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From Classroom to Farm: Examining Practical Competency Development and Learning Experiences in a School-Based Organic Agriculture Work Immersion Program at CCNTS

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Abstract

This study examined practical competency development and learning experiences among Grade 12 Technical-Vocational-Livelihood learners participating in a school-based Organic Agriculture Production (OAP) work immersion program. Using a mixed-methods case study with a one-group pretest–posttest design, the study involved 10 learners from Hagonoy National High School assigned to Carmelo C. Delos Cientos Sr. National Trade School in Padada, Davao del Sur. Data were gathered through a validated 16-item self-rated competency instrument, supervisor performance assessments, daily reflection journals, and an open-ended survey. Quantitative data were analyzed using the Wilcoxon signed-rank test, while qualitative responses underwent thematic analysis. Results revealed a significant increase in overall perceived competency ratings from 1.49 to 4.20, with all learners demonstrating improvement ($W = 0$, $p = .002$). Supervisor performance ratings averaged 4.34, indicating favorable workplace behaviors. Qualitative findings highlighted increased practical participation, teamwork, workplace adjustment, and the importance of supervisory guidance, while heat and fatigue emerged as primary challenges. The study concludes that structured farm immersion supports perceived competency development and meaningful experiential learning. Strengthened supervision, repeated hands-on practice, and appropriate heat management are recommended. The findings also emphasize scheduling around holidays and using direct performance assessments to complement learners' self-reported competency ratings. However, the small sample, shortened six-day implementation, self-reported assessments, and absence of a comparison group limit generalizability and causal interpretation. Aligned with Sustainable Development Goals 2, 4, 8, and 12, the study provides context-specific evidence to improve agricultural vocational education, strengthen competency-based immersion planning, and encourage sustainability-oriented learning practices within school-based agricultural training institutions.

Keywords: Agricultural Education, Competency Development, Experiential Learning, Organic Agriculture, School-Based Farm, Sustainable Development, Work Immersion

1. Introduction

Work immersion enables learners to apply classroom knowledge, develop occupational skills, and experience authentic workplace conditions. Under DepEd Order No. 30, s. 2017, immersion provides opportunities to practice

competencies acquired through specialization subjects (Department of Education [DepEd], 2017). In OAP, practical training includes producing organic fertilizer, preparing organic concoctions and extracts, and cultivating organic vegetables according to occupational competency standards (Technical Education and Skills Development Authority [TESDA], 2017). Organic agriculture education also supports environmentally responsible farming. Republic Act No. 10068, as amended by Republic Act No. 11511, promotes soil fertility, agricultural productivity, natural resource conservation, and food self-sufficiency (Republic Act No. 10068, 2010; Republic Act No. 11511, 2020). School-based agricultural immersion can connect these objectives with practical skills development. Nevertheless, competency development depends on task relevance, facilities, materials, supervision, and opportunities for hands-on participation. The present study examines an immersion originally scheduled for 10 days or 80 hours but implemented over six working days because of unforeseen holidays and other non-working days. It focuses on learners' perceived competency development rather than certified occupational mastery.Work-based learning emphasizes meaningful participation in occupational activities. Billett (2001) explains that workplace learning depends on opportunities to perform authentic tasks and receive appropriate guidance, while Lave and Wenger (1991) describe learning as progressive participation in a community of practice. These perspectives suggest that agricultural immersion should provide learners with opportunities to move from observation toward supervised practical performance. Putra et al. (2025) highlighted competency-based learning, integrated assessment, and collaboration between educational institutions and workplaces as important elements of work-integrated learning in vocational education. Their review provides contemporary support for aligning school-based agricultural immersion activities with practical competency development.

Competency-based agricultural training requires alignment between learning activities and occupational standards. TESDA's OAP NC II Training Regulations establish the competencies required for organic agricultural production, including fertilizer preparation, organic concoction processing, and vegetable cultivation (TESDA, 2017). These competencies require practical experience with tools, materials, production procedures, and workplace safety. Experiential learning further explains how practical activities support competency development. Kolb's (1984) experiential learning framework emphasizes concrete experience, reflection, conceptual understanding, and experimentation. Reflective journals allow learners to document their experiences, difficulties, and developing skills. Thematic analysis provides a systematic approach to identifying recurring meanings in these accounts (Braun & Clarke, 2006). Recent research reinforces the importance of experiential learning in agricultural education. Coleman et al. (2024) emphasized the role of authentic learning experiences, reflection, and educational context in developing meaningful agricultural learning opportunities. Their findings provide contemporary support for integrating supervised farm activities and reflective learning into competency-based agricultural education. Dewey (1938) highlighted experience as central to education, Roberts (2006) examined experiential learning in agricultural education, and Baker et al. (2012) emphasized integrating learning-cycle components into agricultural programs. Together, these perspectives support combining supervised farm activities with learner reflection to understand practical competency development.

Globally, agricultural education contributes to workforce preparation, sustainable food production, and responsible resource management. The 2030 Agenda for Sustainable Development connects quality education, decent work, food systems, responsible production, and climate action (United Nations, 2015). In the Philippines, work immersion policies and competency-based training standards support the integration of classroom instruction with practical occupational experiences (DepEd, 2017; TESDA, 2017). In the Philippine context, Satioquia (2026) examined Grade 12 students' learning competencies in organic agricultural production through hands-on experiences. This study provides relevant local literature supporting the examination of practical agricultural learning opportunities among senior high school students.

National organic agriculture legislation further promotes sustainable agricultural production and environmental protection (Republic Act No. 11511, 2020). At the local level, CCNTS in Padada, Davao del Sur, provides a school-based OAP production environment where learners can engage in fertilizer preparation, organic concoction processing, and vegetable production. The study involves 10 Grade 12 TVL learners from Hagonoy National High School during School Year 2026–2027. Related institutional research by Sabellano (2026) examined perceived learning outcomes and retention following recycling-based Green TVET activities, identifying institutional facilities and continuity as relevant implementation considerations. Although focused on recycling rather than agricultural immersion, this research provides institutional context for examining the conditions that support sustained practical learning.

The study is grounded in experiential learning, situated learning, and competency-based training. Kolb's (1984) framework explains how practical experiences and reflection contribute to learning, while Billett (2001) emphasizes workplace participation and guidance. Lave and Wenger (1991) further explain how learners develop through increasing involvement in authentic occupational activities. The competency-based component follows the OAP NC II standards established by TESDA (2017). The framework connects immersion conditions, including task alignment, facilities, tools, materials, supervision, and safety arrangements, with learning processes such as demonstration, practical participation, feedback, and reflection. The resulting learning outcomes are examined through pre-immersion and post-immersion competency ratings and learners' reflective accounts. This framework recognizes that competency development is influenced by the quality of learning opportunities and supervision, not merely the duration of immersion.

Although work immersion is supported by educational policy and occupational training standards, context-specific evidence remains limited regarding practical competency development during short-duration, school-based OAP immersion in Davao del Sur. Existing policy establishes the importance of authentic workplace experiences (DepEd, 2017), while occupational standards identify the competencies learners are expected to develop (TESDA, 2017). However, these do not establish the extent of learning achievable within a shortened school-farm placement. This study addresses the gap by examining learners' perceived competencies before and after immersion in producing organic fertilizer, organic concoctions and extracts, and organic vegetables. It also investigates whether competency ratings differ significantly, identifies learning experiences and implementation challenges through reflection journals, and develops practical recommendations for improving short-duration agricultural immersion. The investigation is limited to a single cohort of 10 learners and a six-working-day implementation. Accordingly, it documents competency-rating changes and learning experiences without assuming that immersion alone caused the changes or established occupational mastery.

The study aligns with five Sustainable Development Goals identified in the 2030 Agenda (United Nations, 2015). SDG 2 – Zero Hunger. Practical competencies in organic vegetable production, soil preparation, and fertilizer production support learners' understanding of sustainable agricultural practices relevant to food production. However, the study does not measure agricultural yields or food security. SDG 4 – Quality Education. Competency-based immersion strengthens the connection between classroom learning and supervised occupational practice. Its relevance includes Target 4.4 on employment-related skills and Target 4.7 on education for sustainable development. SDG 8 – Decent Work and Economic Growth. Exposure to agricultural workplaces supports the development of practical competencies, work discipline, and occupational awareness, although employment and economic outcomes are not directly measured. SDG 12 – Responsible Consumption and Production. Organic fertilizer preparation and related production activities introduce learners to resource-conscious agricultural practices consistent with sustainable production principles. SDG 13 – Climate Action. Organic agriculture education provides opportunities to understand soil health, resource conservation, and environmentally responsible farming. However, the study does not directly assess climate adaptation or greenhouse-gas reduction. These alignments represent the educational and sustainability relevance of the immersion rather than evidence of measurable SDG impacts.

The study contributes to multidisciplinary sustainability by connecting technical-vocational education, agricultural production, environmental responsibility, workforce preparation, and institutional learning. From an educational sustainability perspective, it examines how competency-aligned activities, supervision, and reflection can support practical learning in a school-based farm. Its contribution to environmental and agricultural sustainability lies in developing learners' understanding of organic production practices associated with soil management, resource conservation, and responsible cultivation. For socio-economic sustainability, the immersion introduces learners to occupational competencies, teamwork, discipline, and workplace expectations relevant to agricultural employment. In terms of institutional sustainability, the study provides context-specific information that may guide immersion coordinators, trainers, and school administrators in planning activities, allocating resources, strengthening supervision, and addressing implementation constraints. By examining both competency ratings and learners' experiences, the research offers evidence for improving short-duration agricultural immersion programs while recognizing that broader environmental, economic, and occupational outcomes require further investigation.

2. Material and methods

2.1 Research Design

The study utilized a mixed-methods case study design incorporating a one-group pre-test–post-test quantitative component and a qualitative examination of learners' experiences. The quantitative component measured changes in self-reported competencies before and after immersion, while the qualitative component explored learning experiences, practical challenges, and enabling conditions through reflection journals and survey responses. The case study approach allowed the program to be examined within its actual educational setting (Yin, 2018). Quantitative and qualitative findings were integrated to provide complementary perspectives on competency development (Creswell & Plano Clark, 2018; Fetters et al., 2013). Because the study involved a single group without random assignment or a comparison group, observed competency changes were not interpreted as evidence of causation.

2.2 Locale of the Study

The study was conducted at the Organic Agriculture Production area of Carmelo C. Delos Cientos Sr. National Trade School (CCNTS), a TESDA-accredited farm school in Padada, Davao del Sur, Philippines. The institution provides facilities for vermicomposting, organic concoction preparation, and vegetable production. The immersion site offered supervised agricultural activities aligned with OAP NC II competency requirements. The program was implemented during School Year 2026–2027 under an institutional Memorandum of Agreement covering the work immersion.

2.3 Respondents of the Study

The respondents consisted of 10 Grade 12 TVL learners from Hagonoy National High School who participated in the OAP work immersion at CCNTS. All participants belonged to the cohort assigned to the training site during School Year 2026–2027. None of the participants was a minor, and participation in the research was voluntary and subject to informed consent. The learners completed competency assessments and reflection journals documenting their practical activities, acquired skills, and challenges encountered during the immersion.

2.4 Sample and Sampling Procedure

Total enumeration was employed because the entire immersion cohort consisted of 10 learners. All participants completed the pre-immersion and post-immersion competency assessments and maintained daily reflection journals. Nine completed supervisor performance rating forms were available for descriptive analysis, while one blank form was excluded. The anonymous post-immersion survey generated six responses concerning valuable skills and seven responses concerning challenges. The small, single-site sample limited the generalizability of the findings to comparable educational settings.

2.5 Research Instrument

The primary quantitative instrument was a researcher-developed competency-rating questionnaire entitled "Effectiveness of 10-Day Work Immersion in Organic Agriculture Production - CCNTS [Pre/Post Test]," based on TESDA OAP NC II competency standards. It contained 16 items covering three competency domains: producing organic fertilizer (AGR611301; five items), producing organic concoctions and extracts (AGR611302; four items), and producing organic vegetables (AGR611306; seven items). Responses followed a five-point scale ranging from 1 (Not Competent) to 5 (Expert/Can Teach Others). The scores represented perceived competency rather than demonstrated occupational mastery or TESDA certification. Self-assessment was used because perceived capability can influence effort and persistence (Bandura, 1997), although self-reported ratings may be affected by social desirability and changes in learners' understanding of competencies (Donaldson & Grant-Vallone, 2002; Howard, 1980). The instrument underwent content validation by three experts comprising a Teacher VI and TVL coordinator, a TESDA specialist and trainer, and a state college associate professor. The experts assessed competency alignment, clarity, relevance, and scale appropriateness. The overall mean validation rating was 4.92, with an item-level content validity index of 1.00 for all four validation statements and an overall Aiken's V of .98. These results indicated unanimous expert endorsement. The validation followed the content-validity principles discussed by Lynn (1986) and Polit and Beck (2006), with Aiken's V calculated in accordance with Aiken (1985). Qualitative data were collected through individual semi-structured daily reflection journals documenting activities performed, skills developed, tools and materials used, and challenges encountered. An anonymous post-immersion open-ended survey gathered learners' perceptions of their most valuable acquired skills and immersion challenges. A pre-immersion version of the open-ended survey was also administered, but no responses were recorded. Observed workplace performance was assessed using the Department of Education, Division of Davao del Sur's Work Immersion Student Performance Rating Tool. The instrument evaluated 10 criteria, including punctuality, understanding of instructions, discipline, skills, attitude, initiative, efficiency, effectiveness, tardiness, and work ethics, using a five-point scale from Poor to Excellent. Recent research emphasizes the importance of using appropriate assessment methods to evaluate learning outcomes in workplace-based education. Luk and Chan (2024), in their systematic review of work-integrated learning assessment, examined different approaches to evaluating students' learning and performance. Their review supports the use of complementary assessment methods to capture different dimensions of workplace learning. Accordingly, the present study combined learners' self-rated competencies with supervisor assessments and reflective journals while recognizing that these measures did not establish independently verified technical mastery.

2.6 Data Gathering Procedure

Data collection was conducted under the institutional Memorandum of Agreement dated October 2, 2026. The researchers explained the study to the learners and secured informed consent before administering the competency-rating instrument. Baseline competency ratings were obtained before the immersion, followed by supervised participation in OAP activities involving organic fertilizer preparation, concoction processing, and vegetable production. The immersion was originally scheduled for 10 days or 80 hours but was completed over six working days because of unforeseen holidays and other non-working days. During the actual immersion, learners performed assigned agricultural tasks and completed daily reflection journals. The immersion supervisor, who was also the first author, monitored the activities and documented workplace performance using the standard assessment form. Following the final immersion day, learners completed the post-immersion competency assessment and anonymous open-ended survey. Completed questionnaires, journals, and supervisor ratings were compiled for quantitative and qualitative analysis. Neither the journals nor the survey responses identified the shortened schedule as a learning constraint.

2.7 Data Analysis Techniques

Quantitative data were analyzed using descriptive and nonparametric statistical techniques. Mean scores and standard deviations were calculated for the 16 competency items and the three OAP competency domains. Scores were interpreted using five equal-width categories: 1.00–1.79 (Not Competent), 1.80–2.59 (Slightly Competent),

2.60–3.39 (Competent), 3.40–4.19 (Highly Competent), and 4.20–5.00 (Expert). One post-immersion response identified as a recording error was treated as missing, and the affected learner's overall score was calculated using the remaining 15 items. The Wilcoxon signed-rank test (Wilcoxon, 1945) was used to determine significant differences between paired pre-immersion and post-immersion competency ratings at the .05 significance level. Exact two-sided probability values were calculated because of the small sample and ordinal rating scale. The matched-pairs rank-biserial correlation (Kerby, 2014) was used to estimate effect size, while the Holm (1979) procedure adjusted item-level significance tests for multiple comparisons. The analysis also reported confidence intervals and standardized mean differences. Supervisor ratings were summarized descriptively by learner and assessment criterion without inferential testing because only one supervisor provided ratings and no baseline supervisor assessment was available. Qualitative data were examined through the six-phase thematic analysis of Braun and Clarke (2006), involving familiarization, initial coding, theme identification, theme review, theme definition, and reporting. Journal entries were coded inductively to identify recurring experiences, learning opportunities, and implementation challenges. Open-ended survey responses were grouped according to reported skills and difficulties and compared with the journal themes. Most journal entries were written in Bisaya, and selected excerpts were translated into English while retaining their original wording. Gemini, an artificial intelligence assistant developed by Google DeepMind, assisted with journal coding and translation, while the researcher retained responsibility for final interpretation. Quantitative and qualitative findings were integrated through convergence, complementarity, and divergence to describe competency-rating changes alongside learners' experiences without establishing causal relationships.

2.8 Ethical Considerations

The study was conducted under the institutional Memorandum of Agreement dated October 2, 2026, with voluntary participation and informed consent from all learners. Confidentiality and data protection were observed in accordance with the Data Privacy Act of 2012 (Republic Act No. 10173, 2012). Participant codes and anonymized quotations protected learners' identities, and participation did not affect academic grades. Occupational health and safety measures included protective equipment, safe tool handling, hygiene practices, and prior safety instructions. The first author's dual role as immersion supervisor and researcher was acknowledged. To support transparency and objectivity, the study used learners' self-assessments, original journal entries, anonymous survey responses, and standard supervisor performance ratings. The analysis retained unfavorable observations and documented challenges, while supervisor ratings were treated as supporting evidence. These safeguards reflected the importance of transparent researcher roles and trustworthy qualitative reporting (Shenton, 2004).

3. Results and Discussion

3.1 Practical Competency Development in Organic Agriculture Production

3.1.1 Overall Pre-Immersion and Post-Immersion Competency Ratings

All 10 learners reported higher competency ratings after the immersion. The overall mean increased from 1.49 (SD = 0.21), classified as Not Competent, to 4.20 (SD = 0.50), at the lower boundary of the Expert category. The mean increase was 2.72 points (95% CI [2.35, 3.08]), with individual gains ranging from 1.94 to 3.56. The Wilcoxon signed-rank test indicated a statistically significant difference (W = 0, exact two-sided p = .002), with a matched-pairs rank-biserial correlation of 1.00 and Cohen’s dz = 5.32. Before immersion, nine learners were classified as Not Competent and one as Slightly Competent. After immersion, four reached the Expert category, five were Highly Competent, and one was Competent. These findings indicate substantial improvement in learners’ perceived practical capabilities during the immersion. However, the initially low ratings provided considerable room for improvement, and learners’ understanding of the competencies may have changed as they gained experience. Self-assessment may also reflect confidence, familiarity, or favorable response tendencies. Consequently, the significant differences describe changes in perceived competence rather than verified occupational mastery. The absence of a comparison group prevents attributing the improvements exclusively to the immersion program.

3.1.2 Competency Development Across the Three OAP Domains

Mean competency ratings increased in all three OAP domains. Producing organic fertilizer improved from 1.10 (SD = 0.17) to 4.10 (SD = 0.63), while producing organic concoctions and extracts increased from 1.10 (SD = 0.17) to 4.10 (SD = 0.74). Both domains recorded mean gains of 3.00 points. Producing organic vegetables increased from 1.99 (SD = 0.41) to 4.34 (SD = 0.49), representing a gain of 2.36 points. All 10 learners improved in each domain, with statistically significant paired differences (W = 0, exact p = .002). The larger gains in fertilizer and concoction production reflect their particularly low initial ratings, while vegetable production began at a comparatively higher level. The results suggest that learners reported increased familiarity with competency-aligned agricultural tasks during the immersion. Nevertheless, the post-immersion scores remain self-assessments and cannot establish that learners independently met the complete TESDA OAP NC II performance standards.

3.1.3 Item-Level Competency Improvements and Learner Subgroups

Ratings improved across all 16 competency items, with no learner reporting a lower post-immersion score on any item. All item-level differences remained statistically significant after Holm adjustment. The largest mean gains occurred in Q2 (3.30), Q3 (3.22), and Q8 (3.20), while Q11 and Q15 recorded the smallest gains (2.00 each). The highest post-immersion mean ratings were Q13 (4.70), Q15 (4.60), and Q12 (4.50). Eight items reached the Expert category at the mean level. Among dataset-coded subgroups, POF learners (n = 5) increased from 1.53 to 4.41, POCE learners (n = 4) from 1.50 to 4.02, and the single POV learner from 1.25 to 3.94. These consistent improvements suggest a broad increase in learners' perceived competencies rather than progress limited to a few activities. The very low baseline ratings for several items also correspond with learners' initial unfamiliarity with the workplace and its technical procedures. However, the subgroup sizes were insufficient for meaningful statistical comparisons. One post-immersion response for Q3 was treated as a recording error, leaving nine valid observations for that item and 15 items for the affected learner's overall post-immersion score.

3.2 Supervisor-Rated Workplace Performance

3.2.1 Work Habits, Initiative, and Performance Ratings

Nine completed supervisor assessment forms produced an overall mean performance rating of 4.34 (SD = 0.41), between Very Good and Excellent. Individual means ranged from 3.70 to 5.00, and no criterion received a rating below Satisfactory. The highest-rated areas were character and behavior toward work ethics (M = 4.78), effectiveness (M = 4.67), and initiative (M = 4.56). The lowest were discipline (M = 4.00), understanding tasks or instructions (M = 4.11), and tardiness (M = 4.11). Supervisor comments emphasized following instructions, teamwork, initiative, and respectful behavior, although two forms identified a need for greater focus or further instruction. The favorable assessments support learners' accounts of cooperation, discipline, and participation in supervised agricultural work. However, these ratings primarily assessed general workplace behaviors rather than specific OAP technical competencies. They were also completed by the immersion supervisor, who was the study's first author. Although the study documented safeguards for this dual role, possible rating bias cannot be eliminated. Accordingly, supervisor assessments provide supplementary observational evidence and should not be directly equated with learners' competency self-ratings.

3.3 Learning Experiences and Practical Skill Development

3.3.1 Workplace Adjustment and Orientation

The reflection journals documented learners' initial adjustment to an unfamiliar agricultural workplace. On the first day, activities focused on orientation, workplace rules, safety procedures, and supervisor instructions rather than practical farming tasks. Several learners expressed uncertainty and unfamiliarity with the setting, while others recognized the importance of discipline and workplace expectations. Of the 60 possible journal entries across six working days, 59 contained responses, with one learner leaving the first-day entry blank. These findings indicate that workplace familiarization was an important initial component of the immersion. Learners began by observing procedures and understanding expectations before participating in technical activities. This progression reflects the importance of guided participation in authentic workplace settings and the gradual transition from observation to practical engagement.

3.3.2 Development of Hands-On Agricultural Skills

Learners' journals showed a progression from basic farm maintenance to more specialized agricultural activities. Initial tasks included clearing, weeding, soil preparation, and planting ginger. Subsequent activities involved harvesting and replanting cassava, mixing soil with rice hull and carbonized rice hull, planting squash and pechay, installing protective netting, and preparing fermented fruit and plant juice. Later entries described more specific skills, including measuring soil mixtures by ratio, applying organic fertilizer, determining planting quantities, and using protective equipment during concoction preparation. The progression from observation to increasingly technical tasks illustrates how practical engagement and reflection supported learners' understanding of agricultural procedures. Interpreted through Kolb's (1984) cycle, these experiences combined concrete activities with reflective observation. The journals also demonstrate the value of integrating practical work and reflection in agricultural education, consistent with Baker et al. (2012). However, the records did not establish whether learners independently planned and tested improvements, indicating that the complete experiential learning cycle may not have been demonstrated during the six-day immersion.

3.3.3 Teamwork, Cooperation, and Workplace Discipline

Seven of the 10 learners explicitly identified teamwork or cooperation as part of their immersion experiences. They described helping one another complete tasks, following team leaders, developing trust, and recognizing the importance of shared responsibility. Several learners also mentioned discipline, dedication, and respect for workplace instructions as valuable lessons. These findings indicate that the immersion provided opportunities to develop interpersonal and workplace behaviors alongside agricultural skills. Ortiz-Terrinches et al. (2026) emphasized the importance of developing and assessing transferable soft skills during vocational internships, particularly teamwork, communication, and problem-solving. Their review provides a relevant perspective for interpreting the interpersonal and workplace behaviors observed during the agricultural immersion.

Collaborative activities appeared to support task completion and helped learners understand the demands of working with others. The supervisor's favorable assessments of teamwork, initiative, and work ethics further supported these qualitative observations, although they did not independently establish technical proficiency.

3.3.4 Supervisor Guidance in Technical Agricultural Tasks

Learners frequently emphasized the importance of supervisor assistance when performing tasks requiring accuracy. Concerns were particularly evident during soil mixing, fertilizer preparation, and activities involving prescribed ratios. Some learners expressed nervousness about making mistakes, while others stated that completing technical tasks without supervision was difficult. The journals also documented demonstrations provided by the supervisor during practical activities. These accounts suggest that structured guidance was particularly valuable for precision-dependent agricultural tasks. Unlike routine activities such as weeding and watering, fertilizer preparation and concoction processing required closer supervision and procedural understanding. The findings reinforce the importance of authentic task participation, appropriate guidance, and competency-aligned learning opportunities in workplace education (Billett, 2001).

3.4 Challenges and Learners' Responses During Work Immersion

3.4.1 Heat, Fatigue, and Physical Demands

Physical discomfort was the most frequently documented challenge. Nine of the 10 learners reported heat, fatigue, or bodily strain in their journals. Other difficulties included muddy or hardened soil, heavy tools and materials, hand cramps, and back pain. The post-immersion survey confirmed these experiences, with six of seven respondents identifying heat as a challenge and three also mentioning tiredness. Two learners referred to the distance to the training site, while one described repetitive work as boring. No learner identified shortages of tools, materials, or time as a major difficulty. These findings show that environmental conditions and physical demands were prominent features of agricultural work immersion. The repeated reports of heat and fatigue indicate the practical importance of scheduling strenuous activities during cooler periods, providing rest and hydration opportunities, and organizing supportive work teams. The absence of reported resource shortages suggests that the school-based setting provided the materials needed for the activities documented, although this observation cannot be generalized to other immersion sites.

3.4.2 Learner Motivation, Adaptation, and Positive Experiences

Despite the physical demands, five learners explicitly described agricultural work as enjoyable, pleasant, or rewarding. Several combined expressions of tiredness with positive feelings, including “Kapoy pero happy” [tired but happy]. Learners also reported becoming more accustomed to the work and expressed satisfaction with planting, harvesting, and completing farm activities. Nevertheless, some continued to experience physical discomfort, and one learner described repetitive work as boring. These accounts suggest that enjoyment and perceived accomplishment coexisted with physical strain. Teamwork, successful task completion, and growing familiarity with farm activities appeared in learners’ explanations of their positive experiences. However, the persistence of fatigue and occasional boredom indicates the importance of balancing practical learning with appropriate workload management and task variety.

3.4.3 Reflections on Agricultural Work and Learning

Learners' journals contained reflections on the difficulty of farming, the importance of effort, and the relationship between planting and harvesting. Some recognized that healthy crop production requires appropriate practices, while others emphasized the importance of following workplace rules and receiving supervisor guidance. These realizations developed alongside their participation in increasingly varied agricultural tasks. The reflections indicate that learners gained an appreciation of agricultural work beyond the mechanical completion of assigned activities. Their accounts linked practical experience with observations about discipline, effort, crop production, and workplace responsibility. However, the journals primarily documented immediate realizations and did not establish long-term changes in agricultural knowledge or behavior.

3.5 Post-Immersion Learning Outcomes and Survey Responses

3.5.1 Most Valuable Skills and Reported Challenges

The anonymous post-immersion survey generated six responses concerning valuable skills and seven concerning challenges. Four of the six skill-related responses mentioned organic fertilizer preparation, measurement, or application. Other responses identified soil mixing, land preparation, harvesting vermicast, teamwork, discipline, and respect for supervisors. Heat was the most frequently reported challenge, followed by physical tiredness. The pre-immersion open-ended survey contained no responses, preventing a qualitative baseline comparison. The survey findings generally reinforced the journal accounts by emphasizing fertilizer preparation, agricultural activities, teamwork, and physical challenges. However, vermicast harvesting appeared in two survey responses without corresponding journal documentation. Because the survey was anonymous and responses could not be linked to individual journals, this difference could not be resolved. The survey therefore provided additional group-level perspectives rather than independently verified evidence of specific competencies.

3.6 Integration of Quantitative and Qualitative Findings

3.6.1 Relationship Between Competency Ratings and Learning Experiences

The quantitative findings showed increased perceived competency ratings among all 10 learners, while the journals documented progression from workplace orientation to practical agricultural activities. The low initial competency ratings were consistent with learners' early unfamiliarity with the training environment. Higher post-immersion ratings corresponded with accounts of soil preparation, planting, harvesting, fertilizer preparation, and concoction processing. Supervisor assessments also reflected favorable workplace performance, particularly in following instructions, initiative, and cooperation. These findings demonstrate convergence between learners' self-assessments, their descriptions of practical experiences, and the supervisor's observations. However, the instruments measured different aspects of performance and could not be directly compared. The competency-rating dataset and journals were not linked at the individual level, and the study did not identify which specific activities produced the reported improvements. Consequently, the integrated evidence describes associated changes and experiences rather than a causal relationship.

3.6.2 Influence of Supervision, Teamwork, and Workplace Conditions

The qualitative findings identified supervisor demonstrations, collaborative activities, and repeated practical tasks as prominent features of the learning environment. Learners also reported heat, fatigue, and concerns about completing technical tasks correctly. Despite these difficulties, all learners reported higher post-immersion competency ratings, and several expressed positive feelings about their agricultural experiences. No direct contradiction was identified between the quantitative and qualitative findings. The findings suggest that supervision, opportunities for practical participation, and peer cooperation were important conditions within the observed learning environment. Learners' concerns about precision tasks support the need for demonstrations, supervised practice, and clear procedural guidance. The results also indicate that physical challenges accompanied reported learning gains rather than preventing them. Nevertheless, the study cannot determine the independent contribution of each condition to competency development.

3.6.3 Implications of the Shortened Immersion Schedule

The immersion was planned for 10 days or 80 hours but was conducted over six working days because of unforeseen holidays and non-working days. Learners completed agricultural activities across all six days, and neither the journals nor the survey identified the shortened schedule as a major limitation. One expert validator had previously expressed concern that even the planned duration might be insufficient for developing the full range of competencies. The findings indicate that learners reported meaningful practical experiences within the shorter period, but they do not establish whether additional days would have produced greater or more sustained competency development. The shortened schedule should therefore be understood as a condition of this particular case. Future implementation may benefit from calendar coordination and scheduling allowances, while maintaining attention to the quality of tasks, supervision, and participation (Billett, 2001).

3.7 Sustainability and Educational Implications of Organic Agriculture Work Immersion

3.7.1 Contributions to Sustainable Agriculture and Workplace Learning

The journals and survey documented participation in organic fertilizer preparation, fermented plant juice processing, soil improvement activities, vegetable planting, and crop harvesting. Learners also described teamwork, discipline, and respect for workplace procedures. These experiences were relevant to SDG 2 (Zero Hunger), SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), and SDG 12 (Responsible Consumption and Production). However, the study did not measure food security, employment, consumption patterns, or climate-related outcomes, and the journals contained no documented climate-related practices supporting an outcome claim for SDG 13. The findings establish educational and thematic connections between agricultural immersion and sustainability-oriented learning rather than measurable progress toward the SDGs. Sabellano's (2026) published follow-up study on recycling-based Green TVET activities provides a related institutional perspective on the importance of facilities, continuity, and opportunities for sustained practical application. Because the two studies examined different interventions and outcomes, this comparison concerns institutional conditions for experiential sustainability education rather than direct evidence supporting the present study's competency gains. Overall, the combined findings indicate that the six-day school-based OAP immersion was accompanied by substantial increases in perceived practical competencies and positive workplace learning experiences. Supervision, teamwork, and participation in authentic agricultural tasks were recurring features of the program, while heat, fatigue, and precision-dependent activities presented important challenges. These conclusions remain limited to the small, single-site cohort and do not establish causation, long-term competency retention, or certified occupational mastery.

4. Conclusion & Recommendations

The study concludes that the school-based Organic Agriculture Production (OAP) work immersion at Carmelo C. Delos Cientos Sr. National Trade School was accompanied by significant improvements in the perceived practical competencies of 10 Grade 12 Technical-Vocational-Livelihood learners from Hagonoy National High School. All participants reported increased competency ratings across organic fertilizer production, organic concoctions and extracts, and organic vegetable production, with a statistically significant overall pre-immersion and post-immersion difference ($W = 0$, $p = .002$). Favorable supervisor assessments further documented positive workplace behaviors, particularly initiative, effectiveness, and work ethics. Learners' reflections revealed a progression from initial unfamiliarity to active participation in agricultural tasks, supported by teamwork, practical demonstrations, and supervisor guidance. Although heat, fatigue, and physically demanding activities presented challenges, learners generally expressed positive experiences. Collectively, the findings demonstrate the educational value of supervised, competency-aligned farm activities within this specific immersion setting without establishing causation or certified occupational mastery.

School administrators, work immersion coordinators, and OAP trainers should strengthen competency-aligned immersion activities by providing structured demonstrations, supervised practice, and procedural checklists, particularly for soil mixing, organic fertilizer preparation, and concoction processing. Learners should receive sufficient opportunities to perform and repeat relevant agricultural tasks rather than relying primarily on observation. To address the frequently reported challenges of heat and fatigue, immersion supervisors should schedule physically demanding activities during cooler periods, provide adequate hydration and rest breaks, and maintain appropriate occupational safety practices. Organizing learners into cooperative teams and continuing daily reflection journals are recommended to support practical participation, teamwork, and learning documentation. Coordinators should also anticipate holidays and other non-working days when preparing immersion schedules and provide buffer days where feasible. Future program evaluations should incorporate direct, competency-specific performance assessments alongside self-ratings. Further studies involving additional cohorts and immersion settings are recommended to examine the consistency and longer-term development of reported competencies.

The study involved only 10 learners from one school-based immersion site, limiting the transferability of its findings. Its one-group pre-test–post-test design lacked a comparison group and could not establish causation. The immersion lasted six working days instead of the planned 10, preventing conclusions about longer exposure or skill retention. Competency ratings were self-reported, and instrument reliability was not examined. Supervisor assessments involved one rater, who was also the researcher, with one incomplete form and no baseline performance assessment. Anonymous survey responses were incomplete and could not be linked to individual journals. Future studies may address these limitations through larger samples, comparison groups, independent performance assessments, and longitudinal evaluation.

5. Compliance with ethical standards

The study observed ethical research standards through institutional authorization under a Memorandum of Agreement, voluntary informed consent, confidentiality, participant anonymity, compliance with the Data Privacy Act of 2012 (Republic Act No. 10173, 2012), and adherence to occupational health and safety protocols, while acknowledging the researcher's dual role as immersion supervisor and ensuring transparent reporting of findings.

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