



Challenges and Opportunities in Implementing K-12 Technical Vocational Tracks: A Comprehensive Review

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Abstract

The integration of Technical Vocational Tracks (TVET) within the Philippine K-12 education reform represents a transformative shift. This article conducts an in-depth review of the challenges and opportunities of embedding TVET within the Philippine education system. Using a comprehensive research approach, including literature analysis, surveys, interviews, and document scrutiny, this study explores the complexities of K-12 TVET. Key stakeholders, including educators, students, policymakers, and industry leaders, contribute diverse perspectives. Challenges encompass curriculum-industry alignment, resource allocation, teacher training, and addressing societal perceptions of vocational education. Regional disparities in access further exacerbate these issues. Conversely, opportunities arise in enhanced employability, industry engagement, entrepreneurship incubation, and diversified educational pathways. TVET can bridge skill gaps and drive economic development. This review offers a holistic perspective on coexisting challenges and opportunities in K-12 TVET, contributing to the ongoing discourse on Philippine education reform. The insights inform evidence-based policies, guide curriculum development, and shape the future of TVET within Philippine education, fostering inclusivity and national progress.

Keywords: Curriculum Development; Educational Psychology; Employability; Policy; Vocational Education

INTRODUCTION

In recent years, the Philippines has undertaken substantial reforms to its K-12 education system with the aim of better preparing students to succeed in an increasingly globalised and competitive environment (Adarlo & Jackson, 2016). A significant aspect of these reforms has been the integration of Technical Vocational Education and Training (TVET) into the K-12 curriculum. This move underscores the recognised importance of vocational skills in enhancing employability and addressing skills gaps across various industries.

However, the incorporation of TVET into K-12 education is not without its challenges. From curriculum development and realignment to faculty training and resource allocation, numerous obstacles must be navigated to ensure successful implementation. Nonetheless, the potential benefits, such as increased student engagement, improved job placement rates, and the development of a more skilled workforce, make this endeavour a worthwhile pursuit (Robinson, 2012).

The purpose of this study, therefore, is to conduct a comprehensive review of the challenges and opportunities involved in embedding TVET within the K-12 education system in the Philippines. Through an in-depth examination of existing literature, case studies, and relevant policy documents, this article aims to provide a thorough understanding of the current landscape. Furthermore, it seeks

to offer actionable insights to policymakers, educators, and other stakeholders involved in the ongoing K-12 education reform efforts.

OVERVIEW OF K-12 TVET

The Philippines' education system consists of three distinct subsectors: basic education, higher education, and technical vocational and training (TVET). This tripartite structure was established as a result of the study conducted by the Congressional Commission on Education (EDCOM) in 1991 (UNESCO, 2010).

Technical Education and Skills Development Authority (TESDA) in the Philippines vigorously implements a dual-fold strategy for technical and vocational education and training (Santos & Relajo-Howell, 2020). One facet is geared towards enhancing global competitiveness and workforce preparedness, while the other focuses on fostering social equity and alleviating poverty by providing services to the Filipino population, both during periods of robust economic growth and in times of crises. Essentially, it delves into our past performance and provides insights on the most effective ways to progress in the future. The establishment of TVET has a rich historical background, with its origins found in various skills and vocational schools around the world (Adams & Cheah, 2022).

In recent years, there has been remarkable growth in the field of TVET in the Philippines. Statistics show that between 2000 and 2016, the number of students enrolled in TVET surged by 395%, rising from 574,017 to 2,270,000 (TESDA, n.d.). Simultaneously, the graduation rate of TVET students also significantly improved climbing from 83% in 2010 to 95% in 2016, a total of 2, 269, 665 students were registered in TVET programmes, and 2, 151, 236 students successfully graduated.

PERSPECTIVES OF KEY STAKEHOLDERS

This paper explores the views of educators, students, policymakers, and industry leaders, providing a multi-dimensional understanding of the impact and implications of TVET in the context of education reform.

Educators

Educators, including teachers and school administrators, play a pivotal role in implementing TVET within the K-12 curriculum (Salleh et al., 2022). Their perspectives shed light on the practical aspects of integrating vocational training into traditional academic frameworks. Many educators express enthusiasm for the potential of TVET to equip students with tangible skills, promoting employability and fostering a more diverse educational environment (Relajo et al., 2015). However, they also highlight challenges such as a lack of resources, insufficient teacher training in technical fields, and the need for curriculum development to ensure alignment with industry requirements (Mian et al., 2020).

Educators' insights underscore the importance of ongoing professional development and robust support systems to ensure successful TVET integration. They advocate for increased collaboration between schools and industries to bridge skill gaps and create meaningful learning experiences for students.

Students

Students' perspectives offer a unique view of how TVET impacts their educational journey and career aspirations (Omar et al., 2020). Many students appreciate the practical skills and real-world applications provided by TVET, viewing it as a pathway to future employment and entrepreneurship. They value hands-on learning experiences and believe that TVET offers a viable alternative to traditional academic tracks.

However, some students express concerns about societal perceptions of vocational education, indicating a need for greater awareness and respect for TVET pathways. These concerns reflect broader cultural attitudes towards education and suggest the importance of promoting TVET as a respected and valuable option for all students.

Policymakers

Policymakers hold a strategic role in shaping the future of education, and their perspectives offer insights into the

broader goals of integrating TVET into the Philippine K-12 system (Albert et al., 2023). Policymakers generally view TVET as a means to address national skill shortages and boost economic development. They support initiatives that promote industry-education collaboration, resource allocation, and regional equity in TVET access.

Nevertheless, policymakers acknowledge the challenges associated with curriculum-industry alignment, funding constraints, and the need for comprehensive data to guide policy decisions. Their insights highlight the complexity of educational reform and the importance of evidence-based policies to drive sustainable change.

Industry Leaders

Industry leaders bring a business-oriented perspective to the discussion, emphasising the need for a workforce equipped with practical skills and competencies. They view TVET as a crucial component of workforce development and support its integration into K-12 education. Industry leaders advocate for closer partnerships with educational institutions to ensure that TVET curricula meet industry demands (Oviawe, 2018).

Their perspectives reveal a strong interest in collaborating with schools to provide internships, apprenticeships, and mentorship programmes. However, they also stress the importance of maintaining high standards and ensuring that TVET graduates are well-prepared for the workforce.

By examining these diverse perspectives, this paper highlights the various factors that influence the integration of TVET into the Philippine K-12 education system. The insights from key stakeholders provide a comprehensive understanding of the challenges and opportunities, guiding future efforts to create a more inclusive and effective educational landscape (Relajo & Pilao, 2018).

CHALLENGES IN TVET INTEGRATION

This section delves into the main challenges encountered in the integration of Technical Vocational Education and Training (TVET) into the Philippine K-12 education system. These challenges encompass curriculum-industry alignment, resource allocation, teacher training, societal perceptions, and regional disparities, each of which plays a crucial role in shaping the effectiveness and reach of TVET programmes.

Curriculum-Industry Alignment

One of the foremost challenges is ensuring that TVET curricula align closely with the needs of the industry. This alignment is critical for the relevance and applicability of the skills taught within vocational programmes. Often, there is a gap between the competencies taught in educational settings and those demanded by employers, leading to graduates who may not be fully prepared for the workforce. Strengthening the link between curriculum development and industry needs involves regular consultation with business leaders,

continuous updates to training programmes, and dynamic educational strategies that adapt to evolving market demands (Brunetti et al., 2020).

Resource Allocation

Resource allocation presents another significant challenge, as many schools lack the necessary facilities, equipment, and financial support to deliver effective TVET programmes. Inadequate funding can lead to outdated equipment, insufficient materials, and lack of access to modern technologies, all of which undermine the quality of vocational training. Addressing these issues requires increased investment from both public and private sectors, targeted funding strategies, and efficient use of resources to ensure that schools can provide high-quality vocational education.

Teacher Training and Professional Development

The effectiveness of TVET also heavily relies on the qualifications and skills of the educators themselves. There is a critical need for comprehensive teacher training and ongoing professional development to prepare educators to deliver specialised vocational training. Many teachers currently lack the industry experience and technical expertise required to effectively teach the latest vocational skills. Enhancing teacher training programmes, providing regular upskilling opportunities, and fostering partnerships with industry professionals can help bridge this gap.

Addressing Societal Perceptions of Vocational Education

Societal perceptions of vocational education often undermine its value and attractiveness as a viable educational pathway. Vocational tracks are frequently viewed as less prestigious than academic routes, which can deter students from enrolling in TVET programmes. Changing these perceptions is essential to elevating the status of vocational education and involves comprehensive awareness campaigns, success stories, and the integration of TVET into mainstream education discussions.

Regional Disparities in Access to Quality TVET Programmes

Finally, regional disparities pose a challenge to the equitable access to quality TVET programmes across the Philippines. Students in rural and underprivileged areas often have less access to well-equipped training facilities and skilled educators, which limits their opportunities for vocational education. Addressing these disparities requires targeted policies that focus on expanding access in underserved regions, ensuring that all students, regardless of their geographic location, have equal opportunities to benefit from TVET.

These challenges highlight the complexities involved in integrating TVET into the Philippine K-12 education system and underscore the need for coordinated efforts among all

stakeholders to overcome these obstacles and fully realise the potential of vocational education.

Opportunities in TVET Integration

This section explores the significant opportunities presented by the integration of Technical Vocational Education and Training (TVET) into the Philippine K-12 education system. These opportunities range from enhanced employability and dynamic industry engagement to the incubation of entrepreneurial skills and economic development.

Enhanced Employability Prospects

TVET integration significantly boosts employability prospects for students by equipping them with practical and relevant skills that are in demand in the workforce. Vocational education prepares students not just for jobs, but for careers, providing them with a competitive edge in the job market. By focusing on hands-on skills that employers value, TVET graduates often experience higher employment rates and potentially higher earnings compared to their peers in traditional academic tracks (Kuha et al., 2018).

Dynamic Industry Engagement through Partnerships and Apprenticeships

One of the key strengths of TVET is its potential for dynamic engagement with industry. Through partnerships and apprenticeship programmes, students gain real-world experience, learn directly from professionals in their field, and make connections that can be invaluable as they enter the job market. These partnerships also benefit industries by allowing them to shape curricula and training programmes to fit their specific needs, ensuring a workforce trained to their standards and expectations.

Incubation of Entrepreneurial Skills

TVET programmes frequently include components that encourage the development of entrepreneurial skills, such as business management, innovation, and problem-solving. These skills empower students to not only seek employment but also to create jobs and start their own businesses. This entrepreneurial focus is particularly beneficial in regions where job opportunities may be limited, and new businesses can stimulate local economies and drive community development.

Diversification of Educational Pathways

The integration of TVET provides students with a diversity of educational pathways, accommodating different interests, strengths, and career aspirations. This diversification helps to reduce dropout rates and increases student engagement by offering alternatives to traditional academic studies. Students can choose from a variety of vocational courses ranging from technology and engineering to healthcare and creative arts, allowing for a more personalised and relevant education.

TVET's Role in Bridging Skill Gaps and Promoting Economic Development

TVET plays a critical role in bridging skill gaps within the economy by training students in specific skill sets that are under-supplied in the labour market. This alignment between education and economic needs promotes overall economic development, as industries gain access to a skilled workforce that can drive innovation and productivity. As such, TVET is not just an educational model but a strategic tool for national development, enhancing the country's competitiveness on a global scale.

These opportunities illustrate the transformative potential of integrating TVET into the Philippine K-12 education system. By leveraging these opportunities, the country can address key economic and educational challenges, fostering inclusivity and progress.

OFFERING A HOLISTIC PERSPECTIVE

This section synthesises the challenges and opportunities of integrating Technical Vocational Education and Training (TVET) into the Philippine K-12 education system, highlighting the intricate interplay between these factors. It emphasises the importance of a balanced view when shaping educational policies to ensure that the full potential of TVET can be harnessed effectively.

Synthesis of Challenges and Opportunities in K-12 TVET

The integration of TVET within the K-12 system presents a complex blend of challenges and opportunities that must be navigated with strategic foresight. Challenges such as aligning curriculum with industry needs, ensuring equitable resource distribution, and transforming societal perceptions about vocational education often intersect with opportunities like enhanced employability, dynamic industry engagement, and the incubation of entrepreneurial skills. This synthesis reveals that while the challenges are significant, the opportunities they present can lead to substantial improvements in educational outcomes and economic growth.

Emphasis on the Intricate Interplay between these Factors

Understanding the intricate interplay between the various challenges and opportunities is crucial for effective policy-making and programme implementation. For instance, addressing the challenge of resource allocation can directly enhance the quality of TVET programmes, thereby improving employability prospects for graduates. Similarly, successful industry partnerships not only contribute to dynamic curriculum development but also help in reshaping societal perceptions by showcasing the viability and prestige of vocational education paths.

The Significance of A Balanced View when Shaping Education Policies

A balanced view is essential when shaping education policies

to integrate TVET in the K-12 system. Policymakers must consider both the barriers and the benefits, ensuring that each decision contributes to a more inclusive, practical, and sustainable educational landscape. This approach requires ongoing dialogue with all stakeholders, continual assessment of the impact of policies, and flexibility to make adjustments as needed. By maintaining a holistic perspective, policymakers can craft strategies that leverage the strengths of TVET to overcome its challenges, leading to a more adaptive and responsive educational system (Fricks, 2022).

Offering a holistic perspective on K-12 TVET integration is not merely about listing challenges and opportunities; it is about understanding their connectivity and the strategic approaches required to navigate them. This comprehensive view will be instrumental in forming a robust foundation for TVET in the Philippines, ultimately contributing to a stronger, more inclusive educational system and a thriving national economy.

Contributions to the Ongoing Discourse

This section discusses how the findings from the research contribute to the ongoing discourse on Philippine education reform, emphasising the importance of evidence-based policies and the potential impact of these insights on curriculum development and educational practices.

Impact on Philippine Education Reform Discourse

The integration of Technical Vocational Education and Training (TVET) into the Philippine K-12 education system is a significant component of broader education reform initiatives aimed at enhancing the relevance and efficacy of education in the country. This research adds depth to the discourse by providing empirical data and comprehensive analyses that highlight both the challenges and opportunities of TVET integration. By outlining specific issues such as curriculum-industry alignment and regional disparities, alongside the potential for enhanced employability and economic development, the study offers a nuanced perspective that can inform ongoing debates and policy-making processes.

Importance of Evidence-Based Policies in Education

The findings underscore the critical importance of basing educational policies on robust evidence. In the context of TVET, this approach involves using data-driven insights to design policies that address identified challenges while capitalising on available opportunities. Evidence-based policymaking ensures that decisions are not only responsive to current needs but are also anticipatory of future trends and challenges. This approach is essential for crafting interventions that are both effective and sustainable, ultimately leading to an education system that is better aligned with the socio-economic needs of the country.

Guiding Curriculum Development and Educational Practices

The insights gained from this research have direct

implications for curriculum development and educational practices. By understanding the specific needs of industry and the workforce, educational authorities and institutions can design TVET curricula that are both relevant and forward-looking. This involves integrating soft skills training with technical education, promoting entrepreneurial thinking, and ensuring that teaching methods are aligned with the demands of modern workplaces. Additionally, these insights can guide the training and professional development of educators, ensuring that they are equipped to deliver high-quality vocational education (Allais, 2012).

Furthermore, the research can influence broader educational practices by promoting inclusivity and adaptability in curriculum design. This could lead to the development of more flexible learning pathways that cater to diverse student needs and backgrounds, ultimately fostering an educational environment that values and supports varied career aspirations.

In summary, this research contributes significantly to the discourse on Philippine education reform by providing evidence-based insights that can guide policy decisions, curriculum development, and educational practices. These contributions are vital for realising the full potential of TVET within the K-12 system and for ensuring that the education sector continues to evolve in alignment with national development goals.

SHAPING THE FUTURE OF TVET

This section explores the pivotal role of research in shaping the future of Technical Vocational Education and Training (TVET) within the Philippine education system and discusses how TVET can contribute to fostering inclusivity and national progress.

The role of research in shaping TVET

Research plays a fundamental role in the development and refinement of TVET programmes. It provides the necessary empirical evidence and analytical insights that guide decision-making processes at all levels – from policy formulation to curriculum design and implementation. Through rigorous research, stakeholders can identify not only the current needs of the industry but also predict future trends that could impact the workforce. This proactive approach enables educational institutions and policymakers to adapt their strategies to ensure that TVET programmes remain relevant and effective in equipping students with the skills required in a rapidly changing economy (Okon, 2019).

In addition, research contributes to the optimisation of TVET by highlighting best practices from around the world and testing new educational methodologies. This continuous feedback loop is essential for refining TVET programmes to maximise their impact and efficiency.

Fostering inclusivity and national progress

One of the broader goals of integrating TVET into the Philippine

education system is to foster inclusivity in education and employment opportunities. By providing various pathways for students, TVET makes education accessible and relevant to a wider demographic, particularly for those who may not thrive in traditional academic environments. This inclusivity extends to providing skills that are in demand in the local and global markets, thereby improving the employability of graduates and reducing unemployment rates among the youth.

TVET also plays a crucial role in national progress. By aligning educational outcomes with industry needs, TVET can drive economic development by filling critical skill gaps in the workforce. This alignment not only boosts the productivity of industries but also stimulates innovation and entrepreneurship, contributing to the overall economic resilience and growth of the country (Williams & Vorley, 2014).

Moreover, the practical nature of TVET can help to democratise education by breaking down socioeconomic barriers. By equipping students with real-world skills and opening up direct routes to employment, TVET supports social mobility and empowers individuals to contribute positively to their communities.

RECOMMENDATIONS

As the Philippines continues to navigate the challenges of educational reform and economic development, the role of TVET will be increasingly significant. Research will remain central to understanding and shaping the evolving landscape of vocational education, ensuring that TVET programmes not only meet the current needs of the economy but are also visionary enough to anticipate and adapt to future demands. By fostering a more inclusive and skill-oriented education system, TVET holds the potential to propel national progress, making it a key pillar in the Philippines' journey towards sustainable development (Alhawal, 2020).

Based on the insights gained from the research, this paper outlines specific policy recommendations and practical steps to enhance the integration of Technical Vocational Education and Training (TVET) within the Philippine K-12 education reform. These recommendations aim to address existing challenges while leveraging the opportunities that TVET offers for education and national development.

Below are some of the policy recommendations:

1. *Enhance curriculum-industry alignment:* Develop closer collaborations between educational institutions and industry stakeholders to ensure that TVET curricula are aligned with current and future workforce needs. This could involve regular consultation forums, industry advisory panels, and joint curriculum development initiatives.
2. *Increase investment in TVET resources:* Secure increased funding for TVET programmes to improve infrastructure,

procure modern equipment, and expand access to technology. This investment should also extend to the construction and maintenance of state-of-the-art vocational training centres, particularly in underserved regions.

3. *Expand professional development for TVET educators:* Establish continuous professional development programmes for TVET educators that focus on both pedagogical skills and industry-specific expertise. Partnerships with industry for in-service training, workshops, and certification courses should be encouraged.
4. *Promote TVET as a valuable educational pathway:* Implement national awareness campaigns to enhance the perception of TVET among students, parents, and the wider community. These campaigns should highlight the employability, entrepreneurial opportunities, and the potential for personal and professional growth within TVET pathways.
5. *Foster inclusivity in TVET access:* Develop policies that specifically target the expansion of TVET to marginalised and rural communities. This could include scholarships, mobile training units, and online vocational education programmes to ensure equitable access.
6. *Strengthen legislation supporting TVET:* Review and strengthen existing laws and regulations to support the expansion and enhancement of TVET programmes. This includes ensuring that TVET is fully integrated into the national education policy and is supported by long-term legislative frameworks.

Below are the suggested steps forward for enhancing TVET integration:

1. *Conduct regular skill gap analysis:* Regularly assess the skills gap in the economy and update TVET programmes accordingly to ensure they remain relevant and responsive to market demands. This can be achieved through ongoing collaboration with industry leaders and labour market analysts.
2. *Integrate TVET with higher education:* Create pathways that allow TVET students to seamlessly transition to higher education opportunities, including degree programmes that value and build upon vocational training.
3. *Utilise technology and innovation:* Leverage technology to enhance TVET delivery, including the use of virtual reality, simulation software, and online platforms that can provide interactive and accessible vocational training.
4. *Establish a national TVET coordination body:* Set up a centralised body responsible for coordinating all aspects of TVET development, from funding and

curriculum design to teacher training and international collaborations. This body would ensure

5. unified approach to TVET across the country.
Monitor and evaluate TVET outcomes: Implement a robust system for monitoring and evaluating the outcomes of TVET programmes. This should include tracking graduate employment rates, employer satisfaction, and the economic impact of TVET graduates on the local and national economy.

By implementing these policy recommendations and strategic steps, the Philippines can significantly enhance the effectiveness and impact of TVET in its education system, thus contributing to more robust economic growth and a more inclusive society.

CONCLUSION

The paper has identified several critical challenges to the effective implementation of TVET, including issues with curriculum-industry alignment, resource allocation, teacher training, societal perceptions, and regional disparities. Conversely, it has also highlighted opportunities that TVET presents, such as enhanced employability, dynamic industry engagement, entrepreneurship, educational diversification, and the bridging of skill gaps. These opportunities can bring substantial benefits not only to individuals but also to the broader economic and social fabric of the Philippines (Kelly, 2013).

The findings emphasise the complexities of integrating vocational training within the K-12 system but also illuminate the pathways through which these challenges can be addressed to fully harness the potential of TVET (Hermans et al., 2024). This form of education holds transformative power for the Philippine education system, providing robust solutions to several pressing challenges. For instance, TVET aligns educational outputs with the needs of the economy, preparing a workforce equipped with relevant skills ready to meet the demands of modern industries. It also promotes social inclusivity by offering diverse educational pathways that cater to various learning preferences and socio-economic backgrounds, thereby reducing educational disparities. Moreover, as discussed by Haolader et al. (2017) integrating TVET can shift societal perceptions about vocational education, promoting it as a prestigious option equivalent to academic pathways.

The implications for policy and practice are clear. There is a pressing need for robust policy frameworks that support the growth and development of TVET, focusing on resource allocation, curriculum development, and stakeholder engagement to ensure that TVET programmes are both effective and sustainable. Additionally, educational practitioners must embrace innovative teaching methods and continuous professional development to deliver high-quality vocational training that meets the evolving needs of students and the labour market.

In conclusion, integrating TVET in the Philippine K-12 education system is not merely an educational reform; it is a strategic socio-economic enhancement tool that promises substantial returns in terms of employability, economic development, and societal advancement. By addressing the identified challenges and leveraging the vast opportunities, the Philippines can transform its educational landscape, making it more inclusive, practical, and responsive to the needs of its people and the demands of the global economy. The future of TVET in the Philippines looks promising, with the potential to significantly influence the nation's trajectory towards sustained growth and development.

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