

Availability of TESDA-Based Tools and Materials as Determinant of Learners' Skill Development in TLE–Garments Technology

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Abstract

This study examined the availability of TESDA-based tools and materials as determinants of learners' skill development in TLE–Garments Technology at Cangawa National High School, Buenavista II District, Division of Bohol, during the School Year 2026–2027. The study was anchored on Experiential Learning Theory, Social Constructivist Theory, Social Cognitive Theory, and Transformative Education Theory, which emphasize learning through experience, interaction, observation, and active participation. A descriptive-correlational research design was employed involving 10 TLE teachers and 40 Grade 10 learners. Data were gathered using an adapted and modified questionnaire and learners' competency assessments. Statistical tools used included frequency counts, percentages, weighted mean, standard deviation, general average, and Spearman Rank-Order Correlation. The findings revealed that the availability of TESDA-based tools and materials was generally rated as sufficient by learners and moderately sufficient by teachers. Among the available resources, pinning and sewing tools obtained the highest rating, while fabric materials received the lowest rating. Learners achieved an overall proficient level of performance in the assessed competencies, particularly in drafting and cutting patterns and preparing and cutting fabric, while performance in assembling upper garments remained at the developing level. Teachers and learners identified resource-related concerns, including inadequate supplies of fabrics, threads, and sewing machines. Statistical analysis revealed a very strong positive and significant relationship between the availability of TESDA-based tools and materials and learners' skill development, indicating that greater access to resources was associated with better competency development. The study concluded that adequate instructional resources are essential for enhancing learners' practical skills and recommended the implementation of a Skill Development Plan to further strengthen competency-based instruction and performance in Garments Technology. The study supports SDG 4 (Quality Education) by promoting access to quality technical-vocational learning experiences and SDG 8 (Decent Work and Economic Growth) by strengthening employability-related skills through competency-based education. Its sustainability contribution lies in supporting educational and institutional sustainability through improved resource provision, enhanced skills development, and strengthened technical-vocational education practices that prepare learners for future livelihood, employment, and lifelong learning opportunities.

Keywords: Availability of Tools and Materials; Garments Technology; Grade 10 Learners; Learners' Skill Development; Skill Development Plan; Technology and Livelihood Education; TESDA-Based Resources; TLE–Garments Technology; Vocational Education

1. Introduction

Garments Technology is a core component of TLE that equips learners with practical competencies useful for employment, livelihood, and entrepreneurship. Learning in this subject requires direct interaction with tools, equipment, fabrics, threads, and other materials necessary for garment construction. The absence or inadequacy of these resources limits learners' opportunities for skill practice and competency development (Calaranan & Corpuz, 2023). In many schools, insufficient sewing machines, fabrics, and supplies reduce learners' hands-on experiences, which may negatively affect motivation, confidence, and performance. Learners with greater access to instructional resources generally have more opportunities to practice and improve their competencies. Research indicates that inadequate practice opportunities and limited access to garment equipment contribute to learning difficulties in garment education (Limon, 2023). The availability of instructional materials and equipment is a critical factor in effective TLE instruction. Appropriate resources support learner participation, enhance understanding, and improve the development of practical skills (Tan, 2021). Vocational education research further demonstrates that direct interaction with tools and machines strengthens technical competencies and prepares learners for real work environments (Asplund et al., 2022). Likewise, adequate instructional resources and supportive learning environments positively influence learner engagement and performance (Roble, 2021; Löfgren et al., 2023). Hands-on learning experiences have also been found to improve vocational learners' practical skills, confidence, and task performance (Qi et al., 2026; Embodo & Alonzo, 2024).

The literature consistently highlights the importance of experiential and resource-supported learning in technical-vocational education. Studies emphasize that learners develop practical competencies more effectively through direct experience, repeated practice, and engagement with authentic tools and materials (Asplund et al., 2022; Qi et al., 2026). Research also underscores the importance of instructional resources in promoting learner participation and achievement. Adequate access to tools, materials, and equipment enables learners to perform practical activities successfully and strengthens competency development (Tan, 2021; Roble, 2021; Embodo & Alonzo, 2024). Furthermore, vocational learning environments that provide appropriate facilities and resources contribute significantly to learners' acquisition of work-related competencies (Löfgren et al., 2023). Studies focusing on garment education specifically reveal that learners often experience difficulties in sewing machine operation, material preparation, cutting procedures, and garment assembly when sufficient resources and practice opportunities are unavailable (Limon, 2023; Calaranan & Corpuz, 2023). Collectively, these findings suggest that resource availability is a critical factor in skills-oriented instruction and competency development.

Locally, Garments Technology classes require learners to acquire practical skills through direct participation in sewing and garment-construction activities. However, schools may face challenges related to the availability of sewing machines, fabrics, threads, and other instructional resources, affecting the quality of learning experiences. Nationally, the Philippine educational system emphasizes competency-based learning through TLE and technical-vocational programs. Adequate tools, materials, and instructional resources are recognized as necessary components in achieving curriculum goals and developing learners' employability and livelihood skills (Tan, 2021). Globally, vocational education research supports the provision of sufficient resources, learning opportunities, and authentic workplace experiences to develop technical competencies and improve educational outcomes (Asplund et al., 2022; Löfgren et al., 2023; Qi et al., 2026). These perspectives reinforce the importance of examining resource availability as a factor influencing learner performance in Garments Technology.

This study is anchored on Experiential Learning Theory by Kolb (1984), which posits that learners develop knowledge and skills through direct experience and reflective practice. The theory supports the need for adequate tools and materials that allow learners to engage in garment-making activities and develop competencies through repeated practice. Kolb and Kolb (2022) and Chukwuedo and Ementa (2022) further emphasized the importance of experiential learning in vocational education. The study is also grounded in Social Constructivist Theory by Vygotsky (1978), which views learning as a socially mediated process involving interaction with teachers, peers, and the learning environment. Access to tools and materials supports guided instruction, collaboration, and practical learning experiences (Calaranan & Corpuz, 2023). Social Cognitive Theory by Bandura (1986) provides another foundation, emphasizing learning through observation, modeling, practice, and feedback. Learners develop skills by observing demonstrations and applying what they have observed using available resources (Chukwuedo & Ementa, 2022; Embodo & Alonzo, 2024). The study further draws from transformative education principles that emphasize active participation, reflection, problem-solving, and the application of learning in real-life contexts. Practical experiences supported by adequate resources help learners improve confidence, independence, and technical competence (Calaranan & Corpuz, 2023). The study is further supported by DepEd Order No. 67, s. 2012; DepEd Order No. 31, s. 2012; DepEd Order No. 13, s. 2012; Republic Act No. 10533; Republic Act No. 7796; and Republic Act No. 10647, all of which promote competency-based education, technical-vocational learning, and the provision of instructional resources necessary for skills development.

Although previous studies have established the importance of instructional resources in vocational and technical education (Tan, 2021; Roble, 2021; Asplund et al., 2022; Embodo & Alonzo, 2024), there remains limited evidence regarding the specific relationship between the availability of TESDA-based tools and materials and learners' skill development in TLE–Garments Technology within the context of secondary schools. Existing literature has highlighted learner difficulties related to garment-making competencies and emphasized the need for appropriate interventions and adequate resources (Limon, 2023; Calaranan & Corpuz, 2023). However, there

is a need to examine how the availability of TESDA-aligned tools and materials influences actual learner competency development in Garments Technology. This study addresses that gap by determining the level of resource availability and its relationship to learners' skill development, providing an empirical basis for designing a skill development plan.

This study aligns with the following Sustainable Development Goals: SDG 4 – Quality Education. The study supports the provision of quality, equitable, and practical learning experiences by examining how access to instructional resources contributes to learners' competency development in technical-vocational education. SDG 8 – Decent Work and Economic Growth. Garments Technology develops employable and livelihood-related skills that may prepare learners for future work opportunities, entrepreneurship, and technical-vocational pathways. SDG 9 – Industry, Innovation and Infrastructure. The study emphasizes the importance of adequate educational infrastructure, equipment, and learning resources that support skills development aligned with industry standards such as TESDA requirements. SDG 17 – Partnerships for the Goals. The study highlights the importance of collaboration among schools, administrators, policymakers, and stakeholders in ensuring the availability of resources that support effective technical-vocational education.

1.7 Importance of the Study to Multidisciplinary Sustainability

The study contributes to educational sustainability by providing evidence on the resources necessary for effective competency-based instruction and continuous learner development in Garments Technology. It supports socio-economic sustainability by helping learners acquire practical competencies that may contribute to future employment, livelihood, and entrepreneurial opportunities. The study advances institutional sustainability by providing data that can guide school administrators, curriculum planners, and policymakers in resource planning, allocation, and program improvement. It also contributes to technological and innovation sustainability by strengthening technical-vocational education through the effective provision and utilization of TESDA-aligned tools, materials, and learning resources that support industry-relevant skill development.

2. Material and methods

2.1 Research Design

The study employed a descriptive-correlational research design. This design was deemed appropriate because it enabled the researcher to describe the existing conditions regarding the availability of TESDA-based tools and materials and the level of learners' skill development in Garments Technology. Furthermore, it facilitated the examination of the relationship between these variables to determine whether the availability of instructional resources significantly influenced learners' competency development. Data were collected through a survey questionnaire and competency-based assessments, while the findings were analyzed using appropriate statistical procedures to ensure objective and systematic interpretation.

2.2 Locale of the Study

The study was conducted at Cangawa National High School, located in Buenavista II District, Division of Bohol. As a public secondary educational institution, the school provides accessible and quality education to learners from the local community and neighboring areas. It offers a complete Junior High School curriculum, specialized academic programs, and Technology and Livelihood Education courses, including Garments Technology. The school environment provided an appropriate setting for the investigation because it regularly implements practical learning activities that require the utilization of TESDA-based tools and materials for skills development.

2.3 Respondents of the Study

The respondents of the study consisted of 50 participants, comprising 10 TLE teachers and 40 Grade 10 learners enrolled in Garments Technology. The teacher-respondents provided information regarding the availability and utilization of instructional resources, while the learner-respondents contributed data concerning resource availability and their level of competency in selected garment technology skills. The inclusion of both groups ensured a comprehensive evaluation of instructional resources and learners' skill development.

2.4 Sample and Sampling Procedure

The study involved all identified TLE teachers and Grade 10 Garments Technology learners of Cangawa National High School. Following the approval of the school administration, the researcher coordinated with the concerned teachers to facilitate respondent selection and schedule the data collection process. The selected participants completed the research instrument based on their actual experiences and observations regarding the availability of TESDA-based tools and materials and the development of garment technology competencies. This approach ensured that the data reflected the prevailing instructional conditions within the study environment.

2.5 Research Instrument

The primary instrument used in the study was a structured questionnaire adapted and modified from the work of Dr. Bridget E. Uwameiye entitled "Availability and Utilization of Tools and Equipment for Teaching and Learning Garment Making Trade in the Senior Secondary Schools in Edo State." The instrument was designed to gather data relevant to the study objectives and consisted of several sections. The first section obtained the profile of the

teacher-respondents, including age, gender, civil status, educational attainment, plantilla position, relevant trainings and seminars attended, National Certificate (NC) acquired, and Trainers Methodology (TM) certification. The second section gathered demographic information from learner-respondents, specifically their age and gender. The third section assessed the level of availability of TESDA-based tools and materials, including sewing machines, measuring tools, cutting tools, marking tools, pinning and sewing tools, fabrics, threads, learning resources, and pressing and finishing equipment. The fourth section measured learners' skill development in Garments Technology competencies and identified issues and concerns related to instructional resource availability. A five-point Likert scale was utilized to assess respondents' perceptions regarding resource availability and skill development. To promote confidentiality and encourage candid responses, the disclosure of respondents' identities was optional.

2.6 Data Gathering Procedure

Prior to data collection, the researcher secured formal permission from the school principal of Cangawa National High School. Upon approval, coordination was conducted with the Garments Technology teachers regarding the selection of respondents and the schedule for administering the questionnaire. Depending on accessibility and availability, the instrument was distributed either through printed copies or online platforms. Respondents were allotted approximately 20 to 30 minutes to complete the questionnaire. Upon retrieval, the responses were examined for completeness, organized systematically, and encoded for statistical analysis. The researcher then analyzed and interpreted the data under the guidance of the research adviser, while consultation with a statistician was undertaken when necessary to ensure the accuracy and reliability of the results. The findings subsequently served as the basis for conclusions, recommendations, and the formulation of the proposed skill development plan.

2.7 Data Analysis Techniques

The data were analyzed using appropriate descriptive and inferential statistical tools. Frequency counts and percentages were employed to describe the demographic profiles of the respondents and summarize the distribution of learners' competency performance. General averages were used to determine the overall level of learners' skill development in Garments Technology. Weighted mean was utilized to assess the level of availability of TESDA-based tools and materials, while standard deviation was applied to determine the variability and consistency of responses. To examine the relationship between the availability of instructional resources and learners' skill development, the Spearman Rank-Order Correlation Coefficient (Spearman's rho) was employed. These statistical techniques enabled the researcher to answer the research questions, test the study hypothesis, and derive valid conclusions regarding the relationship between resource availability and learners' competency development in TLE–Garments Technology.

3. Results and Discussion

3.1 Availability of TESDA-Based Tools and Materials

3.1.1 Teachers' Assessment of Tool Availability

The teachers generally rated the availability of tools in Garments Technology as moderately sufficient, functional, and accessible. Among the tool categories, pinning and sewing tools received the highest assessment, while sewing machines, measuring tools, and marking tools were rated only moderately sufficient. Teachers perceived that available sewing machines generally met TESDA requirements but indicated that the quantity of available units was only moderately adequate for learners' needs. These findings suggest that although essential tools were available, improvements are still necessary to maximize learners' opportunities for practical training. Adequate tools are critical in technical-vocational education because they support competency-based instruction and skills acquisition. This observation supports the findings of Hattie (2023), Hayahay and Estrada (2026), and Mwangunga and Kitainge (2024), who emphasized the importance of instructional resources and equipment in enhancing learning experiences and practical competency development.

3.1.2 Teachers' Assessment of Material Availability

Teachers assessed the availability of materials as moderately sufficient, functional, and accessible. Pressing and finishing equipment received the highest rating, while fabric materials obtained the lowest assessment. Thread supplies and learning resources were also perceived as only moderately sufficient for instructional and laboratory activities. The findings indicate that material-related resources require further enhancement, particularly fabric supplies used during practical activities. Adequate instructional materials allow learners to participate actively in laboratory work and acquire technical competencies. This finding is consistent with Diao et al. (2024), Cabero-Almenara et al. (2023), and Ancho and Arrieta (2024), who highlighted the importance of instructional resources in improving technical-vocational education and supporting effective teaching practices.

3.1.3 Overall Availability of Tools and Materials

The overall assessment of teachers showed that tools and materials were moderately sufficient, functional, and accessible. Tools received a slightly higher rating than materials, indicating that equipment availability was generally better than the availability of consumable resources. This result suggests that while the school possesses

the essential resources needed for Garments Technology instruction, continued provision of materials and equipment remains necessary. The adequacy of instructional resources directly contributes to the effectiveness of competency-based instruction and practical learning opportunities. This observation is supported by Ancho and Arrieta (2024), who emphasized the role of learning facilities and instructional resources in promoting quality technical-vocational education.

3.2 Learners' Assessment of TESDA-Based Tools and Materials

3.2.1 Availability of Tools

Learners generally perceived the tools used in Garments Technology as sufficient, functional, and accessible. Pinning and sewing tools received the highest assessment, particularly hand-sewing needles, while specialized tools such as pinking shears received relatively lower ratings. Sewing machines, measuring tools, cutting tools, and marking tools were all rated as sufficiently available. The findings indicate that learners had adequate access to the tools necessary for practical garment-making activities. Access to these resources allowed learners to engage in hands-on experiences, improve technical competence, and practice required skills. This observation supports the findings of Li et al. (2022), Glock and Kunz (2005), Hadijah et al. (2022), and Limon (2023), who emphasized the importance of accessible and functional tools in developing technical competencies and improving vocational learning outcomes.

3.2.2 Availability of Materials

Learners likewise evaluated materials as sufficient, functional, and accessible. Learning resources received the highest rating, particularly digital learning materials and instructional resources aligned with TESDA standards. Fabric materials obtained the lowest rating, although they were still considered sufficient overall. Thread materials and pressing and finishing equipment also received positive assessments. The results suggest that learners generally benefited from the availability of instructional materials, although additional fabric resources could further improve hands-on learning experiences. Adequate learning resources support learners' understanding of concepts and enhance practical application of skills. This finding aligns with Bond et al. (2021), Kumar and Singh (2022), Sang and Hwang (2022), and Limon (2023), who emphasized that access to instructional resources enhances engagement, competency development, and skills acquisition in vocational education.

3.2.3 Overall Availability of Tools and Materials

Learners generally perceived the availability of tools and materials as sufficient, functional, and accessible. Tools received a slightly higher rating than materials, indicating that equipment resources were more readily available than consumable materials. This finding demonstrates that the instructional environment generally supported competency-based learning in Garments Technology. Continued maintenance and provision of resources can further strengthen practical instruction and sustain the quality of learning experiences. The finding suggests that adequate instructional resources enhance the effectiveness of technical-vocational education and support the attainment of learning competencies.

3.3 Learners' Skill Development in Garments Technology

3.3.1 Drafting and Cutting Patterns

Learners demonstrated a proficient level of performance in explaining the procedures for drafting and cutting patterns. Although many learners remained at the developing level, none were classified at the beginning level, indicating that all respondents possessed at least a basic understanding of the competency. The result indicates that learners have acquired satisfactory knowledge and understanding of pattern drafting and cutting procedures. Continued practice and structured instruction can further improve mastery of this competency. The finding supports Hattie (2023), who emphasized that continuous practice, feedback, and opportunities for skill application enhance learner competency development.

3.3.2 Preparing and Cutting Fabric

Learners achieved a proficient level of performance in discussing the procedures for preparing and cutting fabric. Nearly half of the respondents were classified at the developing level, while only a small proportion remained at the beginning level. This result suggests that learners possess a reasonable understanding of fabric preparation and cutting procedures but still require additional instructional support and practical exposure. Consistent practice and guided learning activities are important in improving competency development. This finding is likewise supported by Hattie (2023), who highlighted the importance of well-structured instruction and frequent practice in promoting learning achievement.

3.3.3 Assembling Upper Garments

Learners demonstrated a developing level of performance in explaining the procedures for assembling upper garments. Most respondents were classified at the developing level, and none were classified at the beginning level. The result indicates that assembling upper garments remains the most challenging competency among the three assessed areas. The complexity of garment assembly may require additional practical experiences, demonstrations, and guided instruction to achieve the desired competency level. This finding supports Hattie

(2023), who noted that competency development is strengthened through continuous practice, effective feedback, and quality instruction.

3.3.4 Overall Learner Performance

Across all assessed competencies, learners achieved an overall proficient level of performance. While most learners were classified at the developing level, none were categorized at the beginning level, indicating that all learners demonstrated at least basic competency in Garments Technology. These findings suggest that learners have generally acquired the expected competencies in Garments Technology, although opportunities for further skill enhancement remain necessary. The result is consistent with Alta et al. (2023), who emphasized that competency-based learning and meaningful learning activities contribute to improved knowledge acquisition and skill development.

3.4 Issues and Concerns Encountered

3.4.1 Teachers' Issues and Concerns

Teachers reported that issues and concerns in teaching Garments Technology were sometimes encountered. The most common difficulties involved the inadequate supply of fabrics and threads and budget constraints for materials and equipment. Overcrowded classes were identified as the least common concern. These findings indicate that resource-related concerns remain the primary challenge affecting the implementation of Garments Technology instruction. Limited consumable materials and financial constraints may restrict practical learning experiences and competency development. This observation is consistent with Dordas and Accad (2025), who reported that TLE teachers commonly encounter challenges associated with inadequate instructional resources and technical support.

3.4.2 Learners' Issues and Concerns

Learners also reported that issues and concerns were sometimes encountered. The insufficient number of sewing machines emerged as the most common problem, while difficulty in meeting TESDA competency standards was identified as the least common concern. The findings suggest that although learners generally have access to learning resources, equipment shortages may occasionally limit participation in practical activities. Adequate equipment and learning facilities are essential in enabling learners to gain meaningful hands-on experiences and develop technical competencies. This finding supports Dordas and Accad (2025), who emphasized the importance of instructional resources in promoting competency development within Technology and Livelihood Education.

3.5 Relationship Between Resource Availability and Learners' Skill Development

The analysis revealed a very strong positive relationship between the availability of TESDA-based tools and materials and learners' skill development in TLE–Garments Technology. The statistical results showed that the relationship was significant, leading to the rejection of the null hypothesis. Learners with greater access to tools, materials, learning resources, and equipment demonstrated higher levels of competency development. This finding confirms that adequate instructional resources are critical determinants of learners' skill development in Garments Technology. Access to functional and sufficient tools and materials allows learners to engage in repeated practice, apply theoretical concepts, and strengthen technical competencies. The result is consistent with Alta et al. (2023), which emphasized that meaningful learning experiences supported by adequate resources contribute significantly to improved learning outcomes and competency development.

4. Conclusion & Recommendations

The study concluded that the availability of TESDA-based tools and materials was significantly related to learners' skill development in TLE–Garments Technology. Adequate tools, materials, learning resources, and equipment provided learners with greater opportunities to participate in practical activities and develop the competencies required in garment technology. Although the resources were generally available and learners demonstrated a proficient level of performance, the concerns raised by both teachers and learners indicate the need to further improve the provision of consumable materials and instructional equipment to strengthen the implementation of TLE–Garments Technology and enhance learners' skill development.

It is recommended that the proposed Skill Development Plan be implemented to provide learners with meaningful opportunities to strengthen their practical skills, improve their competencies in TLE–Garments Technology, and achieve better learning outcomes. The plan should be utilized to support the effective delivery of competency-based instruction and to address identified areas requiring further development, particularly in practical garment-making competencies.

5. Compliance with ethical standards

Ethical approval to conduct the study was obtained from the administration of Cangawa National High School prior to data collection. Participation of both teacher- and learner-respondents was voluntary, and informed consent was secured before the administration of the research instrument. Respondents were assured of the confidentiality and anonymity of their responses, and all information collected was used solely for academic and research purposes. The researcher declares no conflict of interest and confirms that the study received no external funding.

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