



(RESEARCH ARTICLE)



## Implementation of Senior High School-Technical Vocational Livelihood (SHS-TVL) track in public schools of Region XI: A multiple case study

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### Abstract

This study examined the implementation of the Senior High School Technical-Vocational-Livelihood (SHS-TVL) Track in public schools, focusing on the implementation practices, challenges encountered, and strategies employed to address these challenges across four strands: Agricultural and Fishery Arts (AFA), Home Economics (HE), Industrial Arts (IA), and Information and Communications Technology (ICT). Using a multiple-case study design, data were collected to provide an in-depth understanding of how SHS-TVL programs are operationalized in diverse school contexts. Findings revealed that implementation is largely anchored on competency-based, experiential, and performance-oriented learning approaches, supported by curriculum alignment with the standards of the Department of Education (DepEd) and the Technical Education and Skills Development Authority (TESDA), continuous teacher development, stakeholder engagement, and industry partnerships for work immersion. However, the study also identified persistent and interrelated challenges affecting implementation, including curriculum misalignment between DepEd and TESDA requirements, shortages of qualified and certified teachers, inadequate and outdated facilities and equipment, limited access to tools and consumables, restricted immersion opportunities due to limited industry partners, socioeconomic constraints affecting learners' participation and retention, and difficulties in managing large and uneven student populations across specializations. In response to these challenges, school heads demonstrated adaptive and context-responsive leadership by implementing strategies such as strengthening teacher competence through training and certification, maximizing and managing limited resources through planning, cost-sharing, and scheduling, expanding stakeholder and industry linkages to support immersion and resource needs, improving learner distribution through guidance and administrative adjustments, and enhancing planning, monitoring, and supervision systems to ensure continuous program improvement. Guided by Najam's 5C framework content, context, commitment, capacity, and clients the findings indicate that SHS-TVL implementation is a context-sensitive and capacity-driven process, where capacity and context emerge as the most critical determinants of successful implementation. The study further reveals that while schools exhibit strong adaptive capacity and innovation in sustaining program delivery, implementation remains uneven and dependent on local conditions, highlighting the need for stronger system-level support, improved resource allocation, enhanced curriculum alignment, and more effective coordination among DepEd, TESDA, industry partners, and other stakeholders to ensure equitable, sustainable, and high-quality implementation of the SHS-TVL Track in public schools.

**Keywords:** SHS-TVL Implementation; Technical-Vocational Education; Competency-Based Education; Work Immersion; Teacher Competence; Resource Management; Stakeholder Engagement; Najam's 5C Framework; Multiple Case Study

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## 1. Introduction

The Technical-Vocational-Livelihood (TVL) Track is a key component of the Senior High School (SHS) program under the K to 12 curricula, designed to equip Filipino students with practical skills and competencies that align with industry needs and employment opportunities. The Department of Education emphasized that the TVL track prepares learners for immediate employment, entrepreneurship, or further education by providing technical skills recognized both locally and internationally [9]. However, despite its potential benefits, the implementation of the TVL track faces challenges such as limited resources, inadequate facilities, and teacher preparedness [26,28].

Globally, Technical and Vocational Education and Training (TVET) institutions face challenges in adapting to rapid technological advancements and aligning curricula with labor market demands. Harun, Rahim, and Mohamed reported that TVET in higher learning institutions faces several challenges affecting program effectiveness and public perception, including issues related to graduates' technical and soft skills, industry participation, and curricular relevance [12]. One of the major concerns is the mismatch between the skills taught in schools and the actual demands of industries, resulting in graduates who are not fully prepared for employment. This issue is further aggravated by the limited involvement of industries in the design and delivery of TVET programs, leading to curricula that are not fully aligned with current industry standards and expectations [12].

In the Philippines, the Enhanced Basic Education Act of 2013 mandates the integration of the TVL track in the Senior High School program, enabling students to obtain Certificates of Competency (COC) and National Certificates (NC) [21]. However, studies revealed that challenges remain, including inadequate facilities, outdated instructional materials, and shortages of qualified teachers [19,20].

In Region XI, particularly in the Mati City Division, the implementation of the TVL track is constrained by limited industries available for on-the-job training, lack of specialized educators, and insufficient modern equipment [18]. School administrators also experience difficulties in aligning TVL specializations with local industry needs, while the recruitment and retention of qualified instructors remain continuing concerns [14].

The effective implementation of the TVL track is crucial in addressing the growing demand for a skilled workforce that contributes to economic growth and sustainable development. TVET programs support Sustainable Development Goal (SDG) 4, which advocates for quality education and lifelong learning, and SDG 8, which promotes decent work and economic growth [27]. Ensuring quality TVL education is essential in empowering students with industry-relevant skills, fostering entrepreneurship, and enhancing employability [17].

Although numerous studies have examined TVL implementation at the national level, such as the studies on the implementation and challenges of TVL [2], the status of TVL track implementation in secondary schools [10], and the effectiveness of TVL education in terms of implementation and learning environment [1], the researcher observed that limited studies have been conducted on the implementation of the TVL strand in Region XI. Specifically, there is a lack of empirical data assessing the alignment of TVL programs with industry needs, the effectiveness of work immersion, and the adequacy of teacher training and facilities. Furthermore, existing literature does not sufficiently explore the long-term employability outcomes of TVL graduates.

Despite the urgency of addressing gaps in technical-vocational education, there remain insufficient studies focusing on the lived realities and practical challenges in implementing the TVL strand in Region XI. While national-level studies are available, local contexts such as regional industry needs, available resources, and school-specific concerns are often overlooked. Therefore, there is a need to explore these challenges and opportunities through focused regional research, which justifies the conduct of this study.

The results of this research will provide deeper awareness of the issues encountered by educators, learners, and stakeholders involved in the TVL track. Moreover, the findings may guide local and regional policymakers in improving the alignment between TVL education and labor market demands. Ultimately, the study is socially relevant because it aims to empower students with more effective and employment-ready skills while ensuring that the TVL strand fulfills its goal of preparing learners for real-world work opportunities. This study seeks to address these gaps by analyzing the challenges and opportunities in implementing the TVL track in Region XI and by proposing an enhancement program to improve its effectiveness.

### 1.1. Purpose of the Study

This multiple case study examines the implementation of the SHS TVL Track in public schools across Region XI, focusing on school heads' practices, challenges, and solutions in executing the program. The study explores similarities and differences in implementation among different schools, considering the hands-on learning, industry collaboration, and TESDA-aligned training that define the program.

### 1.2. Research Questions

- What are the implementation practices of School Heads on SHS-TVL Track in Public Schools in Region XI?
- What challenges are encountered by the School Heads in the implementation of SHS-TVL Track in Public Schools in Region XI?
- How do school heads address the implementation challenges of the SHS-TVL Track in Public Schools in Region XI?

### 1.3. Theoretical Lens

This study on the implementation of the Senior High School Technical-Vocational-Livelihood (TVL) Track in the Davao Region is anchored on the Program Implementation Theory of Scheirer. This theory provides a systematic framework for examining how programs are carried out in practice, emphasizing the relationships among program inputs, implementation processes, and outcomes. It highlights that the effectiveness of a program depends not only on its design but also on how it is implemented within a specific context [23].

Program Implementation Theory identifies three key components: (1) program inputs or activities, (2) intended outputs or outcomes, and (3) the mechanisms through which these outcomes are achieved [23]. It also recognizes that both positive and negative impacts may arise and that contextual factors can significantly influence implementation. In this study, program inputs include curriculum design, teacher qualifications, availability of tools and instructional materials, adequacy of physical facilities, and the extent of industry partnerships. These elements are essential in facilitating the implementation of the TVL Track and ensuring alignment with the goals of technical-vocational education. The intended outcomes, on the other hand, relate to students' skills development, competencies, and readiness for employment or further training.

To further examine the factors influencing program implementation, this study also draws on Najam's 5C Framework [16], which provides a more detailed lens for analyzing implementation conditions. The framework identifies five critical variables: content (the nature of the policy or program), context (the institutional and environmental setting), commitment (the dedication of implementers and stakeholders), capacity (the availability of resources, skills, and support), and clients and coalitions (the roles and influences of stakeholders and beneficiaries) [16].

Within the context of this study, Najam's 5C Framework complements Scheirer's theory by operationalizing the analysis of implementation processes. While Scheirer provides the overarching structure for understanding how inputs are translated into outcomes, the 5C Framework enables a more in-depth examination of the specific factors that facilitate or constrain the implementation of the TVL Track in the Davao Region [16,23].

Guided by these frameworks, the study examines how program inputs are translated into actual practices and outcomes, while also identifying the contextual and institutional factors that influence implementation. This integrated approach allows for a comprehensive and nuanced analysis of the TVL Track, contributing to a deeper understanding of its effectiveness in preparing Filipino students for workforce readiness.

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## 2. Methods

### 2.1. Research Design

This study employed a qualitative multiple-case study design to explore the diverse experiences, strategies, and perspectives of individuals involved in the implementation of the Senior High School Technical-Vocational-Livelihood (TVL) Track. The approach enabled the researchers to investigate multiple bounded systems and gather rich, comprehensive data from various sources, providing a deeper understanding of the phenomenon within its real-life context [29,6]. Guided by the constructivist worldview, the study recognized that participants such as school heads, teachers, and stakeholders interpreted and experienced TVL implementation differently based on their unique contexts, challenges, and resources. Through interviews and cross-case analysis, the study identified common patterns, themes,

barriers, and strategies across participants, allowing for a more contextualized and comprehensive understanding of the implementation process [7,3].

## **2.2. Locale and Sampling Procedure**

This study was conducted in public Senior High Schools in Region XI or the Davao Region, which consists of five provinces, six cities, and eleven school divisions, and was selected because of its diverse and dynamic implementation of the Technical-Vocational-Livelihood (TVL) curriculum. The study employed purposive and homogeneous sampling to select four cases representing the Agricultural Fishery Arts (AFA), Home Economics (HE), Industrial Arts (IA), and Information and Communications Technology (ICT) strands. A total of eight participants were involved, consisting of four school heads and four teachers, with each participant having at least five years of experience in schools offering two or more TVL strands. Participants who were unable or unwilling to continue the interview process were excluded or withdrawn from the study.

## **2.3. Data Collection**

The researcher initiated the data collection process by securing approval from the Dean of the Institute of Advanced Study and obtaining permission to conduct online and off-campus interviews with selected school heads. Participants were asked to sign informed consent forms and were oriented regarding the purpose and objectives of the study before the interviews. The researcher prepared the interview guide, field notes journal, and audio recorder for documentation. In-depth interviews were then conducted, and the recorded data were transcribed and analyzed objectively to identify emerging themes and develop the findings of the study.

## **2.4. Data Analysis Procedure**

The data were analyzed using a structured multiple-case study approach. Collected data, including interview transcripts, field notes, and related documents, were organized and analyzed on a case-by-case basis through coding to identify patterns, themes, and discrepancies. Cross-case analysis was then conducted to compare similarities and differences across cases, leading to the development of major themes. The findings were interpreted using Program Implementation Theory and synthesized to highlight the study's contributions, implications for practice and policy, and recommendations for future research [6,4,15].

## **2.5. Ethical Consideration**

The researcher upheld ethical standards by securing informed consent, scheduling interviews at the participants' convenience, and ensuring voluntary participation throughout the study. Participants were informed about the study's objectives, their roles, and their right to withdraw at any time without consequence. Strict confidentiality and privacy protocols were observed by anonymizing personal information and using all collected data solely for scholarly purposes to protect the rights, dignity, and well-being of the participants.

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## **3. Results**

### **3.1. Profile of the Cases**

Case 1 involved two participants from the Agri-Fishery Arts (AFA) strand in the Division of Davao del Norte: a 60-year-old male Principal IV with a PhD and 39 years of service in the Department of Education, and a 45-year-old Teacher II with 15 years of teaching experience and a Bachelor of Science in Agriculture. The school head provided insights into the implementation and management of the SHS-TVL AFA strand, while the teacher, who handled Organic Agriculture Production and served as immersion coordinator, shared experiences related to classroom instruction and immersion practices, strengthening the study through data triangulation.

Case 2 focused on the implementation of the SHS-TVL Home Economics (HE) strand, which was supported by key strategies that promoted responsive and sustainable technical-vocational education. Informants identified major implementation strengths, including developing learner competence, teacher development, management of learning resources, and stakeholder engagement. These were reflected through TESDA-recognized assessment centers, well-equipped laboratories, inclusive learning programs, industry partnerships, and alignment with DepEd and TESDA standards, demonstrating the school's commitment to quality and relevant program delivery.

Case 3 focused on the implementation of the SHS-TVL Industrial Arts (IA) strand and revealed several challenges encountered by the education program supervisor, school head, and teacher participants. Major issues included

developing learner competence, institutional and stakeholder engagement, resource management, performance monitoring, school leadership, and structuring TVL program offerings. Informants highlighted difficulties in aligning DepEd and TESDA requirements, shortages of trained teachers, limited facilities and consumable materials, and the need for stronger industry partnerships, which affected the quality, relevance, and sustainability of IA instruction in public senior high schools.

### 3.2. Cross-Case Analysis

#### 3.2.1. Implementation Practices of Senior High School-Technical Vocational Livelihood (SHS-TVL) Track in Public Schools of Region XI

The cross-case analysis revealed that implementation strategies across P-AFA, P-HE, P-IA, and P-ICT were shaped by shared themes but differed in execution depending on context. Developing learner competence emerged as a dominant focus across all cases, primarily through experiential, performance-based, and certification-oriented approaches such as hands-on practice, immersion, and NC II attainment. While all cases aimed at competency development, methods varied from structured immersion and certification tracking to exposure activities like skills competitions and TVL events.

Teacher competence development was strongly emphasized in P-HE and P-IA through TESDA-aligned training, certifications, and LAC sessions, although some gaps in specialization were noted. Stakeholder engagement was also evident across cases but differed in formality, ranging from community-based collaboration in P-AFA to structured forums and institutional partnerships in P-IA, and strong external support from TESDA and PTA in P-HE. These variations show that while stakeholder involvement was universal, its implementation depended on available networks and school context.

Across all cases, managing learning resources, monitoring outcomes, and strengthening industry immersion were consistently prioritized, though levels of adequacy and implementation strategies differed. Leadership support and curriculum alignment were particularly evident in P-IA and P-ICT, highlighting monitoring, communication, and ongoing adjustments to standards. Overall, the findings showed strong thematic convergence in core implementation areas, but clear variation in depth, strategy, and contextual responsiveness across cases.

**Table 1** Cross-Case Analysis on the Implementation Practices of Senior High School -Technical Vocational Livelihood (SHS-TVL) Track in Public Schools of Region XI

Major Themes	Case Units		Remarks
	Similar	Differences	
Developing Learner Competence	P-AFA, P-HE, P-IA all emphasize skills development through hands-on practice, immersion, certification (NC II), and competitions.	P-AFA focuses on agricultural hands-on and certification prep; P-HE highlights competitions and confidence-building; P-IA emphasizes immersion outputs and performance tasks.	All cases prioritize competency, but strategies vary based on specialization (Agri, HE, Industrial).
Developing Teacher Competence	P-HE and P-IA both highlight teacher training, certification, and alignment with standards.	P-HE stresses TESDA certification (NC, TM), while P-IA focuses more on LAC sessions and continuous training; P-AFA and P-ICT mention less explicit teacher development.	Teacher capacity building is strong but unevenly emphasized across cases.
Engaging Stakeholders in Planning / Stakeholder Engagement	P-AFA, P-HE, P-IA all involve stakeholders such as parents, community, TESDA, and partners.	P-AFA highlights community/farmer support; P-HE emphasizes PTA, alumni, and TESDA; P-IA focuses on structured stakeholder forums and conferences.	Stakeholder engagement is a common strength but differs in formality and structure.
Managing Learning Resources	All cases (P-AFA, P-HE, P-IA, P-ICT) ensure availability of facilities,	P-AFA uses agri-based facilities (greenhouse, vermiculture); P-HE focuses on organized facilities per specialization; P-ICT deals with limited	Resource management is universal, but resource type and

	equipment, and laboratories.	resources via scheduling and class division; P-IA highlights complete laboratories.	constraints vary significantly.
Monitoring Performance Outcomes	P-AFA, P-HE, and P-IA track performance through certification rates, competitions, and feedback.	P-AFA emphasizes employment outcomes and partner feedback; P-HE focuses on assessment centers; P-IA highlights contest achievements and NC II rates; P-ICT less explicit.	Monitoring is strong but more outcome-driven in AFA and IA compared to others.
Strengthening Industry Immersion / Linkages	P-AFA, P-IA, P-ICT all implement immersion and industry partnerships.	P-AFA highlights fixed partners and expansion plans; P-ICT emphasizes scheduling and slot management; P-IA integrates immersion into curriculum; P-HE less explicit immersion detail.	Industry linkage is present but operational challenges differ (e.g., slot availability in ICT).
Aligning Curriculum / Program Implementation	P-IA and P-ICT both align curriculum with DepEd and TESDA standards.	P-ICT highlights ongoing curriculum alignment issues; P-IA focuses on compliance; P-AFA and P-HE less explicit on curriculum alignment.	Curriculum alignment is evolving, especially in ICT.
Strengthening School Leadership	P-IA and P-ICT both emphasize leadership through teacher support and monitoring.	P-IA highlights relational leadership and communication; P-ICT focuses on operational support (repairs, facilities); other cases less explicit.	Leadership plays a facilitative role, especially in addressing teacher needs.
Promoting Inclusive Education	Only P-HE explicitly includes ALS and SNED learners.	Other cases do not explicitly mention inclusivity.	Inclusion is not consistently integrated across cases.
Structuring TVL Program Offerings	P-IA structures subjects and schedules to maximize resources.	Not explicitly discussed in other cases.	Program structuring is a unique strength in IA.
Sustaining Program Continuity	P-AFA builds on prior SPTVE experience.	Other cases do not explicitly mention continuity.	Sustainability practices are not uniformly emphasized.

### 3.2.2. Challenges Encountered by the School Heads in the Implementation of SHS-TVL Track in Public Schools in Region XI

The cross-case analysis of challenges showed that school heads encountered interconnected issues across curriculum, human resources, resources, learner management, and immersion. A common concern was curriculum misalignment between DepEd and TESDA, as participants noted outdated curriculum guides and differing standards that affected competency-based implementation.

Human resource shortages were also consistent across cases, including limited training opportunities, lack of NC/TM certification, misaligned teacher assignments, and insufficient staffing in some TVL areas. Immersion-related challenges were evident in limited partner slots, financial constraints among parents, and competition among schools, which restricted student placement opportunities.

Resource limitations and socioeconomic constraints further affected program delivery, including shortages in tools, equipment, funding, internet access, and materials, as well as student dropouts due to financial difficulties. Additional issues included overcrowded specializations, uneven enrolment distribution, low learner motivation, and limited monitoring time. Overall, the findings indicated that challenges were both systemic and context-specific, requiring adaptive and multi-level responses from school leaders.

**Table 2** Cross Case Analyses on the Challenges encountered by the School Head

Major Themes	Case Units		Remarks
	Similar	Differences	
Curriculum Gaps	P-AFA and P-ICT both experience misalignment between DepEd curriculum and TESDA standards.	P-AFA highlights outdated curriculum and lack of NC-aligned modules; P-ICT focuses on ongoing alignment and updating of subjects; other cases do not explicitly mention this issue.	Curriculum alignment remains a persistent issue, especially in technical tracks requiring TESDA compliance.
Human Resource Constraints	P-AFA, P-HE, and P-IA all report shortages or inadequacies in qualified teachers.	P-AFA emphasizes lack of NC/TM certification and limited training access; P-HE highlights teacher misalignment; P-IA points to lack of teachers and need for technical assistance; P-ICT less explicit.	Teacher qualification and availability are major systemic challenges affecting program delivery.
Immersion Accessibility / Constraints	P-AFA and P-ICT both face limited industry partners and restricted immersion slots.	P-AFA highlights high costs and limited partners; P-ICT emphasizes competition for slots, delayed placement, and scheduling adjustments; P-IA and P-HE less explicit.	Access to immersion opportunities is constrained by limited industry capacity and logistical issues.
Resource Limitations	All cases (P-AFA, P-HE, P-ICT) report insufficient resources, funding, and materials.	P-AFA focuses on tools, equipment, and MOOE limitations; P-HE highlights costly and scarce materials; P-ICT emphasizes lack of computers, internet, and facilities; P-IA less explicit.	Resource scarcity is a universal challenge, though the type of resource varies by specialization.
Socioeconomic Constraints	P-AFA and P-HE both identify financial difficulties among students and parents.	P-AFA highlights student dropouts and inability to afford immersion; P-HE emphasizes inability to support materials and projects; other cases less explicit.	Poverty significantly affects participation, retention, and program sustainability.
Learner Management / Distribution Constraints	P-HE, P-IA, and P-ICT all experience issues related to large student populations and uneven distribution.	P-HE highlights imbalance in specialization demand; P-IA and P-ICT emphasize overcrowding and difficulty accommodating learners; P-AFA mentions large population but less detailed.	Increasing enrollment creates strain on facilities, teachers, and program delivery.
Learner Participation Constraints	Unique to P-IA.	P-IA highlights lack of willingness, low participation in competitions, and resistance to training; not evident in other cases.	Learner motivation is an emerging concern that may affect program outcomes.
Resource Accessibility Constraints	Unique to P-HE.	P-HE emphasizes difficulty sourcing materials locally; not highlighted in other cases.	Availability of materials depends on local context and supply chains.
Time Constraints	Unique to P-AFA.	P-AFA notes insufficient time for immersion; not emphasized in other cases.	Time allocation issues may affect depth of learning experiences.
Implementation Monitoring Constraints	Unique to P-IA.	P-IA highlights administrative workload, limited classroom observation, and monitoring challenges; not present in other cases.	Leadership workload impacts effective supervision and program quality.

Immersion Constraints (Operational)	P-ICT and P-AFA share immersion-related issues.	P-ICT provides more detailed operational challenges (competition, scheduling, delays); P-AFA focuses on availability and cost.	ICT context shows more complex logistical challenges due to higher enrollment and demand.
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3.2.3. How School Heads Address the Implementation Challenges of the SHS-TVL Track in Public Schools in Region XI

The cross-case analysis of strategies for overcoming challenges showed that school heads addressed implementation issues through adaptive approaches involving teacher development, resource management, stakeholder engagement, and industry partnerships. A common strategy was strengthening teacher competence through training, certification, proper assignment, and school-based LAC sessions to ensure alignment with TESDA standards and improve instructional quality.

Resource constraints were managed through planning, cost-sharing, sourcing materials externally, dividing classes, adjusting schedules, and seeking sponsors. Schools also strengthened competency alignment by ensuring learners met TESDA requirements before immersion, while industry linkages were sustained through continuous coordination, partnership expansion, and flexible scheduling of placements.

Stakeholder engagement and learner management were likewise prioritized through parental involvement, PTA support, career guidance, and sectioning strategies to address overcrowding. Additional strategies included financial planning, transparent budgeting, monitoring systems, and learner motivation initiatives such as competitions and financial support. Overall, the findings showed that school heads applied both collaborative and context-specific solutions to address implementation challenges effectively.

**Table 3** How School Heads Address the Implementation Challenges of the SHS-TVL Track in Public Schools in Region XI

Major Themes	Case Units		Remarks
	Similarities	Differences	
Developing Teacher Competence	P-AFA, P-HE, and P-IA all strengthen teacher capability through training, certification, and proper assignment.	P-AFA emphasizes encouraging teachers despite limited slots; P-HE ensures alignment and qualification; P-IA relies on LAC sessions and division support; P-ICT less explicit.	Teacher development is a shared strategy, though access to training and support systems varies.
Ensuring / Enhancing Resource Accessibility	P-AFA, P-HE, and P-ICT all implement strategies to maximize or supplement limited resources.	P-AFA uses planning and stakeholder involvement; P-HE applies cost-sharing, sourcing, and substitution; P-ICT focuses on scheduling, prioritization, and seeking sponsors.	Resource scarcity is addressed through adaptive and context-specific strategies.
Strengthening Competency Alignment	P-AFA and P-ICT align teaching and preparation with TESDA standards.	P-AFA emphasizes institutional assessment and readiness before immersion; P-ICT focuses on alignment and preparation practices; other cases less explicit.	Ensuring competency alignment is critical for certification and program success.
Strengthening Industry Linkages	P-AFA and P-ICT both expand and coordinate partnerships for immersion.	P-AFA focuses on sustaining and expanding partners; P-ICT emphasizes scheduling, coordination, and use of local partners; P-IA integrates immersion but less detailed here.	Strong partnerships are essential to address limited immersion opportunities.
Strengthening Stakeholder Engagement	P-AFA and P-HE both involve stakeholders in addressing financial and program needs.	P-AFA highlights community and parent involvement; P-HE emphasizes PTA support, financial transparency, and shared	Stakeholder support plays a key role in sustaining program implementation.

		responsibility; other cases less explicit.	
Managing Learner Distribution / Population	P-HE and P-ICT both implement strategies to manage student distribution and congestion.	P-HE uses career guidance and realignment; P-ICT uses class division, scheduling, and balancing of facility use; P-IA focuses on motivation rather than distribution.	Effective learner management helps address overcrowding and imbalance.
Maximizing Learning Resources	P-HE utilizes student outputs and IGPs to sustain resources.	Unique to P-HE; other cases do not explicitly use learner outputs as resource solutions.	Innovative use of learner outputs supports sustainability.
Strengthening Resource Management	P-HE emphasizes planning and financial management strategies.	Includes early budgeting, buffer funds, and prioritization; less evident in other cases.	Financial planning strengthens program stability.
Supporting Financial Needs	P-AFA and P-HE both address financial constraints through stakeholder support.	P-AFA involves stakeholders for financially challenged learners; P-HE promotes shared responsibility and transparency; P-IA provides direct financial support for learners.	Financial strategies are necessary to sustain participation and equity.
Strengthening Teacher Support Systems	P-IA uniquely highlights coordination with the division office for additional teachers.	Includes requesting additional staff and leveraging division support; not explicitly mentioned in other cases.	External support systems are crucial in addressing teacher shortages.
Strengthening Monitoring and Supervision	P-IA and P-ICT emphasize monitoring and communication with teachers.	P-IA includes both internal and external monitoring; P-ICT focuses on internal support; less explicit in other cases.	Monitoring ensures continuous improvement and problem resolution.
Strengthening Planning and Program Management	P-AFA and P-IA both emphasize planning as a key strategy.	P-AFA focuses on stakeholder-based planning; P-IA emphasizes adherence to guidelines and advance program planning.	Strategic planning is foundational in addressing multiple challenges.
Enhancing Learner Motivation and Engagement	Unique to P-IA.	Focuses on encouraging participation in trainings and competitions and providing support.	Learner motivation is an important but context-specific intervention.
Allocating Limited Resources	P-ICT specifically addresses efficient allocation of scarce resources.	Includes scheduling, prioritization, and seeking external support; other cases address this indirectly.	ICT context highlights operational strategies for limited resources.

#### 4. Discussion

The findings show that SHS-TVL implementation is characterized by both shared priorities and contextual variation across schools. All cases emphasized developing learner competence, stakeholder engagement, resource provision, industry immersion, and outcome monitoring, although strategies varied based on specialization, resources, and institutional capacity. Learner competence was consistently central, implemented through experiential, performance-based, and certification-focused approaches such as hands-on activities, immersion, and NC II attainment, reflecting alignment with DepEd's emphasis on work immersion as a bridge to industry practice [8].

Teacher competence also emerged as a key factor, with schools investing in training, certification, and professional development aligned with TESDA standards [25,13]. However, challenges in specialization and limited training opportunities persisted. Stakeholder engagement was evident across cases but varied in structure, from community-based collaboration to formal partnerships with industry and TESDA, supporting literature that highlights collaboration

as essential for TVL success [5,24]. Resource availability further shaped implementation, with some schools having adequate facilities while others relied on adaptive strategies such as scheduling, cost-sharing, and sourcing external materials.

Monitoring of outcomes was largely performance-based, using NC II passing rates, competitions, and employment results, consistent with TESDA's competency-based framework [25]. Industry immersion remained essential but was constrained by limited partners and logistical issues, reinforcing findings on the importance and variability of workplace exposure [8,5]. Curriculum alignment was also an ongoing concern, particularly in fast-changing fields like ICT, indicating continuous adjustment rather than full alignment.

Overall, SHS-TVL implementation reflected Najam's 5C framework content, context, commitment, capacity, and clients where capacity emerged as the most critical factor influencing success. Schools operated within systemic constraints such as resource shortages, teacher limitations, and curriculum gaps, while also demonstrating commitment through adaptive leadership, stakeholder collaboration, and localized solutions [11,16]. This highlights SHS-TVL implementation as a dynamic, context-sensitive process requiring flexible, capacity-driven, and collaborative approaches.

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## 5. Conclusion

The implementation of the SHS-TVL Track reflects a structured yet context-sensitive approach grounded in competency-based education, curriculum alignment, and stakeholder-supported delivery. Schools that successfully align curriculum with competency standards, ensure teacher qualification, maintain functional facilities, and sustain industry partnerships demonstrate stronger implementation outcomes.

However, persistent structural constraints such as teacher shortages, inadequate resources, limited immersion access, and socioeconomic barriers continue to affect the quality and equity of implementation. These findings confirm that SHS-TVL implementation is a capacity-driven and context-sensitive process, consistent with Najam's 5C framework.

Despite these challenges, schools demonstrate adaptive capacity through localized strategies, including stakeholder engagement, resource mobilization, instructional flexibility, and proactive leadership. Nevertheless, long-term sustainability requires stronger system-level support to ensure that implementation is not dependent on short-term adaptations but on stable and adequate institutional capacity.

### *Implications*

The findings suggest that strengthening SHS-TVL implementation requires coordinated action from key education stakeholders. The Department of Education (DepEd) should go beyond policy formulation by improving monitoring systems, ensuring adequate resource allocation, and strengthening curriculum alignment with TESDA standards. TESDA, in turn, should expand collaboration with schools by increasing access to assessment services, certification opportunities, and teacher upskilling programs. School administrators must treat SHS-TVL as a strategic program through systematic planning, strong leadership, and continuous improvement, while teachers require sustained training, certification, and institutional support to effectively deliver competency-based instruction.

Students should be provided equitable access to learning resources, industry immersion, and certification pathways to ensure consistent outcomes. Stakeholder and community engagement must be institutionalized to support resource mobilization, immersion opportunities, and program sustainability. Future researchers are encouraged to further examine the relationship between implementation conditions and learner outcomes using longitudinal or mixed-method designs to identify more sustainable and effective TVL implementation models.

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## Compliance with ethical standards

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### *Disclosure of conflict of interest*

We, Maria Victoria L. Loon and Glenne B. Lagura, declare that we have no conflicts of interest or competing interests to disclose regarding the publication of this manuscript or any institution, product, or entity mentioned herein. Furthermore, we have no affiliations with, or financial interests in, any products or organizations that could influence the study outcomes presented or compete with those discussed in the manuscript.

### *Statement of ethical approval*

Ethical approval adhered to Belmont Report principles, ensuring informed consent, confidentiality, voluntary participation, minimized risks, participant protection, and trustworthy procedures throughout the study for all respondents.

### *Statement of informed consent*

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

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