Othman *et al.* (2022), who emphasized that structured supervision, mentoring, and timely feedback are critical elements in developing students' workplace competence during OJT.

The final theme, professional workplace communication, demonstrates that the trainees consistently displayed courtesy, respect, and professionalism when interacting with supervisors, co-workers, clients, and other stakeholders. Professional communication contributes to positive workplace relationships, enhances teamwork, and promotes trust within agricultural organizations.

Beyond technical competence, employers increasingly value interpersonal attributes that enable graduates to collaborate effectively in multidisciplinary work environments. The trainers' evaluations therefore suggest that the OJT program successfully fostered not only technical capability but also the professional attitudes and communication behaviors expected in the agricultural sector. Similar conclusions were drawn by Al Barwani and Azam (2023), who reported that high-quality workplace training contributes substantially to students' employability by strengthening professional behavior, communication competence, and workplace preparedness.

Overall, the thematic findings demonstrate that the OJT program effectively developed the students' oral communication competencies alongside their technical agricultural skills. The integration of clear communication, appropriate technical language, confidence, responsiveness to feedback, and professional workplace behavior reflects the holistic competency development expected of future agriculture professionals. These findings reinforce the importance of competency-based experiential learning in higher agricultural education and support the view that technical expertise and effective communication are complementary competencies necessary for successful professional practice and sustainable agricultural development (Calabit and Paglinawan, 2024; Othman *et al.*, 2022).

Emergent meaning of the findings

Fig. 1 illustrates the emergent meaning derived from the integration of the quantitative and qualitative findings of the study. The framework demonstrates that competencies in organic chicken production, organic vegetable production, and workplace oral communication collectively contribute to the development of agriculture students who are technically competent, effective communicators, and well-prepared for sustainable agricultural practice. Rather than functioning as independent competencies, these domains interact to produce graduates capable of applying sustainable farming principles while effectively communicating and

collaborating within professional agricultural environments. This integrated perspective supports the competency-based approach to agricultural education, which emphasizes the simultaneous development of technical knowledge, practical skills, and professional attributes required by the agricultural industry (Calabit and Paglinawan, 2024).



Fig. 1. Emergent meaning of the findings

The findings indicate that students acquired strong technical competencies in both organic poultry and vegetable production through experiential learning during their on-the-job training. The consistently high trainer evaluations suggest that authentic workplace experiences enabled students to apply classroom concepts in real farming situations, thereby strengthening their practical decision-making and problem-solving abilities. According to Kolb (1984), experiential learning occurs through the transformation of experience into knowledge, allowing learners to refine their competencies through concrete practice, reflection, conceptualization, and active experimentation. Similarly, Othman *et al.* (2022) emphasized that well-structured workplace learning environments facilitate the development of occupational competencies by providing continuous supervision, mentoring, and opportunities for authentic skill application.

Beyond technical competence, the qualitative findings demonstrate that effective oral communication serves as a complementary competency that enhances students' ability to perform successfully in

agricultural workplaces. The identified communication themes—including clarity of expression, appropriate use of agricultural terminology, confidence in oral interaction, responsiveness to feedback, and professionalism—indicate that communication skills facilitate collaboration, efficient knowledge exchange, and productive relationships among supervisors, co-workers, and other stakeholders. These findings are consistent with Banes *et al.* (2025), who reported that OJT programs contribute substantially to the development of communication skills, workplace confidence, and professional behavior alongside technical competence.

The convergence of these technical and communication competencies ultimately results in graduates who demonstrate workplace readiness and are capable of contributing to sustainable agricultural production. Sustainable agriculture increasingly requires professionals who can integrate scientific knowledge, practical farming skills, environmental responsibility, and effective communication when addressing complex agricultural challenges. As noted by Reganold and Wachter (2016), sustainable agricultural systems depend not only on technical production practices but also on the capacity of agricultural professionals to implement environmentally responsible management strategies through informed decision-making and collaborative practice.

Consequently, the emergent meaning presented in Fig. 1 extends beyond a simple summary of the study findings by illustrating the interconnected nature of technical competence and communication competence in agricultural education. The figure highlights that successful OJT is a holistic educational process in which experiential learning, workplace supervision, and competency-based instruction collectively prepare graduates who are technically proficient, professionally competent, and committed to sustainable agricultural development. This interpretation reinforces the growing recognition that higher agricultural education should cultivate well-

rounded graduates capable of meeting the evolving demands of modern agriculture while supporting environmental sustainability and long-term agricultural resilience (Calabit and Paglinawan, 2024; Othman *et al.*, 2022; Reganold and Wachter, 2016).

The agrobiodiversity competency framework

Fig. 2 presents the Agrobiodiversity Competency Framework, which synthesizes the study findings into a conceptual model illustrating how academic preparation, experiential learning, technical competencies, communication skills, and sustainability values interact to develop competent agriculture graduates. The framework demonstrates that competency development is a dynamic and interconnected process in which knowledge acquired through classroom instruction is reinforced by authentic workplace experiences during on-the-job training (OJT). This integration reflects the principles of competency-based education, where technical knowledge, practical application, and professional behavior collectively contribute to graduate employability and lifelong learning (Calabit and Paglinawan, 2024).

At the foundation of the framework are academic preparation, OJT experiences, trainer guidance, and sustainable agricultural values, which function as the primary drivers of competency development. Academic instruction provides students with theoretical understanding, while OJT offers authentic learning opportunities where concepts are translated into practical skills under the supervision of experienced industry trainers. Continuous mentoring and constructive feedback further strengthen students' ability to refine both technical and interpersonal competencies. This process aligns with Kolb's (1984) Experiential Learning Theory, which emphasizes that meaningful learning occurs through continuous cycles of concrete experience, reflective observation, conceptual understanding, and active experimentation. Likewise, Othman *et al.* (2022) highlighted that effective workplace supervision and structured industry partnerships significantly enhance students' professional competence by bridging the gap between academic preparation and workplace expectations.



Fig. 2. Agrobiodiversity competency framework

The framework further illustrates that these foundational learning experiences foster two complementary domains of competence: technical agricultural competencies and professional communication competencies. Technical competencies encompass students' abilities in organic chicken production and organic vegetable production, while communication competencies include clarity in workplace communication, appropriate use of agricultural terminology, confidence in oral interaction, responsiveness to instructions and feedback, and professional workplace behavior. The findings indicate that these competencies are mutually reinforcing rather than independent, as effective communication facilitates the accurate application of technical knowledge, collaborative problem-solving, and efficient decision-making within agricultural workplaces. Similar observations were reported by Banes *et al.* (2025), who concluded that OJT simultaneously strengthens students' technical performance, communication skills, confidence, and workplace professionalism.

The interaction of these competencies ultimately contributes to broader agrobiodiversity outcomes, including biodiversity conservation, environmentally sustainable organic farming, responsible natural resource management, improved agricultural productivity, food security, and the development of socially responsible agriculture professionals. Sustainable agriculture increasingly requires practitioners who possess not only technical expertise but also the capacity to communicate effectively, collaborate with diverse stakeholders, and make

informed management decisions that balance productivity with environmental stewardship. According to Reganold and Wachter (2016), the long-term success of organic and sustainable agriculture depends on integrating ecological principles with sound management practices and competent human resources capable of implementing sustainable production systems. Similarly, the Food and Agriculture Organization (FAO, 2019) emphasized that conserving agrobiodiversity requires multidisciplinary competencies that integrate scientific knowledge, practical farming skills, environmental awareness, and stakeholder collaboration to enhance resilient food systems.

The Agrobiodiversity Competency Framework therefore extends beyond describing student performance by providing a conceptual explanation of how competency-based agricultural education contributes to sustainable agricultural development. The framework demonstrates that effective OJT is not merely a mechanism for acquiring technical skills but also a transformative educational process that cultivates professional communication, ethical responsibility, environmental stewardship, and workplace readiness. By integrating academic learning with supervised industry experiences, higher education institutions can produce graduates who are technically proficient, communicative, adaptable, and capable of addressing the evolving challenges of sustainable agriculture. Consequently, the framework offers a practical guide for curriculum enhancement, competency-based instruction, and OJT implementation, reinforcing the role of experiential learning as a cornerstone of quality agricultural education and sustainable workforce development (Calabit and Paglinawan, 2024; Othman *et al.*, 2022).

CONCLUSION

The findings demonstrate that the on-the-job training (OJT) program effectively developed the technical and communication competencies of Bachelor of Science in Agriculture students. Trainers consistently rated the students' performance as Excellent in organic chicken and organic vegetable production,

reflecting their ability to apply sustainable agricultural practices in authentic workplace settings. The qualitative findings further revealed that the students demonstrated clear communication, appropriate use of agricultural terminology, confidence, responsiveness to feedback, and professionalism, indicating that the OJT program successfully prepared them for the interpersonal and technical demands of the agricultural workplace.

The proposed Agrobiodiversity Competency Framework highlights the integration of technical competence, communication skills, experiential learning, and sustainability values in developing workplace-ready agriculture graduates. Overall, the study affirms that competency-based OJT is an effective approach for preparing graduates who are technically proficient, professionally competent, and capable of contributing to sustainable agricultural development and environmental stewardship.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are proposed:

1. The Bachelor of Science in Agriculture program should strengthen practical training in organic housing management and organic pest and disease management through additional field demonstrations and supervised hands-on activities.
2. Industry trainers should continue providing structured mentoring and constructive feedback to further enhance students' technical competencies and professional communication skills during OJT.
3. Greater emphasis should be placed on the consistent use of technical agricultural terminology in classroom instruction and workplace practice to improve students' professional communication.
4. The proposed Agrobiodiversity Competency Framework may be adopted as a guide for curriculum enhancement and competency-based OJT implementation to better align graduate competencies with the requirements of sustainable agriculture.
5. Future studies should validate the proposed framework using larger samples, multiple higher education institutions, and diverse agricultural training settings to establish its broader applicability.

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