

Plowing Through Challenges: A Case Study of Tool and Equipment Unavailability in TVL Organic Agriculture

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Abstract

This case study aims to investigate the factors that contribute to the absence of tools and equipment in TVL organic agriculture in Sto. Niño High School, school year 2024-2025. Methods-wise, the researcher employed purposive random sampling and a set of criteria for the participant's qualifications. Moreover, in the collection of data, the researcher used an interview guide with open-ended questions to elicit more ideas that can largely contribute to the development of the study. The collection of data anchored was in adherence to rigorous procedures such as member checking, audit trail, thick description, and reflexivity for credibility, transferability, dependability, and confirmability purposes. Personal interview was utilized for the teacher participant and focus group discussions for the student participants. To reach data saturation, the interview took 3 sessions and 4 sessions for the focused group discussions. Through thematic analysis, code and themes were generated and findings revealed that the lack of tools and equipment is caused by the lower priority of the school. The absence of the tools and equipment affects the psychological drive of the student participants such as fading interest and motivation to do practical applications in the field. This resulted in their views of tools and equipment incompetence. Despite this problem, the resourcefulness and initiatives of the TVL teacher paralleled the absence of the new tools and equipment. Thus, the study suggests that the school should prioritize purchasing tools and equipment for students and teachers to learn and be competent in their field.

Keywords: *Qualitative research; case study; unavailability of tools and equipment; tools and equipment incompetence*

Introduction

The secret to seizing opportunities and succeeding in life is said to be education. Nonetheless, a significant barrier to realizing one's full potential for a great number of learners worldwide may be the absence of resources and instructional materials. This problem has a substantial influence on students' capacity to learn and achieve at all educational levels, from elementary school to college. Due to the lack of resources and materials in the educational setting, the goal of achieving a quality education is at stake. The issue of the scantiness of materials and resources in the educational landscape is evident in the many schools in the Philippines. This includes the lack of textbooks and other learning materials. One of the biggest obstacles to effective learning in the Philippines is the dearth of textbooks and instructional resources. Many students struggle to understand concepts taught in class because they lack access to the necessary resources. This disparity is especially noticeable in rural areas, where schools have challenges in providing basic resources like electricity and clean water, further impairing the atmosphere for learning (C. Staff & Staff, 2021). Consequently, this affects the performance of the learners. Having a lack of instructional materials proved to affect students' academic performance (Manizabayo & Nyirandimukaga, 2021).

In the k-12 curriculum, to accommodate students' diverse interests, skills, and professional aspirations, senior high school offers a variety of tracks. These tracks help students get ready for their chosen job path and give them the chance to specialize in a particular area of study (*Factors Affecting Senior High School Track Offerings in the Philippines*, 2019). Allowing learners to explore their interests and talents is one of the primary reasons senior high schools offer a variety of tracks. Since not every student is interested in the same subjects, providing a variety of tracks allows them to concentrate on their areas of passion. However, the implementation of senior high school has been facing tremendous challenges in terms of resources including teachers, instructional materials, and tools and equipment. This is substantiated by the study of Resoor (2023). Based on the findings, instructional materials such as textbooks, and teachers' manuals were found to be an issue in the implementation of the senior high school curriculum.

In the context of Technical vocational livelihood as a track, issues pertain to tools and equipment. According to a study by Cabutihan et al. (2024), students' involvement in cooking and baking was significantly impacted by a lack of resources, space issues, and cooking and baking tools and equipment. Moreover, another study by McCubbins et al. (2016), revealed that inadequate tools and equipment affect agricultural educators that may impede the learning of the students. Moreover, budgetary restrictions are a primary cause of the TVL Organic Agriculture program's tool and equipment shortages. It is possible that the school did not set aside enough money for the purchase and upkeep of the tools and equipment required for the program due to the cost. As a result, learners could have to share scarce resources or forego necessary equipment, which could make learning more difficult. The overall efficacy of the TVL Organic Agriculture program may suffer because of the tool and equipment shortages. Students may find it difficult to engage in hands-on tasks like soil preparation, planting, watering, and harvesting if they lack the required equipment. This may make it more difficult for them to comprehend organic agricultural methods and restrict their opportunities for practical practice. Additionally, learners may become frustrated and disengaged because of a lack of tools and equipment. Their enthusiasm for the program may decline and they might not fully understand the concepts being taught in the classroom if they are unable to fully participate in hands-on activities. In the end, this can have an impact on their overall learning outcomes and assessment results. The best method to learn is through experience as explained by the theory of the cone of experience introduced by Edgar Dale in 1946 (Janoska, 2021).

Teaching Technical Vocational Livelihood (TVL) courses requires the use of tools and equipment, especially when it comes to organic agriculture. The sustainable and eco-friendly methods of organic farming are making it more and more popular, but schools that provide TVL programs in this field frequently lack the necessary tools and equipment. This concept is timely and relevant to the context of Sto Niño High School in implementing the Senior High School TVL organic agriculture. Based on the teacher's perspective, knowledge of the content, and pedagogy are not the issue but the lack of tools equipment, and resources are the main problems in implementing the curriculum. Moreover, based on the teacher's end; in teaching the specialization of Grade 11, several competencies need equipment and tools such as producing organic vegetables which require a hand tractor, rotavator, and mower; raising organic chicken that needs a Pelletizing machine, and producing organic fertilizer that requires wheel borrow. The lack of these tools and equipment makes the pace of learning more challenging for the teacher and learners.

The present study aimed to investigate the case of tools and equipment in TVL-Organic Agriculture in Sto Niño High School, particularly, in grade 11's competencies for the school year 2024-2025. Furthermore, the result of the study will be the basis for SIP inclusion and proposal development to Agricultural sectors and partners. Specifically, this study addressed the questions.

1. What are the key factors that contribute to the inadequate tools and equipment in grade 11 Organic Agriculture?
2. What students' aspects are affected by the lack of tools and equipment in TVL 11?
3. How does the TVL teacher face this problem?
4. Based on the result of the study, what recommendation can be made?

Methodology

This section elucidates the research design, locale, participants, instruments, data-gathering procedures, and ethical considerations.

Research Design

This research employed a case study approach. A case study is a branch of study that seeks to examine a particular circumstance or incident to comprehend its root causes, consequences, and possible remedies. According to MSed (2024), a case study is a comprehensive analysis of a single individual, organization, or occasion. To identify trends and reasons for behavior, a case study examines almost every facet of the subject's life and past. Thus, the researcher used this design to investigate the case of lack of tools and equipment faced by grade 11 TVL organic agriculture students studying at Sto. Niño High School for the school year 2024-2025. To provide insight into their circumstances, codes, and themes were developed using thematic analysis.

Research Locale

Any investigation must choose a suitable study site because it has a big impact on the conclusions drawn from the research. Moreover, access to data, resource availability, and the findings' generalizability can all be impacted by the research location. Therefore, when planning a research project, it is crucial to give serious thought to the research location. When selecting a research location, there are several things to consider (Admin, 2024). In this sense, the locale of the study was the school's library, as preferred by the participants. The locale was chosen due to the participants' convenience and comfort.

Research Participants

Research participants are crucial to the study since they can provide researchers with priceless data and information. They support the gathering of information and the development of conclusions in a range of research initiatives, surveys, and interviews. In this study, the researcher used purposive sampling with a random selection, also known as expert or judgmental sampling, which is the intentional selection of participants qualifying for a set of criteria set by the researcher (Positly, 2023). Thus, one TVL teacher and seven grade 11 students were chosen to be the participants of the present study. The teacher participant was interviewed separately, and the seven student participants were invited for a focused group discussion.

Research Instrument

A tool or device used by researchers to gather, assess, and examine data related to their study is known as a research instrument (Admin, 2024). In this study, the researcher prepared two separate sets of interview guide questions for the teacher participant and the student participants using open-ended questions. This was necessary to extract varied information about the case. To reach the data saturation of both interviews and focused group discussions, the session took two sessions for the interview and four sessions for the focused group discussion.

Data Gathering Procedures

The entire study underwent tripartite procedures, namely pre-data gathering, during-data gathering, and post-data gathering. In the pre-data gathering, the researcher proposed the study to the schools' board of reviewers. This was necessary to make sure that no conflict or rights were being violated in the pursuance of the study. As approved by the board, the researcher invited the teacher-participant and student-participants for an orientation on the nature and purpose of the study. The orientation emphasized the voluntariness of the participants that they may withdraw anytime from the study, and that to protect their identity, coding was utilized by the researcher. As promised, the data gathered will be treated with the utmost confidentiality and shall be used for research purposes only. Thus, the researcher retrieved all the consents of the participants.

During the data gathering, the researcher interviewed the TVL teacher and focused group discussions with the student participants. Both interviews and focus group discussions took two and four sessions for data saturation. The researcher used a consented audio recording for credibility purposes. Moreover, the researcher did a member check to ensure the consistency of the information given by the participants. Also, the thick description was emphasized by the researcher to state the context and the limitations of the study.

Lastly, in the post-data gathering, the researcher transcribed all the verbatims from the recorded audio during interviews and focus group discussion sessions. To analyze the data, the researcher employed thematic analysis. After the transcription, the researcher familiarized the responses of the participants, then found similar categories and turned them into codes. Then, codes were categorized to formulate themes. After the naming of the themes, the researcher defined each theme. After the analysis, the result underwent a review for credibility purposes.

Ethical Consideration

Before the conduct of the study, the researcher submitted a proposal to the board of reviewers. This was important to ensure no rights would be violated in the conduct of research. After the approval of the board, the researcher invited the participants for an orientation and explained thoroughly the nature and the purpose of the study, the scheme of the interview, and the focus group sessions, their voluntariness, and participation were not influenced by any threat or coercion. Participants were given informed consent before commencing the study.

Findings and Discussion

The study's findings are outlined in this section. This reveals the case of lack of equipment and tools in Sto. Nino High School Tanjay City Division, for the school year 2024-2025.

Table 1. Thematic map of the participants' responses on the organic agriculture lack of equipment.

Codes	Themes
High-cost budget	Financial Management
Spent for teachers training	
Other projects and extracurricular activities are prioritized	
Not included in the school improvement plan	

Fading interest	Psychological Drive
Lack of motivation	
Do not know how to operate modern tools and equipment	Modern Tool and Equipment Incompetence
Manual mixing	Strategic Initiatives
Bring alternatives found at home	
Showing modern tools and equipment through TV	

Financial Management

This theme is reflected in the issues pinned in the lack of tools and equipment in TVL organic agriculture in Sto. Niño High School. The common reason why this problem emerged is the financial management of the school to prioritize other matters and educational resources other than these tools and equipment in teaching the specialized subjects in grade 11. The first hand to experience the lack of these materials is the immediate TVL teacher. Based on the teacher's view, high-cost budget, prioritizing extracurricular activities, and exclusion in the school improvement plan are the reasons for not purchasing tools and equipment. This is corroborated by the statement of the teacher participant.

Teacher participant said,

"The case of having a lack of tools and equipment in the school is due to some reasons. First, the school prioritizes other educational materials like school supplies and laboratory equipment. This is given priority since materials are needed to maintain cleanliness and away from potential harm. Moreover, the expenses of the school MOOE are used for some extracurricular activities in the school like materials during intramurals and foundation day. Other expenses are intended for pieces of training for professional development. Lastly, one of the major reasons is that the tools and equipment were not included in the school improvement plan for the school year. Reason for the school to prioritize other matters over the procurement of tools and equipment".

The challenges of the TVL teacher pose a threat to achieving quality learning and practical experiences for grade 11 learners. In this sense, the TVL teacher shall be proactive in the inclusion of these materials in the curriculum implementation. Moreover, the school and teachers should be wise enough to prioritize educational materials, especially in the implementation of the schools' specialization, TVL organic agriculture, thus exercising financial management (Sukenti, 2023).

Students' Psychological Drive

Interests and motivation are one of the factors that play a significant role in learning. In the case of a lack of tools and equipment in the specialized subjects in grade 11 TVL, it is inevitable to say that it affects the motivation and interests of the learners adversely. Student participants revealed that due to this shortage, they sometimes feel that their interest fades. These feelings allow them to be vulnerable, feeling insecure for not being able to try new tools and equipment intended for their learning. This psychological drive is expressed by the student participants.

Participant 7 said,

"I feel insecure about other students in different schools because they have tools and equipment in their specialization. I was able to witness the TVL students in other schools trying to make bread and pastries at their homes, and they were able to bake successfully since they had complete sets of equipment."

Participant 2 added,

"I was excited to know that we were going to use tools and equipment that I was not used to. However, when our teacher told us that we could not use the intended tools and equipment, I was disappointed. I was excited to use the palletizing machine. I wanted to see how this equipment produces products from raw materials. Sometimes, I thought of transferring to another school just to experience using new tools and equipment in our field."

Participant 5 expressed,

"I like organic agriculture because I was trained at home by my parents. When my parents told me that Sto Niño High School offers TVL Organic Agriculture, I was amused because I was aware that we would be taught how to do things in the field and of course, be able to be taught on the usage of different tools and

equipment. But when I learned that the school does not have the equipment, I was sad since I cannot practice my skills using new technology.”

Participant 1 emphasized,

“I just thought, what am I going to do without the tools and equipment? It could have been better if we had the right tools and equipment while learning. I hope the school should provide these tools and equipment to deliver what it ought to deliver in the grade 11 specializations.”

Participant 4 added,

“When our teacher told us that we didn’t have the intended materials for our practical applications in the field, my interest faded. I was excited to operate different tools, but I felt sad after learning that we didn’t have them. We were just holding to what our teachers said and instructed us to do despite the case.”

Participant 6 highlighted,

“Since we didn’t have the tools and equipment, we kept on waiting for the available materials until the other was finished. It is time-consuming and makes us bored. There were times when I even observed that my classmates were going away since they didn’t have any tools to use in the field.”

Participant 3 stated,

“It is inconvenient to work without tools. Sometimes I felt so tired of not doing anything because we didn’t have enough materials. I was hoping that maybe one of these days, our school can provide us with the tools and equipment intended for our subjects. It is hard for all of us to practice and learn the skills without the aid of this equipment in organic agriculture.”

The statements of the participants expressed their feelings and emotions about the lack of tools and equipment. As highlighted, the scantiness of these materials can impede the learners’ motivation and interest in the landscape of learning. As evident in their responses, some of them did not participate in the practical applications taught in the field since they felt uninterested. Waiting for any available tool makes them bored and is time-consuming affecting their performance and learning. Thus, the lack of these tools and equipment has a detrimental effect on the student’s educational outcomes (Maffea, 2021). Moreover, due to the inconvenience and unavailability of materials, students feel emotional distress (Torres, 2024).

Modern Tool and Equipment Incompetence

The availability of the tools and equipment in the implementation of TVL organic agriculture greatly affects the performance and competence level of grade 11 learners in terms of practical applications under specific specializations of the TVL 11 curriculum. However, the tools said to aid the competence level of the participants are not evident in the case. Teachers and students shared the same views on the scantiness of the appropriate tools and equipment in grade 11. This theme is reflected in the participants’ responses, where they expressed views about how they worried about their competence in operating tools and machines since these are lacking in the school. These views are evident in the responses of the student participants.

Participant 5 stated,

“I was expecting that we could use tools such as a palletizing machine for raising organic chicken and rotavator for the production of organic vegetables. However, our school does not have these tools. So instead that we can practice using these tools, we keep on doing things manually.”

Participant 1 added,

“I have known other TVL schools that have tools and equipment in TVL organic agriculture, and I saw how equipped their students were in operating new tools and equipment. They enjoyed operating, and they were competent to use their new tools. Here in our school, we only use the tools that serve as alternatives and do so manually to practice the skills taught by our teacher.”

Participant 6 emphasized,

"I do agree with what they said, if we could just only try to operate new tools and equipment, then we could enhance our skills, aside from doing the manual or alternatives. The theories and knowledge will not be of use if we cannot apply these through immersing ourselves in new tools and equipment intended for our specialization."

Participant 2 said,

"Knowing that we lack tools and equipment that are supposed to be a big help in the enhancement of our skills, sounds frustrating. I wanted to learn new things, and although we were taught by our competent teacher, this lack of materials led us to be incompetent on how to operate palletizer, mower, hand tractor, etc."

Participant 4 added,

"I just thought that if we have complete equipment in teaching our specialization, which is TVL organic agriculture, then we can enhance our skills. But in our case, in the absence of these materials, the chance to be competent in operating these new tools and equipment is difficult to achieve."

Participant 7 highlighted,

"Although we were taught the concepts in the TVL organic agriculture, practice is what makes our learning effective. In our specialized subjects, we need to use the palletizing machine to produce organic vegetables. However, the school doesn't have this equipment. It could have been better if we knew the concepts plus the competence in operating those tools needed in our specialization."

Participant 1 stated,

"I know the concepts taught us by our teacher, and we were able to use some alternatives, and sometimes, we do the manual. There is nothing bad, I think, using these strategies, but it could be better if the school provides other tools and equipment such as a palletizing machine, rotavator, and hand tractor. The availability of these materials could enhance our competence."

This theme highlights the views of grade 11 learners' incompetence due to the absence of tools and equipment. It showed how these learners aim to enhance and update their skills in the manipulation and operation of these materials especially in the delivery of the subjects relevant to their program specialization. As emphasized by the participants, they believed that learning could be better if the said tools and equipment were present during the practical applications in the field. According to Uwameiye (2016), the availability of tools in equipment in the vocational contexts plays a vital role in the learners' competence and learning. Thus, the scantiness of materials leads to low performance and incompetence.

Strategic Initiatives

In the absence of the tools and equipment in the implementation of TVL organic agriculture, several aspects have been affected on the learners' and teachers' end. This tremendous issue challenged the TVL teacher at Sto Niño High School and led to the teacher's resourcefulness in finding alternatives as solutions to the lack and absence of the palletizing machine, rotavator, hand tractor, etc. This instance prompted the TVL teacher to undertake initiatives despite the case. This theme is supported by the TVL teacher's response.

The teacher participant said,

"It's never easy to teach the subjects, especially in the absence of tools and equipment. I have been teaching specialized subjects for many years, and I know that my students were looking for the tools and equipment but all I can show to them are pictures. Despite this challenge, I always find ways to make the teaching work. The specialized subjects I taught needed tools and equipment like a hand tractor, palletizing machine, rotavator, wheel borrower, mower, and knapsack sprayer but in the absence of these materials, I utilized trowel, sturdy twigs, and shovel for preparing land in the vegetable production. Moreover, in teaching the subject of raising organic chicken, in the feed preparation, I used my hand to make products separately. Also, in the event of organic fertilizer production, I used empty containers to prepare composting areas and raw materials. I taught my students the competencies of the specialized subjects using alternative ways and teaching my students to be resourceful in the absence of materials. In the actual preparation of an application in the field, my students too, bring the same tools found in their homes or the environment."

The theme of the teacher's initiatives displays the resourcefulness of the teacher. As expressed by the teacher participant, using alternative tools that can be found at home and or in the environment is what the teacher and students do to practice and attain competency in the curriculum. These strategic initiatives are crucial in the implementation of the curriculum, especially in teaching organic agriculture. This means that the teacher can adapt, modify, contextualize, and innovate things for the benefit of learners in teaching TVL organic agriculture (Asiegbu & Okpala, 2019).

Conclusion

This case study revealed that there are factors that contribute to the lack of tools and equipment in teaching TVL organic agriculture at Sto Niño High School. This includes the priority of the school to spend for extracurricular activities, and other school supplies and projects. Moreover, the purchase of tools and equipment in organic agriculture needs to be included in the school improvement plan to be prioritized since the school is offering the specialization. This case shall be acted on since it can affect students' aspects especially their psychological drive and competence in operating new tools and equipment in TVL organic agriculture. Students' interest and motivation fade in the absence of appropriate tools and equipment (McCubbins et al., 2016). In this regard, the TVL teacher demonstrated commendable initiatives by using tools and equipment found at home and in the environment, making learners resourceful too in looking for remedies despite this challenge. Thus, the study recommends that prioritization of the tools and equipment in TVL organic agriculture in Sto. Niño High School must be strongly encouraged.

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