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TLE Teachers in Implementing a Continuously Changing Curriculum

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Abstract: Technology and Livelihood Education (TLE) plays a significant role in developing learners' technical, vocational, entrepreneurial, and life skills in the Philippine K–12 curriculum. However, the continuous revision of the TLE curriculum presents implementation challenges, particularly in schools with inadequate instructional resources. This systematic review examines existing literature on the challenges encountered by TLE teachers in implementing the evolving curriculum, with particular emphasis on the availability of tools and equipment. Relevant studies published between 2020 and 2025 were gathered from scholarly databases, government reports, and peer-reviewed journals. The review synthesizes findings under four major themes: curriculum change and teacher adaptation, availability of tools and equipment, instructional challenges in practical learning, and teacher preparedness and professional development. Findings reveal that insufficient tools and equipment remain among the most persistent barriers to effective curriculum implementation. These shortages limit hands-on learning opportunities, reduce the attainment of learning competencies, and increase teachers' reliance on improvised instructional strategies. Additionally, inadequate training and limited institutional support further hinder teachers' capacity to respond to curriculum reforms. The review highlights significant gaps in localized studies examining the relationship between teacher characteristics and the extent of implementation challenges. The findings underscore the need for increased resource allocation, strengthened teacher training programs, and evidence-based interventions to improve TLE curriculum implementation in rural schools.

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I. INTRODUCTION

The increasing demands of the twenty-first century workforce have transformed educational systems worldwide. Technical and vocational education has become n essential component of educational reforms aimed In the Philippines, Technology and Livelihood Education. Serves as core component of the K-12 curriculum designed to develop practical skills and work competencies aligned with industry standards.

The education landscape continues to evolve in response to technological advancement, industry demands, and educational reforms. Consequently, the TLE curriculum undergoes periodic revision to ensure relevance and alignment with labor market requirements. While curriculum reforms aim to improve educational outcomes, they also create implementation challenges for challenges for teachers, and assessment standards.

In many public secondary schools, particularly in rural areas, insufficient tools and equipment have become a persistent obstacle to success curriculum implementation. The lack of adequate resources affects the quality of instruction, limit students' opportunities for hands-on learning, and creates additional burdens for teachers tasked with delivering competency-based education.

- *Scope and Purpose*

This review focuses on literature related to the implementation of the continuously changing TLE curriculum, particularly studies examining the effect of insufficient tools and equipment on teaching and learning process. The review covers research conducted within the Philippines educational context and selected international studies on technical and vocational education published between 2020-2025.

The review excludes studies unrelated to vocational education, higher education context, and curriculum implementation issues outside the scope of instructional resources and teacher challenges.

- *Thesis Statement*

This review argues that insufficient tools and equipment significantly hinder the effective implementation of the continuously changing TLE curriculum by limiting practical instruction, reducing learning competency attainment, and increasing the challenges faced by teacher, particularly in resource-constrained schools.

II. METHODOLOGY

A system review approach was employed to identify relevant literature. Source were obtained from google

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scholar, ERIC, ScienceDirect, ResearchableGate, and educational policy document from UNESCO and Department of Education.

➢ *The Following Keywords Guided the Search:*

- Technology and Livelihood Education implementation
- TLE curriculum challenges
- Technical vocational education resources
- Tools and equipment in TLE
- Curriculum implementation in K–12 education
- Teacher challenges in vocational education
- Practical skills instruction

➢ *Incusion Criteria*

- Published between 2020-2025
- Peer-reviewed journal article, thesis, and government reports
- Studies conducted in secondary education foundational resources;
- Studies conducted in secondary education setting.

➢ *Exclusion Criteria*

- Studies published before 2020 unless considered foundational;
- Research unrelated to vocational or technical education;
- Opinion papers lacking empirical evidence.

➢ *Selection Process*

The search yield approximately 85 studies. After screening titles, abstract, and full text based on relevance and quality. 35 studies were selected for detailed analysis. Studies based categorized according to major themes and synthesized to identify patterns, contradictions, and research gaps.

➢ *Curriculum Change and Teacher Adaption*

Curriculum reform is a continuous process designed to address to address societal and industry demands. UNESCO (2021)emphasized that technical and vocational education contribute significantly to workforce development and sustainable economic growth. As industries become increasingly technology-driven, curriculum updates become necessary to ensure learners acquire relevant competencies.

Bongco and David (2020) highlighted that teachers play a central role in successful curriculum implementation. However, frequent curriculum changes require teachers to continuously update their pedagogical knowledge and instructional strategies. Bilbao et al. (2015) further argued that rapid educational reforms often place teachers under pressure, especially when changes occur without sufficient preparation and support.

Similarly, Barcelona et al. (2023) reported that TLE teachers experienced difficulties adapting to evolving curriculum requirements due to limited resources and insufficient institutional support. These findings suggest that curriculum change is not merely a policy issue but also a practical challenge requiring adequate teacher preparation.

➢ *Availability of Tools and Equipment in TLE Instruction*

The availability of instructional resources is a critical determinant of successful TLE implementation. Adeniran (2020) emphasized that educational resources, including tools and equipment, directly influence teaching effectiveness and student learning outcomes.

Tan (2021) found that many secondary schools lacked the necessary tools and facilities for effective TLE instruction. This deficiency prevented students from participating in meaningful hands-on activities and limited the development of technical competencies. Similarly, Salvador et al. (2022) identified inadequate facilities and equipment as major barriers to curriculum implementation in public schools.

Studies consistently indicate that insufficient resources force teachers to modify lessons, reduce practical activities, and rely on theoretical instruction. While such adaptations allow instruction to continue, they often compromise the achievement of intended learning outcomes.

➢ *Instructional Challenges in Practical Skills Development*

TLE is fundamentally skills-based and requires experiential learning opportunities. De Alca (2008) described TLE as a subject centered on practical application and skill mastery. Consequently, effective instruction depends heavily on access to appropriate facilities and equipment.

Lardizabal (2009) argued that adequate instructional resources improve student engagement, participation, and understanding. Conversely, De Jesus (2018) observed that many schools lacked updated facilities, forcing teachers to employ improvised teaching methods that may not adequately simulate real-world applications.

Flores and Antonio (2020) further identified overcrowded classrooms and limited instructional time as factors that negatively affect practical skills development. These challenges become more severe when combined with shortages of instructional tools and equipment.

The literature suggests that the absence of adequate resources significantly reduces opportunities for authentic learning experiences and competency development among learners.

➢ *Teacher Preparedness and Professional Development*

Teacher competence remains essential for effective curriculum implementation. Gregorio (2020) noted that TLE teachers frequently encounter challenges related to lesson planning, instructional strategies, and resource limitations. Continuous professional development is therefore necessary to enhance teachers' capacity to deliver quality instruction.

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Tangzon and Buyok (2022) revealed that many teachers teach TLE subjects outside their specialization while simultaneously dealing with insufficient instructional resources. This mismatch between teacher expertise and subject assignment further complicates curriculum implementation.

Likewise, Basal (2022) emphasized the importance of teacher training programs in addressing implementation challenges. Professional development opportunities help teachers adapt to curriculum changes, integrate innovative teaching strategies, and effectively utilize available resources.

➢ *Identification of Research Gaps*

Although numerous studies have examined curriculum implementation challenges in TLE, several gaps remain evident:

- Most studies focus broadly on curriculum implementation without specifically examining the extent of challenges caused by insufficient tools and equipment.
- Limited research investigates the relationship between teacher demographic characteristics and implementation challenges.
- Few localized studies have been conducted in rural districts such as Villaviciosa.
- Existing literature often identifies challenges but provides limited evidence regarding intervention programs that effectively address resource deficiencies.
- There is insufficient empirical evidence linking resource availability to competency attainment in continuously changing TLE curricula.

These gaps justify the conduct of the present study.

III. CONCLUSION AND RECOMMENDATIONS

➢ *Summary of Main Findings*

The reviewed literature consistently demonstrates that insufficient tools and equipment significantly affect the implementation of the continuously changing TLE curriculum. Resource shortages hinder practical instruction, limit competency development, and increase teachers' workload. Additionally, curriculum reforms, inadequate teacher preparation, and limited institutional support compound implementation difficulties.

➢ *Significance of the Review*

This review contributes to the growing body of knowledge on TLE curriculum implementation by synthesizing contemporary evidence regarding resource-related challenges. It provides a comprehensive understanding of factors affecting instructional effectiveness and highlights areas requiring policy and administrative intervention.

➢ *Recommendations for Future Research*

- *Future Studies should:*

✓ Examine the relationship between teacher profiles and implementation challenges.
✓ Investigate the effectiveness of intervention programs addressing equipment shortages.
✓ Explore innovative and technology-assisted approaches for resource-constrained schools.
✓ Conduct comparative studies between urban and rural school settings.
✓ Evaluate the long-term effects of inadequate resources on student competency development and employability outcomes.

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