International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue. 6, Nov-Dec 2026, page no. 01-17

To cite this article: Niña R. Andoy and Anabelle T. Pantaleon (2026). TECHNICAL SELF-EFFICACY AND CERTIFICATION READINESS OF NON-VOCATIONAL APPAREL AND FASHION TECHNOLOGY STUDENTS IN PHILIPPINE HIGHER EDUCATION, International Journal of Applied Science and Engineering Review (IJASER) 7 (6): 01-17 Article No. 304 Sub Id 446

TECHNICAL SELF-EFFICACY AND CERTIFICATION READINESS OF NON-VOCATIONAL APPAREL AND FASHION TECHNOLOGY STUDENTS IN PHILIPPINE HIGHER EDUCATION

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DOI: https://doi.org/10.52267/IJASER.2026.7601

ABSTRACT

Competency-based technical education prepares industrial technology students for national workforce certification. National workforce certification under TESDA Dressmaking NC II requires high precision and independent execution during practical garment evaluation. Practical garment evaluation challenges college learners who enter the program without prior vocational preparation in Senior High School. To diagnose these learning obstacles, this study assessed the baseline technical self-efficacy and certification readiness of non-vocational entrants. A total enumeration of 65 sophomore Apparel and Fashion Technology students at North Eastern Mindanao State University completed a validated structured questionnaire. The survey results showed a moderate level of technical self-efficacy across eight competency dimensions with an average weighted mean of 2.57. This moderate self-efficacy showed particular weaknesses in applying quality standards at 2.33 and sewing casual apparel at 2.45. These technical weaknesses corresponded with low perceived certification readiness, which obtained an overall grand mean of 2.51. Perceived readiness dropped to its lowest point in the psychomotor domain at 2.34, followed by the cognitive domain at 2.39, while the affective domain reached 2.81. These diagnostic findings confirm that high student motivation cannot compensate for hands-on skill deficits without direct workshop interventions. Technical instructors must therefore integrate deliberate stitching practice and quality inspection rubrics into early laboratory courses.

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

KEYWORDS: TVET, Apparel and Fashion Technology, Technical Self-Efficacy, Assessment Readiness, Dressmaking NC II, Non-Vocational Learners

1. INTRODUCTION

Technical and vocational education drives economic progress and industrial workforce development in developing nations. Industrial workforce development in the Philippines depends on competency standards established under Republic Act No. 7796, known as the TESDA Act of 1994. The TESDA Act of 1994 mandates national competency assessments to verify that college learners acquire the practical skills required by industry. Industry requirements in the garment sector demand credentials such as the Dressmaking NC II qualification, which provides technical graduates with superior employment opportunities and stable wages (Brown et al., 2024, Soliz, 2023). These career advantages remain out of reach for learners who fail their initial competency assessment and must repeat the practical examination. Repeating the practical examination creates instructional delays, increases training costs, and strains institutional laboratory resources.

Institutional laboratory resources face heavy demands when state universities admit students from non-vocational Senior High School backgrounds into technical specializations. Technical specializations such as the Bachelor of Industrial Technology major in Apparel and Fashion Technology at North Eastern Mindanao State University enroll many students from academic strands, including HUMSS, GAS, and STEM. Students from academic strands enter college laboratory courses without previous experience in pattern drafting, sewing machine operation, or garment assembly. Garment assembly and machine operation require high manual dexterity, procedural precision, and sustained confidence under time constraints. Time constraints and unfamiliar industrial machinery trigger test anxiety, causing novice students to struggle during complex construction procedures (Nwadi et al., 2025, Theobald et al., 2022). Complex construction procedures expose deep foundational gaps that traditional classroom lectures cannot resolve.

Traditional classroom lectures often assume that all college entrants possess equivalent vocational readiness, leaving curriculum planners without empirical measures of learner capability. Empirical measures of learner capability in technical education frequently focus on general employability or engineering trades rather than garment manufacturing (Ahmad et al., 2023). Garment manufacturing studies rarely measure technical self-efficacy across specific TESDA competency dimensions, creating a significant literature gap regarding learner confidence in higher technical education (Leyson & Leyson, 2025, Merillo et al., 2025). Higher technical education also lacks comprehensive baseline data showing how non-vocational students evaluate their certification readiness across psychomotor, cognitive, and affective domains. The absence of baseline domain data prevents state universities from designing targeted

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

bridging interventions that address specific student difficulties before national testing takes place.

To address this empirical and instructional gap, this study investigated the baseline technical self-efficacy and certification readiness of non-vocational Apparel and Fashion Technology sophomores. Non-vocational Apparel and Fashion Technology sophomores at North Eastern Mindanao State University - Cantilan Campus participated in a descriptive cross-sectional evaluation using a total enumeration of 65 students. The descriptive evaluation analyzed self-efficacy across eight official TESDA competency units alongside perceived preparedness across the psychomotor, cognitive, and affective readiness domains. These diagnostic findings offer vital empirical evidence to guide TVET instructors and campus administrators in developing responsive bridging activities aligned with Commission on Higher Education guidelines. Responsive bridging activities aligned with Commission on Higher Education guidelines strengthen practical mastery, reduce assessment failures, and support the successful transition of non-vocational learners into certified garment professionals.

2. LITERATURE REVIEW

2.1 Competency-Based Education and Practical Mastery in TVET

Competency-based education centers instruction on demonstrated occupational performance rather than instructional seat time (Spady, 1994). Demonstrated occupational performance requires vocational learners to satisfy industry benchmarks established by training authorities such as TESDA. In garment technology, these training regulations prescribe specific operational standards for pattern drafting, fabric cutting, and machine stitching (Leyson & Leyson, 2025). Meeting operational standards requires progressive skill development, which the Dreyfus Model of Skill Acquisition describes as advancing from novice execution toward competent performance through deliberate practice (Benner, 1984, Dreyfus & Dreyfus, 1986). Deliberate practice enables students to transform theoretical explanations into reliable physical routines within workshop environments (Fowler, 2008). Physical routines developed in campus laboratories simulate workplace conditions, yet non-vocational entrants often struggle to achieve acceptable accuracy without sustained foundational guidance (Merillo et al., 2025).

2.2 Technical Self-Efficacy and Garment Construction Performance

Foundational guidance in technical workshops shapes students' beliefs regarding their practical capabilities. Bandura (1997) defined these capability beliefs as self-efficacy, which determines how much effort individuals exert and how long they persist when encountering difficult technical tasks. In technical-vocational trades, technical self-efficacy influences how learners handle industrial equipment and execute complicated workshop exercises (Liu et al., 2021, Zhao et al., 2021). Complicated workshop exercises provide learners with mastery experiences, which Bandura identified as the primary source of self-efficacy. Mastery experiences in garment manufacturing involve operating industrial sewing machines,

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

managing fabric grainlines, and executing precise seam allowances (Myers & Eike, 2020). When students experience recurring success in executing these basic operations, their technical confidence increases and lowers their fear of practical failure (Chuang et al., 2022). Low fear of practical failure encourages learners to work independently, while low technical confidence causes hesitation and reliance on constant instructor intervention (Tentama et al., 2019).

2.3 Multidimensional Assessment Readiness and Transition Deficits

Constant instructor intervention highlights the distinction between routine classroom practice and formal competency assessment. Formal competency assessment in Philippine TVET requires comprehensive readiness across psychomotor, cognitive, and affective domains. The psychomotor domain demands physical speed, precision, and tool handling to produce wearable garments within a strict four-hour testing limit (Leyson & Leyson, 2025). A strict four-hour testing limit also tests the cognitive domain, which requires trainees to interpret measurement charts, understand assembly sequences, and troubleshoot sewing machine errors (Misbah et al., 2020, Qi et al., 2026). Understanding assembly sequences and operating machinery must be supported by the affective domain, which encompasses motivation, composure under evaluation pressure, and resilience when sewing errors occur (Cao & Han, 2024, Syakina et al., 2025). These three readiness domains develop unevenly among students who graduate from academic Senior High School strands (de Groot & Opdenakker, 2026). Academic Senior High School graduates possess general study skills, yet their lack of prior workshop drills leaves them unprepared for the psychomotor demands of national certification (Abao et al., 2025, Maloto, 2025).

3. METHODS

3.1 Research Design

This study used a descriptive survey research design to examine learner capabilities. Descriptive survey research designs evaluate existing educational conditions and student perceptions without introducing experimental treatments (Creswell & Creswell, 2018). Evaluating student perceptions without introducing experimental treatments allows researchers to document baseline competencies across technical domains. Documenting baseline competencies across technical domains establishes an empirical diagnostic reference for technical educators. Technical educators can use this empirical diagnostic reference to identify specific curriculum gaps and guide instructional improvements prior to formal certification testing.

3.2 Research Setting and Participants

Instructional improvements require an authentic training environment equipped for vocational assessment. The study took place at North Eastern Mindanao State University - Cantilan Campus in the province of Surigao del Sur, Philippines. The Cantilan campus houses the Department of Industrial Technology, which

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

maintains a specialized Garment Technology Laboratory featuring industrial lockstitch sewing machines, overlock machines, cutting tables, and pattern drafting facilities. These specialized laboratory facilities support sophomore students enrolled in the Bachelor of Industrial Technology major in Apparel and Fashion Technology during Academic Year 2026-2027. Sophomore students in this degree program represented the target population because they prepare directly for the TESDA Dressmaking NC II national assessment. Because the total cohort of sophomore students entering from non-vocational Senior High School strands comprised 65 individuals, the study employed total enumeration. Total enumeration involves surveying every eligible member of the target population, which eliminates sampling bias and ensures full representation of the learner group (Creswell & Creswell, 2018). Full representation of the learner group across both class sections appears in Table 1.

Table 1: Distribution of Research Participants

Campus Section	*Academic Year Level*	*Number of Participants*	*Percentage (%)*
Section A	Second Year	33	50.8
Section B	Second Year	32	49.2
Total		135	100.0

3.3 Research Instruments

Presenting participant distribution across class sections establishes the scope for administering the research instrument. The study utilized a structured survey questionnaire adapted from Bandura's (1997) Self-Efficacy Theory and the official TESDA Dressmaking NC II Training Regulations. Official TESDA Dressmaking NC II Training Regulations provided the foundational indicators for the Technical Self-Efficacy Scale and the NC II Readiness Scale. The Technical Self-Efficacy Scale evaluated student confidence across eight core competency units using a five-point Likert scale ranging from 1 for Not at All Confident to 5 for Completely Confident. The NC II Readiness Scale assessed student preparedness across psychomotor, cognitive, and affective domains using a corresponding five-point Likert scale ranging from 1 for Not Ready at All to 5 for Highly Ready. To confirm that each questionnaire item measured its intended construct accurately, a panel of two TVET experts and three garment technology specialists conducted content validation. Content validation confirmed that all indicators aligned with national assessment standards, after which the researchers performed a pilot test to determine internal consistency reliability. Internal consistency reliability testing produced Cronbach alpha values above 0.80 across all dimensions, confirming that the measurement tool generated stable and dependable scores.

3.4 Data Collection Procedure

Generating dependable scores required systematic administrative procedures carried out across three sequential phases. During the preliminary phase, the researchers secured official transmittal approvals

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

from the university administration and coordinated with department faculty members. Coordinating with department faculty members ensured that questionnaire distribution did not interfere with regular laboratory classes. During the data gathering phase, the researchers distributed printed questionnaires to all 65 students inside the Garment Technology Laboratory. Inside the Garment Technology Laboratory, the researchers explained the purpose of the study and administered an informed consent form to ensure voluntary participation. Ensuring voluntary participation protected respondent rights and complied fully with institutional research ethics standards. During the post-gathering phase, the researchers collected completed survey forms, verified each submission for complete answers, and organized the raw data into an electronic database for statistical processing.

3.5 Data Analysis

Statistical processing involved descriptive analyses computed through IBM SPSS version 23. Using IBM SPSS version 23, the researchers calculated frequency counts and percentage distributions to describe the demographic characteristics of the participants. The researchers also computed weighted means and standard deviations to assess the level of technical self-efficacy across eight competency dimensions and the level of assessment readiness across three domains. To interpret the calculated weighted means accurately, the study established standardized scoring intervals and qualitative descriptors. Standardized scoring intervals and qualitative descriptors applied to evaluate both research constructs appear in Table 2.

Table 2: Scoring Criteria and Interpretation

Scale	*Categorical Range*	*Verbal Description (Self-Efficacy)*	*Verbal Description (Readiness)*	*Qualitative Interpretation*
5	4.50 to 5.00	Completely Confident	Highly Ready	Competency is mastered beyond national standards with independent execution
4	3.50 to 4.49	Very Confident	Ready	Competency meets national standards with minimal supervision
3	2.50 to 3.49	Moderately Confident	Slightly Ready	Competency is developing but requires frequent guidance
2	1.50 to 2.49	Slightly Confident	Not Ready	Competency shows limited execution and fails to meet minimum requirements
1	1.00 to 1.49	Not at All	Not Ready at All	Competency demonstrates no

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

		Confident		visible mastery or independent ability

4. RESULTS

4.1 Demographic Profile of Participants

Standardized scoring criteria provided the baseline for analyzing the gathered demographic characteristics. The demographic characteristics captured the educational background and household resources of the 65 sophomore participants. Table 3 presents the frequency and percentage distribution of the student profile.

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

Table 3: Demographic Profile of Participants

Variable	*Category*	*Frequency*	*Percentage (%)*
Age	18 to 19 years old	46	71.0
	20 to 21 years old	12	18.0
	22 years old and above	7	11.0
	Total	**65**	**100.0**
Gender	Male	13	20.0
	Female	52	80.0
	Total	**65**	**100.0**
Senior High School Track	HUMSS	23	35.0
	GAS	14	22.0
	STEM	8	12.0
	TVL (Non-Garments)	20	31.0
	Total	**65**	**100.0**
Prior TVL Garment Subject	None	65	100.0
	Total	65	100.0
Access to Sewing Machine at Home	Yes	14	22.0
	No	51	78.0
	Total	**65**	**100.0**
Monthly Family	Less than ₱10,957	48	74.0

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

Income			
	₱10,958 to ₱21,914	13	20.0
	₱21,915 to ₱43,828	4	6.0
	Total	**65**	**100.0**

As displayed in Table 3, the age distribution indicates that a large majority of respondents were 18 to 19 years old, comprising 46 students or 71.0 percent. This younger age group was followed by participants aged 20 to 21 years old at 18.0 percent, while students aged 22 years old and above represented 11.0 percent. Representing learners at the early stage of technical specialization, this age concentration highlights an immediate transition into tertiary vocational coursework. Tertiary vocational coursework enrolled a predominantly female student body, where female learners accounted for 52 individuals or 80.0 percent, compared to 13 male learners representing 20.0 percent. Regarding secondary school preparation, respondents entered college from varied academic backgrounds, led by HUMSS with 23 students or 35.0 percent, TVL non-garment strands with 20 students or 31.0 percent, GAS with 14 students or 22.0 percent, and STEM with 8 students or 12.0 percent. Despite these varied academic backgrounds, every respondent reported having zero prior exposure to TVL garment-related coursework in Senior High School. Zero prior exposure to garment coursework was compounded by household resource limitations, where 51 participants or 78.0 percent reported having no sewing machine at home. Lacking sewing machines at home coincided with economic constraints, as 48 respondents or 74.0 percent came from households earning less than ₱10,957 per month. Households earning less than ₱10,957 per month find it difficult to purchase private equipment, forcing learners to rely entirely on campus facilities for skills practice.

4.2 Construct Evaluation Results

4.2.1 Technical Self-Efficacy

Technical capabilities were measured across eight competency dimensions derived from national training standards. Table 4 summarizes the weighted means, standard deviations, and verbal interpretations for technical self-efficacy.

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

Table 4: Levels of Technical Self-Efficacy across Competency Dimensions

Dimension Code	*Competency Dimension*	*Weighted Mean*	*Standard Deviation*	*Verbal Interpretation*
TSE1	Carry out measurements and calculations	2.64	0.90	Moderately Confident
TSE2	Set up and operate machines	2.55	0.97	Moderately Confident
TSE3	Perform basic maintenance	2.70	1.11	Moderately Confident
TSE4	Apply quality standards	2.33	0.87	Slightly Confident
TSE5	Draft and cut patterns	2.53	1.02	Moderately Confident
TSE6	Prepare and cut materials	2.61	1.01	Moderately Confident
TSE7	Sew casual apparel	2.45	0.95	Slightly Confident
TSE8	Apply finishing touches	2.67	1.06	Moderately Confident
	Summary Weighted Mean	2.56	0.99	Moderately Confident

The descriptive findings in Table 4 show that technical self-efficacy obtained a summary weighted mean of 2.56 with a standard deviation of 0.99, interpreted as Moderately Confident. This Moderately Confident rating reveals that students feel somewhat capable of performing dressmaking tasks but continue to require frequent instructor guidance. Among the eight competency dimensions, performing basic maintenance obtained the highest weighted mean of 2.70, followed by applying finishing touches at 2.67 and carrying out measurements and calculations at 2.64. Performing basic maintenance scored relatively high because students felt confident cleaning sewing equipment after use at 3.12, although independent preventive maintenance dropped to 2.15. In contrast to maintenance tasks, applying quality standards recorded the lowest evaluation across all dimensions, yielding a weighted mean of 2.33 with a standard deviation of 0.87. This low-quality score reflects difficulty in evaluating whether garments meet formal certification criteria, which registered a low mean of 2.18. A similar hands-on deficit emerged in sewing casual apparel, which obtained the second lowest mean of 2.45. Within casual garment construction, completing an entire

International Journal of Applied Science and Engineering Review

IJASER

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

garment within the prescribed time limit recorded a low score of 2.31, proving that complex assembly under time constraints challenges non-vocational learners.

4.2.2 Perceived NC II Assessment Readiness

Time constraints and assembly challenges directly influence how students perceive their certification readiness. Perceived certification readiness was evaluated across psychomotor, cognitive, and affective domains. Table 5 presents the descriptive statistics for national competency readiness.

Table 5: Levels of Perceived Assessment Readiness across Domains

Domain Code	*Assessment Readiness Domain*	*Weighted Mean*	*Standard Deviation*	*Verbal Interpretation*
AR1	Psychomotor Readiness	2.34	0.86	Not Ready
AR2	Cognitive Readiness	2.39	0.92	Not Ready
AR3	Affective Readiness	2.81	0.87	Slightly Ready
	Grand Mean	**2.51**	**0.88**	**Slightly Ready**

As demonstrated in Table 5, national competency readiness achieved an overall grand mean of 2.51 with a standard deviation of 0.88, corresponding to a Slightly Ready interpretation. A Slightly Ready interpretation indicates that student competencies are developing but remain below official TESDA benchmarks. Among the three readiness domains, affective readiness achieved the highest evaluation with a weighted mean of 2.81 and a standard deviation of 0.87. This higher affective rating was driven by strong student belief that continuous practice improves competence at 3.62 and a willingness to accept corrections at 3.48. In sharp contrast to these positive attitudes, psychomotor readiness recorded the lowest evaluation with a weighted mean of 2.34 and a standard deviation of 0.86. Low psychomotor readiness showed that students struggled with manual dexterity, where possessing the manual skill to pass the practical test scored a low mean of 2.12. Cognitive readiness similarly revealed a learning deficit, obtaining a weighted mean of 2.39 with a standard deviation of 0.92. This cognitive deficit was marked by difficulty in integrating theoretical knowledge into actual production tasks at 2.22 and troubleshooting technical problems at 2.29. These descriptive findings prove that while non-vocational learners possess the motivation to learn, they lack the physical speed and diagnostic knowledge required for certification.

5. DISCUSSION

5.1 The Quality Standards Deficit and Evaluative Literacy

The survey findings demonstrate that students struggle most when applying formal quality standards to garment construction tasks. Garment construction tasks demand precise seam tolerances and defect recognition, yet participants recorded their lowest technical self-efficacy score in evaluating whether garments meet national requirements. Evaluating whether garments meet national requirements requires assessment literacy, which involves understanding the exact criteria that examiners use during technical

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

evaluations (Caretta-Weyer et al., 2024, Stiggins, 1995). Technical evaluations in Philippine vocational schools often suffer when instructors emphasize physical sewing drills while keeping assessment scoring sheets private (Budiastuti et al., 2023, Sims & Cilliers, 2023). Keeping assessment scoring sheets private creates assessment blindness, leaving students unsure about how examiners detect minor stitching errors and assign point deductions. Point deductions during practical dressmaking examinations occur when seam lines waver or garment components fail alignment checks (TESDA, n.d.). Alignment checks and dimensional tolerances require trainees to develop criterion-referenced self-assessment skills alongside basic stitching routines (Leyson & Leyson, 2025). Developing criterion-referenced self-assessment skills enables learners to inspect their own work critically before presenting completed garments for evaluation (Budiastuti et al., 2023). Completed garments that satisfy industrial criteria reflect a deep understanding of quality benchmarks, proving that technical self-efficacy requires evaluative knowledge alongside physical speed.

5.2 Household Equipment Scarcity and the Practical Practice Bottleneck

Evaluative knowledge and physical speed depend heavily on frequent access to industrial equipment and repeated workshop practice. Repeated workshop practice remains severely restricted for students who lack sewing machines in their homes. In the present study, more than three-quarters of the participants reported having no household access to sewing machinery. Having no household access to sewing machinery reflects broader socioeconomic conditions in regional Philippine communities, where low family incomes restrict spending on private vocational equipment (Gervacio, 2025, Santos & Cruz, 2021). Private vocational equipment remains unaffordable for rural families in Mindanao who live below regional income thresholds (Dizon & Lee, 2023, Reyes et al., 2022). Regional income thresholds force vocational trainees to depend entirely on scheduled campus laboratory hours to develop basic motor dexterity (Capulong, 2026, Maloto, 2025). Depending entirely on scheduled campus laboratory hours creates a practice deficit, because mastering complex garment assembly requires continuous, distributed repetition across several weeks (Bandura, 1997, Fowler, 2008). Continuous distributed repetition provides the essential mastery experiences that build technical confidence and eliminate physical hesitation (Power et al., 2025). Eliminating physical hesitation becomes difficult when students must share institutional machines, leading to instructional backlogs and restricted practice time (Abao et al., 2025, Merillo et al., 2025). Restricted practice time ultimately limits psychomotor skill acquisition, leaving non-vocational college learners vulnerable during timed certification assessments.

5.3 The Affective-Psychomotor Divide in Technical Certification

Timed certification assessments create an acute performance divide between student motivation and practical execution. Practical execution recorded low readiness scores in both psychomotor and cognitive domains, contrasting sharply with high student scores in affective readiness. High student scores in affective readiness indicate that non-vocational entrants possess strong learning motivation and an exceptional willingness to accept instructional corrections. An exceptional willingness to accept

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

instructional corrections confirms that students value continuous improvement and desire technical certification (Chuang et al., 2022, Syakina et al., 2025). Desiring technical certification cannot compensate for insufficient manual speed and weak construction knowledge on examination day (Theobald et al., 2022). Examination day requires learners to operate machinery safely, execute complex pattern layouts, and finish wearable garments within four hours (Leyson & Leyson, 2025). Finishing wearable garments within four hours induces severe testing pressure, which quickly overwhelms learners who lack deep procedural automaticity (Nwadi et al., 2025, Qi et al., 2026). Deep procedural automaticity develops through structured bridging courses that combine guided fault-correction exercises with transparent scoring rubrics (Pauig, 2024, Temple, 2022). Transparent scoring rubrics and deliberate bridging exercises allow technical colleges to bridge the affective-psychomotor gap, transforming motivated learners into fully certified garment technicians.

6. CONCLUSION

Sophomore apparel and fashion technology students from non-vocational backgrounds enter higher technical education with high motivation but low physical readiness. Low physical readiness is evidenced by low scores in psychomotor skills and quality evaluation, which prevent students from meeting TESDA Dressmaking NC II standards. Meeting TESDA Dressmaking NC II standards requires learners to operate industrial sewing machinery, execute precise garment assembly, and recognize structural defects independently. Recognizing structural defects independently becomes difficult when learners lack previous vocational training in Senior High School and lack sewing machines at home. Lacking sewing machines at home forces trainees to rely entirely on limited campus laboratory hours, creating persistent gaps in technical self-efficacy. Persistent gaps in technical self-efficacy demonstrate that positive student attitude alone cannot guarantee successful national certification. Successful national certification requires technical colleges to provide structured, criterion-referenced bridging programs before students undergo official competency evaluation.

7. RECOMMENDATIONS

Providing structured bridging programs requires practical action from technical instructors, institutional leaders, and curriculum planners. Technical instructors must incorporate explicit TESDA scoring rubrics and quality evaluation checklists into early laboratory sessions. Early laboratory sessions should include deliberate defect-detection exercises to help trainees distinguish between acceptable and substandard seam allowances. Distinguishing acceptable seam allowances should be reinforced through timed garment construction drills that prepare students for four-hour examination limits. Preparing students for four-hour examination limits also demands institutional intervention from campus administrators. Campus administrators must expand evening and weekend laboratory access to compensate for the severe shortage of home sewing equipment. Expanding laboratory access enables students from low-income households to complete the repetitive practice required for motor mastery. Repetitive practice required for motor mastery should guide curriculum developers to integrate formal non-credit bridging modules for

ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

academic-track entrants. Academic-track entrants who complete structured bridging modules will gain the technical confidence needed to pass national certification on their first attempt. Passing national certification on the first attempt reduces family financial burdens and fulfills the workforce mandate of Republic Act No. 7796. Fulfilling the workforce mandate of Republic Act No. 7796 provides a strong basis for future researchers to conduct longitudinal investigations into the impact of bridging interventions on technical certification rates across Philippine state universities.

ACKNOWLEDGEMENT

The authors express sincere gratitude to the faculty members and sophomore students of the Bachelor of Industrial Technology major in Apparel and Fashion Technology at North Eastern Mindanao State University - Cantilan Campus. These individuals participated generously and contributed valuable empirical data to this research. The authors also thank the university leadership and the Department of Industrial Technology for granting administrative approvals and providing access to the Garment Technology Laboratory facilities. The cooperation of all academic stakeholders made the successful completion of this investigation possible.

ETHICAL STATEMENT

This study strictly observed the research ethics guidelines established by the North Eastern Mindanao State University Research and Development Office. The research protocol complied with institutional ethics standards approved under Protocol Reference Number NEMSU-RDO-2026-10. The researchers obtained signed informed consent forms from all participants prior to survey administration. Participant confidentiality and anonymity were protected throughout data collection, encoding, and statistical analysis. All research procedures conformed to national and international ethical research standards for higher education institutions.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no financial, commercial, or personal relationships that could influence the conduct or reporting of this research. No external commercial organization or funding body dictated the design, analysis, or interpretation of the findings. The researchers conducted the investigation with complete academic independence.

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ISSN: 2582-6271

Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

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Vol. 7, Issue.6, Nov-Dec 2026, page no. 01-17

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