Development of the Trainer's Methodology Workbook for Bachelor of Technical and Vocational Teacher Education Students

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Abstract

Many BTVTEd students encounter difficulties in demonstrating the required core competencies under Trainer's Methodology I (TM I), particularly in hands-on tasks such as assessment, facilitation, and work-based learning supervision. Addressing these gaps is essential to improve the preparedness of future vocational educators.

This study assessed the perceived level of core competencies in TM I among BTVTEd students of Southern Luzon State University – Dual Training and Learning Center. It focused on six key areas: planning training sessions, facilitating sessions, supervising work-based learning, conducting competency assessments, maintaining training facilities, and utilizing electronic media in training. The study also examined differences in perceived competency levels based on sex, year level, and area of specialization. In addition, it aimed to develop and evaluate a workbook to enhance students' competencies and support learning outcomes.

A descriptive-developmental research design was employed. A total of 158 BTVTEd students from SLSU-Lucena Campus were selected through total population sampling. Six expert validators were purposively chosen to evaluate the instructional material. Data collection tools included a researcher-adapted questionnaire and a standardized evaluation checklist. Statistical methods used were frequency, percentage, weighted mean, independent t-test, and one-way ANOVA.

Results indicated generally low perceived competency levels, especially in developing assessment tools, monitoring training activities, and maintaining facilities. No significant differences were found based on sex and year level, while specialization showed a significant effect. The workbook was rated effective, with recommendations for improvement in hands-on tasks and instructional alignment.

Keywords: core competency, workbook, instructional material, Trainer's Methodology

1. Introduction

Vocational education teacher training prepares individuals to teach in career-focused fields. While this training varies globally, effective TVET (Technical and Vocational Education and Training) teachers must combine strong pedagogical and industry-specific skills to meet evolving job market demands [53]. Rapid technological advancements and the COVID-19 pandemic have further emphasized the need for TVET trainers to remain adaptable and continually upskill (Minghat et al., 2023).

Globally, countries face unique challenges in TVET. Germany addresses its skilled labor shortage by opening vocational training to underqualified youth. UNESCO stresses the need to upskill trainers to match labor market needs [48]. Indonesia's SMK revitalization (Presidential Instruction No. 9, 2016) and Malaysia's Education Blueprint 2013–2025 highlight issues such as outdated trainer skills and low student motivation.

In the Philippines, TVET has expanded through initiatives like the National Qualification Framework, unified registration systems, and DepEd Orders No. 40 series of 2021 [12] and No. 35 series of 2020 [13]. TESDA plays a key role in providing trainer development programs (RA 7796). However, challenges persist, including insufficient training, limited resources, and difficulties in integrating ICT into teaching [52, 42, 9].

Effective TVET instruction depends largely on teacher competency [3]. Technical

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Vocational Teacher Education programs aim to equip teachers with both instructional and industry skills. As UNESCO-UNEVOC notes, these educators are critical agents of change, essential to workforce skills development and achieving educational goals [50].

This study explored the importance of teacher competency training in Technical Vocational Teacher Education, emphasizing the dual role of TVET educators in improving vocational learning and addressing workforce needs.

2. Research Problems

The delivery of effective technical-vocational education requires instructors to possess not only content knowledge but also strong instructional competencies, especially in the framework of competency-based training. This study aimed to assess the perceived core competencies in Trainer's Methodology 1 (TM 1) among BTVTEd students at Southern Luzon State University – Dual Training and Learning Center. It seeks to identify gaps in essential training skills to improve student preparedness as future technical-vocational educators and to guide the development of more effective learning interventions.

This study aimed to assess the perceived level of core competencies in Trainer's Methodology 1 (TM 1) among BTVTEd students at Southern Luzon State University – Dual Training and Learning Center. It sought to determine the students' competencies in areas such as planning and facilitating training sessions, supervising work-based learning, conducting assessments, maintaining training facilities, and using electronic media. The study also examined differences in competencies based on gender, year level, and specialization. Based on the findings, it proposed supplementary training materials to enhance student competencies, which were evaluated for adequacy, appropriateness, coherence, and usefulness .

3. Methods and Materials
3.1 Research Methodology

This study utilized a descriptive-developmental educational research approach to design an alternative workbook that addresses the least-learned and least-practiced concepts and skills among BTVTEd students. Descriptive research was employed to determine the perceived level of students' core competencies in trainer's methodology through a checklist questionnaire.

3.2 Respondents of the Study

Two groups participated in the study: 159 BTVTEd students from SLSU Lucena Campus (44 fourth-year and 115 third-year students) and six expert validators (one instructional material specialist and five content experts) with Trainer's Methodology I and relevant teaching and training experience. The experts assessed the workbook based on adequacy, coherence, appropriateness, and usefulness.

3.3 Research Procedure

The study followed four phases.

Phase I involved securing informed consent and ethical clearance.

Phase II included data collection via a Google Forms questionnaire administered to third- and fourth-year students.

Phase III entailed organizing and analyzing data using descriptive, correlation, and inferential statistics.

Phase IV involved developing the workbook based on Training Regulations, which was then validated by experts, and revised according to their feedback for clarity and quality.

3.4 Data Analysis

Data were analyzed using frequency and percentage for respondents' profiles, and weighted mean for assessing training methodology levels and workbook quality. Independent Samples T-Test and One-Way ANOVA were used to determine significant differences across demographic groups, with a significance level of $p = 0.05$.

4. Results and Discussion

The following section presents the analyzed data and key findings based on the study's research problems.

Figure 1 showed that 64.2% (102) of the respondents are female, while 35.8% (57) are male, indicating a higher representation of female students in the BTVTEd program. This trend aligns with the NTESDP 2023–2028, which reported that 50.92% of TVET graduates in 2020 were female [54]. Similarly, studies by Roble [41] and Catangui [11] also found higher female enrollment in TVL and BTVTEd programs, often linked to the popularity of Home Economics specializations among women.
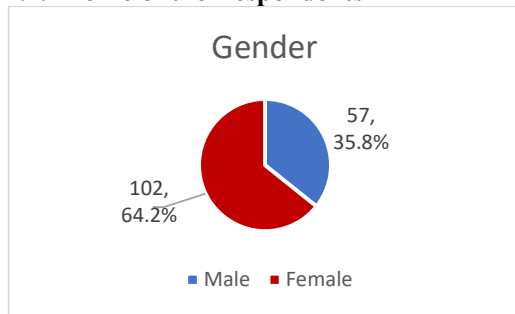
4.1. Profile of the Respondents

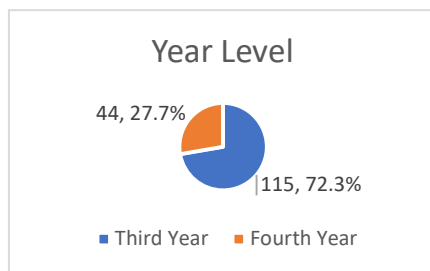**Figure 1.** Distribution of the Respondents by Gender

Figure 2. Distribution of the Respondents by Year Level

Figure 2 showed that 27.7% (44) of the respondents are fourth-year students, while 72.3% (115) are in their third year. This indicates that most respondents are still in the intermediate stage of their academic journey, which may explain lower exposure to core competencies in Trainer's Methodology I. Moreira-Choez [28] support this, noting that higher academic levels are linked to greater development of digital and complex thinking competencies, highlighting the role of academic progression in skill acquisition.

Figure 3 showed that most BTVTEd students specialize in Food Service Management (51.6%), followed by Computer Programming (18.9%). Other specializations—Electrical Technology (8.8%), Automotive Technology (8.2%), Electronics Technology (6.3%), and Civil Technology (6.3%)—have lower but relatively balanced enrollment. This suggests that students tend to choose fields like hospitality and IT, which are perceived to offer better job prospects. As noted by Schlott [55], students increasingly pursue vocational paths aligned with market demand, financial stability, and personal interest.
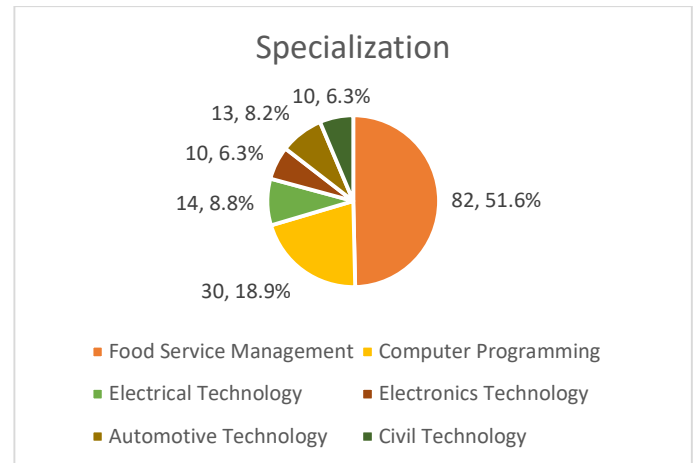

Figure 3. Distribution of the Respondents by Specialization

3. Recommendations

Based on the study's findings, several key recommendations emerge to enhance students' academic performance in postgraduate statistics. Improving student satisfaction should be a priority, as it is closely linked to motivation and engagement. This can be achieved through student-centered teaching methods, relevant course content, supportive classroom environments, and strong institutional support services. Instructors should foster inclusive and safe learning spaces where students feel a sense of belonging, which is crucial for maintaining high levels of satisfaction and academic persistence.

In addition, equipping students with strong computer literacy skills is essential, given the increasing reliance on statistical software in postgraduate studies. Institutions should offer training sessions and ensure access to technological resources. To build on prior academic knowledge, instructional strategies like anticipation guides can be used to help students activate and assess their understanding before tackling new content. While the study identified satisfaction, prior performance, and computer literacy as significant predictors, future research should explore other factors such as motivation, learning styles, and contextual influences to develop a more comprehensive model of academic success in statistics.

Table 1. Perceived Level of Students' Core Competencies in Trainer's Methodology 1 in terms of Plan Training Session

Indicators *When planning training session, I can…*	Mean	Standard Deviation	Verbal Interpretation
1. prepare instructional blueprint and learning engagement plan.	2.37	1.010	Low Competent
2. finalize session plan according to required format.	2.49	1.043	Low Competent
3. prepare clear and appropriate presentation materials.	2.49	1.078	Low Competent
4. identify and select suitable assessment methods appropriate with the learning outcome of a module.	2.38	1.118	Low Competent
5. prepare assessment instruments in accordance with the content and learning outcome.	2.38	1.146	Low Competent
Overall	2.42	.0984	Low Competent

Legend: 1.0-1.49 (Never/Not Competent); 1.50-2.49 (Rarely Low Competent); 2.50-3.49 (Sometimes/ Competent); 3.50-4.0 (Always/Highly Competent).

Table 1 showed that the students' perceived competency in planning training sessions falls within the Low Competent category, with mean scores ranging from 2.38 to 2.49. The highest scores (2.49) were in finalizing session plans and preparing presentation materials, indicating slight proficiency in these areas. The lowest scores (2.38) were in selecting assessment methods and preparing assessment instruments, suggesting difficulty in designing effective evaluation tools. The overall mean of 2.42 reflects limited competency in structuring training plans, echoing Enama's [15] findings that student teachers struggle with aligning outcomes and assessments.

Table 2. Perceived Level of Students' Core Competencies in Trainer's Methodology 1 in terms of Facilitating Training Session

Indicators *When facilitating training session, I can…*	Mean	Standard Deviation	Verbal Interpretation
1. prepare appropriate training facilities/resources based on the session requirement.	2.43	1.082	Low Competent
2. explain the context and procedures of pre-training assessment according to the guidelines.	2.49	1.102	Low Competent
3. provide competency assessment tools, materials and equipment to learners.	2.49	1.084	Low Competent
4. use appropriate feedback mechanism to inform learner of his/her progress.	2.48	1.146	Low Competent
5. monitor work and learning activities based on training plan.	2.40	1.126	Low Competent
Overall	2.46	1.014	Low Competent

Legend: 1.0-1.49 (Never/Not Competent); 1.50-2.49 (Rarely Low Competent); 2.50-3.49 (Sometimes/ Competent); 3.50-4.0 (Always/Highly Competent).

Table 2 revealed that students' perceived competency in facilitating training sessions falls under the Low Competent category, with mean scores ranging from 2.40 to 2.49. The highest scores (2.49) pertain to explaining pre-training assessment procedures and providing assessment tools, indicating a basic grasp of assessment tasks. The lowest

mean (2.40) in monitoring work and learning activities suggests challenges in actively guiding learners. The overall mean of 2.46 highlights a need for improvement, affirming TESDA's [48] call for competency-based training and supporting studies by Szczesny [47], Lafinier [25], and Rendino [40] which emphasize the importance of adaptability, learner engagement, and consistent support in effective facilitation.

Table 3 showed students' perceived competencies in supervising work-based learning, with an overall mean of 2.42 (SD = 1.059), classified as Low Competent. The highest-rated indicator (2.50) is "explaining training objectives and processes," suggesting some ability to communicate goals—an aspect emphasized by Goff [20] and Stümpfl [46] as vital for motivation and learning. The lowest score (2.35) in "evaluating training effectiveness" reflects challenges in assessing outcomes. These results point to limited hands-on experience in planning, monitoring, and evaluation, highlighting the need for real-world learning through internships and work-based training, as supported by Kamaliah et al. (2018) as cited by Utami [56] and Padagas [34].

Table 3. Perceived Level of Students' Core Competencies in Trainer's Methodology 1 in terms of Supervising Work-based Learning

Indicators *When supervising work-based learning, I can…*	Mean	Standard Deviation	Verbal Interpretation
1. prepare training plan in accordance with agreed outcomes.	2.43	1.150	Low Competent
2. explain to trainees the objectives for undertaking work-based training and the processes involved in this.	2.50	1.107	Low Competent
3. observe work performance and suggest alternative approaches	2.41	1.132	Low Competent
4. monitor OHS requirements to ensure health, safety, and welfare of trainees	2.38	1.135	Low Competent
5. evaluate the effectiveness of work-based learning against the extent of attainment of the objectives.	2.35	1.169	Low Competent
Overall	2.42	1.059	Low Competent

Legend: 1.0-1.49 (Never/Not Competent); 1.50-2.49 (Rarely Low Competent); 2.50-3.49 (Sometimes/ Competent); 3.50-4.0 (Always/Highly Competent).

Table 4 showed that students' perceived core competencies in conducting competency assessments under Trainer's Methodology 1 fall under the Low Competent category, with an overall mean of 2.41. The highest-rated indicators (both at 2.44) involve gathering and documenting evidence using relevant tools and explaining competency standards to candidates, indicating some familiarity with assessment procedures. However, the lowest scores (2.38) in obtaining resources and accurately recording results suggest difficulties in assessment preparation and documentation, which are essential for ensuring valid and reliable evaluations.

Table 5 revealed that students' perceived competencies in maintaining training facilities are rated Low Competent, with an overall mean of 2.42. The highest score (2.49) was in maintaining facilities according to OHS regulations, indicating basic awareness but limited practice. In contrast, the lowest-rated indicators (2.35) were in hazardous waste disposal and workplace inspections, highlighting weaknesses in essential safety practices. These findings align with studies (Qaraman [37] and Gerona [19]) that stress the gap between knowledge and compliance in OHS. To address this, Tims [49] recommends hands-on, immersive safety training, while Muladi [29] emphasize the role of well-maintained facilities in supporting student learning and competence.

Table 4. Perceived Level of Students' Core Competencies in Trainer's Methodology 1 in terms of Conducting Competency Assessment

Indicators *When conducting competency assessment, I can…*	Mean	Standard Deviation	Verbal Interpretation
1. obtain, check and arrange resources required for assessment as specified in the Evidence Guide and the assessment tools within a safe and accessible assessment environment.	2.38	1.078	Low Competent
2. explain the context and purpose of assessment to candidates in line with the requirements of the relevant Assessment Guidelines.	2.39	1.141	Low Competent
3. explain clearly the competency standards to be assessed and the evidence to be collected to the candidate.	2.43	1.122	Low Competent
4. gather and document evidence using the relevant assessment tools.	2.44	1.106	Low Competent
5. record accurately the assessment results in accordance with approved record keeping guidelines.	2.38	1.174	Low Competent
Overall	2.41	1.045	Low Competent

Legend: 1.0-1.49 (Never/Not Competent); 1.50-2.49 (Rarely Low Competent); 2.50-3.49 (Sometimes/ Competent); 3.50-4.0 (Always/Highly Competent).

Table 5. Perceived Level of Students' Core Competencies in Trainer's Methodology 1 in terms of Maintaining Training Facilities

Indicators *When maintaining training facilities, I can…*	Mean	Standard Deviation	Verbal Interpretation
1. identify training facilities and equipment to be maintained.	2.48	1.174	Low Competent
2. maintain facilities in accordance with Occupational Health and Safety regulations.	2.49	1.147	Low Competent
3. check disposal of waste and dangerous chemicals in accordance with Occupational Health and Safety, regulations and organizational policies and other regulations.	2.35	1.120	Low Competent
4. secure instructional materials and /equipment in safe places in accordance with procedures.	2.43	1.150	Low Competent
5. carry out regular inspections in the work area according to workplace procedures and standards.	2.35	1.185	Low Competent
Overall	2.42	1.074	Low Competent

Legend: 1.0-1.49 (Never/Not Competent); 1.50-2.49 (Rarely Low Competent); 2.50-3.49 (Sometimes/ Competent); 3.50-4.0 (Always/Highly Competent).

Table 6. Perceived Level of Students' Core Competencies in Trainer's Methodology 1 in terms of Utilizing Electronic Media in Facilitating Learning

Indicators *When utilizing electronic media in facilitating learning, can…*	Mean	Standard Deviation	Verbal Interpretation
1. Operate electronic media equipment in accordance with the user's manual.	2.42	1.058	Low Competent
2. Implement teacher- and learner-centered learning principles as appropriate in the execution of the session plan.	2.52	1.107	Low Competent
3. Set up equipment in accordance with health and safety standards.	2.48	1.130	Low Competent
4. Create an interactive presentation.	2.43	1.209	Low Competent
5. Abide by safety practices related to electrical, radiation, and shock hazards.	2.33	1.172	Low Competent
Overall	2.44	1.058	Low Competent

Legend: 1.0-1.49 (Never/Not Competent); 1.50-2.49 (Rarely Low Competent); 2.50-3.49 (Sometimes/ Competent); 3.50-4.0 (Always/Highly Competent).

Table 6 indicated that students' perceived competencies in using electronic media for facilitating learning are Low Competent, with an overall mean of 2.44 (SD = 1.058). The highest-rated indicator (2.52) involves applying teacher- and learner-centered principles, showing occasional use of active learning strategies. However, the lowest score (2.33) pertains to safety practices related to electrical and radiation hazards, revealing a significant gap in OHS awareness. These results echo findings by Amiruddin [4], Kinhal [24], who stress the need for improved safety training and pedagogical integration. Overall, the data underscore the importance of hands-on, structured instruction to build both digital teaching skills and safety compliance [57].

4.3. Significant Difference in the Level of Students' Core Competencies in Trainers' Methodology 1 when grouped according to Demographic Profile

Table 7 presented the results of a Mann-Whitney U test, showing no statistically significant differences in Trainer's Methodology 1 competencies based on sex, as all p-values exceeded 0.05. The minimal mean differences (mostly around -0.200) suggest that sex does not notably affect competency levels.

Table 7. Significant Difference in the Level of Students' Core Competencies in Trainer's Methodology 1 when grouped according to Sex

		Statistic	p	Mean difference
PTSm	Mann-Whitney U	2713	0.484	$-6.59\text{e}{-}7$
FTSm	Mann-Whitney U	2578	0.236	-0.200
SWLm	Mann-Whitney U	2530	0.173	-0.200
CCAm	Mann-Whitney U	2461	0.107	-0.200
MTFm	Mann-Whitney U	2508	0.149	-0.200
UEMm	Mann-Whitney U	2533	0.178	-0.200

Note. $H_a \ \mu_{\text{Male}} \neq \mu_{\text{Female}}$

This aligns with findings by Bae [7] and Avila [6], who also reported no significant gender-based differences in student

competencies. While studies like Ray [39] and Fajardo [16] highlight gender-related challenges and perceptions in VET, the results support the notion that competency development in Trainer's Methodology 1 is generally not influenced by sex, reinforced by TESDA's efforts toward gender-sensitive education.

Table 8. Significant Difference in the Level of Students' Core Competencies in Trainer's Methodology 1 when grouped according to Year Level

		Statistic	p	Mean difference
PTSm	Mann-Whitney U	2221	0.233	0.200
FTSm	Mann-Whitney U	2148	0.140	0.200
SWLm	Mann-Whitney U	2179	0.174	0.200
CCAm	Mann-Whitney U	2290	0.354	0.200
MTFm	Mann-Whitney U	2320	0.416	3.85e-5
UEMm	Mann-Whitney U	2376	0.551	3.00e-5

Table 8 showed that the Mann-Whitney U test found no statistically significant differences in Trainer's Methodology 1 competencies based on year level, as all p-values exceeded 0.05. The minimal mean differences (mostly around 0.200) indicate that year level does not significantly impact competency levels. This aligns with Khan [23] and Ojeda [31], who emphasized that training structure, teaching quality, and resources influence competency more than academic standing. Ainley [2] and Amiruddin [58] suggest older or more advanced students may perform better, these findings underscore that competency development is multifactorial,

relying heavily on pedagogy, curriculum, and learner differences.

Table 9. Significant Difference in the Level of Students' Core Competencies in Trainer's Methodology 1 when grouped according to Specialization

Core Competencies	F	df1	df2	P
Plan Training Session	3.09	5	153	0.011
Facilitate Training Session	5.89	5	153	<.001
Supervise Work-based Learning	5.74	5	153	<.001
Conduct Competency Assessment	5.86	5	153	<.001
Maintain Training Facilities	6.4	5	153	<.001
Utilize Electronic Media in Facilitating Learning	4.61	5	153	<.001

Table 9 showed the one-way ANOVA results indicating significant differences in students' Trainer's Methodology 1 competencies based on specialization ($p < 0.05$ for all competencies), with the highest variance in "Maintain Training Facilities" ($F = 6.4$, $p < 0.001$). Students in Food Service Management differed significantly from those in Electrical and Automotive Technology in areas such as "Supervise Work-Based Learning" and "Conduct Competency Assessment." Differences were also noted between Computer Programming and Electrical Technology in assessment tasks. These findings suggest that specialization significantly impacts competency development due to varying technical requirements and field-specific practices. This supports studies by Lomeda-Junio [26], Orlanda [33], and Adihardja [1], which highlight how specialization influences

curriculum alignment, readiness, and performance. The results underscore the importance of tailoring training programs to meet the distinct needs of each field for effective competency development.

Table 11. Evaluation of the Developed Trainer's Methodology Workbook in terms of Coherence

Indicators	Mean	SD	VI
1. Contains relevant activities	3.29	0.471	Agree
2. Activities provide practical work	2.86	0.577	Agree
3. Activities develop creativity and resourcefulness	3.43	0.500	Agree
4. Provides relevant information for better understanding	3.71	0.745	Strongly Agree
5. Activities conform with the concepts	3.29	0.577	Agree
Overall	3.37	0.269	Agree

Legend: 1.0-1.49 (Strongly Disagree); 1.50-2.49 (Disagree); 2.50-3.49 (Agree); 3.50-4.0 (Strongly Agree).

Table 11 revealed the evaluation of the Trainer's Methodology Workbook in terms of coherence, with an overall mean of 3.37 (SD = 0.269), indicating general agreement that the workbook maintains coherence across content and activities. The highest-rated indicator, "Provides relevant information for better understanding" (M = 3.71, SD = 0.745), reflects the workbook's strength in delivering clear and contextualized information that aids comprehension. This supports findings by Atondo [5] and Velasco [51], who emphasized the value of localized and subject-integrated content in improving understanding and learner engagement.

However, the lowest mean score (2.86, SD = 0.577) was recorded for "Activities provide practical work," indicating a need for more hands-on learning experiences. As highlighted by Oliveira [32] and Balayong [8], practical applications are essential for developing skills, sustaining interest, and deepening learning. Overall, while the workbook is coherent and informative, integrating more experiential and applied

activities—such as real-world scenarios, hands-on tasks, and interactive exercises—could further enhance its effectiveness and learner engagement.

Table 12. Evaluation of the Developed Trainer's Methodology Workbook in terms of Appropriateness

Indicators	Mean	SD	VI
1. Adapted to intended learners	3.29	0.471	Agree
2. Based on the Training Regulation training competencies	3.00	0.373	Agree
3. Provides immediate needs	3.14	0.373	Agree
4. Arranged in the correct sequence	3.57	0.500	Strongly Agree
5. Provides varied activities to sustain interest	3.71	0.500	Strongly Agree
Overall	3.40	0.115	Agree

Legend: 1.0-1.49 (Strongly Disagree); 1.50-2.49 (Disagree); 2.50-3.49 (Agree); 3.50-4.0 (Strongly Agree).

Table 12 showed the evaluation of the Trainer's Methodology Workbook in terms of appropriateness, with an overall mean score of 3.40 (SD = 0.115), indicating general agreement that the material is suitable for its intended purpose. The highest-rated indicator, "Provides varied activities to sustain interest" (M = 3.71, SD = 0.500), highlights the workbook's effectiveness in engaging learners through diverse strategies, supporting findings by Valdez [50] and Sari [44] on the benefits of varied instructional methods in promoting critical thinking and improving performance.

However, the lowest score (M = 3.00, SD = 0.373) was observed in "Based on the Training Regulation training competencies," suggesting the need for stronger alignment with TESDA's prescribed standards. As emphasized by the NTESDP 2023–2028 [30] and Perna [36], aligning instructional materials with Training Regulations ensures relevance, standardization, and industry-readiness. Overall, while the workbook is engaging and well-structured, enhancing its alignment with training competencies would further strengthen

its effectiveness and compliance with national standards.

Table 13. Evaluation of the Developed Trainer's Methodology Workbook in terms of Usefulness

Indicators	Mean	SD	VI
1. Easy to understand	3.14	0.500	Agree
2. Provides knowledge and skill	2.86	0.816	Agree
3. Encourages creative and critical thinking	3.43	0.500	Agree
4. Serves as an instructional tool	3.29	0.687	Agree
5. Helps facilitate lesson presentation	3.43	0.687	Agree
Overall	3.27	0.249	Agree

Legend: 1.0-1.49 (Strongly Disagree); 1.50-2.49 (Disagree); 2.50-3.49 (Agree); 3.50-4.0 (Strongly Agree).

Table 13 showed the evaluation of the Trainer's Methodology Workbook in terms of usefulness, with an overall mean score of 3.27 (SD = 0.249), indicating that expert validators generally agree on its relevance and instructional value. The highest-rated indicators, "Encourages creative and critical thinking" and "Helps facilitate lesson presentation" (M = 3.43), suggest that the workbook effectively promotes higher-order thinking and supports lesson delivery. These findings align with studies by Valdez [50] and Rahayu [38], which affirm that structured materials enhance critical thinking and instructional efficiency.

However, the lowest mean score (2.86) for "Provides knowledge and skill" points to a need for strengthening the workbook's content depth. Effective instructional materials should balance knowledge acquisition with skill development. As noted by Pecson [35] and Sam [43], embedding core competencies such as creativity, collaboration, and problem-solving ensures learner preparedness. Gyamfi [21] also emphasized that workbooks enhance critical thinking through structured, practical tasks. Overall, while the workbook is seen as useful and engaging, refining its content to better support skill acquisition could enhance its overall effectiveness.

Conclusions

This study examined whether there were significant differences in the perceived core competencies in Trainer's Methodology I (TM I) among BTVTEd students when grouped according to demographic variables such as sex, year level, and area of specialization. The results led to a partial acceptance of the null hypothesis, which stated that there are no significant differences in competency levels across demographic groups.

No statistically significant differences were found in students' TM I core competencies when grouped by sex and year level, thus supporting the null hypothesis for these variables. In contrast, a significant difference was identified based on area of specialization, leading to the rejection of the null hypothesis for that factor.

These findings suggest that while sex and year level do not have a measurable effect on students' perceived competencies, specialization plays a meaningful role in shaping competency levels in TM I. This highlights the need for differentiated instructional support or curriculum enhancements tailored to specific areas of specialization within technical-vocational teacher education programs.

6. Recommendations

Based on the above findings and conclusions, the following recommendations are given.

Policy Level

1. Training institutions and HEIs offering the BTVTEd program may consider revising and enhancing their curriculum to address areas where competency gaps were identified. Incorporating more practical, hands-on activities and experiential learning opportunities can strengthen students' core competencies.

2. Training institutions and HEI offering BTVTEd program may provide additional training sessions or workshops for students struggling to meet competency standards can help bridge the gap and support their learning progress.

3. Educational policymakers may develop clear and updated guidelines to ensure

consistent implementation of Trainer's Methodology 1 (TM1) core competencies across all institutions.

Practical Level

4. Faculty members and trainers are encouraged to incorporate more hands-on, independent, and scenario-based activities to reinforce student competencies in real-world contexts.

5. It is recommended to enhance the alignment of instructions with activities, integrate more independent and practical tasks, and include additional visual elements to cater to diverse learning styles.

6. It is recommended that instructional materials, including the developed workbook, be revised to enhance alignment between learning objectives and activities. Materials should include visual aids and diverse learning tools to address varied learner needs and preferences.

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