

# Development and Evaluation of Proposed Continuous Improvement Plans for the Bachelor of Technical and Vocational Teacher Education of Laguna State Polytechnic University System

Jocelyn V. Madrideo<sup>1</sup> and John Clifford M. Alvero<sup>2</sup>

<sup>1</sup>Laguna State Polytechnic University, San Pablo City, Laguna, Philippines

<sup>1,2</sup>Graduate School, San Pablo Colleges, San Pablo City, Laguna, Philippines

**Abstract**— This study evaluated the effectiveness, alignment, and implementation challenges of the Bachelor of Technical-Vocational Teacher Education (BTVTED) program at Laguna State Polytechnic University (LSPU) to inform a continuous improvement plan. Guided by the Logic Model (Schuman and Wholey, 1995; Derr and Derr, 2024) and the Multidimensional Analysis Framework (Karyanto et al., 2023), it employed a mixed-methods design combining quantitative surveys and qualitative interviews. A total of 270 respondents participated, including 251 graduates, 15 faculty members, and four program coordinators. Quantitative data assessed program effectiveness across inputs, activities, outputs, and outcomes, while qualitative data provided deeper insights from key informants. Findings revealed significant differences in curriculum evaluation among stakeholders. Program coordinators rated the curriculum as Effective to Very Effective ( $M = 3.14$ ), highlighting alignment with CHED and TESDA standards. Faculty members ( $M = 2.09$ ) and graduates ( $M = 1.90$ ) rated the program as Ineffective, identifying concerns in instructional resources, industry immersion, digital competency integration, and laboratory facilities. Significant differences in assessments were found by sex ( $t = 2.21, p = 0.030$ ), marital status ( $F = 3.96, p = 0.050$ ), and stakeholder group ( $F = 6.42, p = 0.002$ ). Five alignment themes emerged: mission alignment, industry responsiveness, technical-digital gap, industry linkages, and curriculum updating. Implementation challenges included resource constraints, faculty competency gaps, limited industry exposure, curriculum-industry gap, and student barriers. A Continuous Improvement Plan (CIP) anchored on the Plan-Do-Check-Act cycle was developed and validated as Highly Acceptable by both external ( $M = 3.60$ ) and internal evaluators ( $M = 3.60$ ).

**Keywords**— continuous improvement plan (CIP), BTVTED program, curriculum alignment, industry partnership, faculty development, program evaluation.

## I. INTRODUCTION

The Bachelor of Technical-Vocational Teacher Education (BTVTED) program is a specialized higher education offering designed to prepare future educators for the Technical-Vocational-Livelihood (TVL) track of the Philippine K-12 curriculum and Technical-Vocational Education and Training (TVET) institutions. Guided by CHED CMO No. 79, Series of 2017, the program aims to produce graduates who integrate theory and practice, becoming critical thinkers, lifelong learners, and nationally certified trainers. This mission directly supports the United



Nations Sustainable Development Goals, particularly SDG 4 (Quality Education) and SDG 17 (Partnerships for the Goals).

Despite clearly defined objectives, the BTVTED program faces persistent challenges. Chief among these is misalignment between global labor market expectations and existing graduate competencies, attributable to lags in curriculum innovation and insufficient digital technology integration (Tuenpusa et al., 2021). The absence of strong and sustained industry-academe linkages limits experiential learning opportunities, while resource constraints hinder access to modern tools and facilities critical for competency-based training (Legusov et al., 2022; Alinea, 2021).

At Laguna State Polytechnic University, stakeholders recognized the need to further strengthen program implementation in facilities, curriculum relevance, and student preparedness for industry requirements. Motivated by these challenges, this study examined program gaps, identified priority areas for improvement, and developed a Continuous Improvement Plan (CIP) to enhance program quality, strengthen institutional performance, and promote a more competitive and industry-aligned TVET education at LSPU.

## **II. REVIEW OF RELATED LITERATURE**

### ***A. Multi-Stakeholder Perspectives in BTVTED Evaluation***

Program evaluation in Technical-Vocational Teacher Education requires a multi-stakeholder lens that integrates respondent profiling and contextual interpretation. Contemporary evaluation frameworks emphasize that program quality cannot be fully understood without considering demographic, academic, professional, and socioeconomic characteristics of respondents, as these variables shape perceptions of program relevance, instructional quality, and competency development (Nguyen and Pham, 2023). Stakeholder heterogeneity -- across students, faculty, alumni, employers, and coordinators -- produces differentiated interpretations of program effectiveness, reinforcing the need for structured profiling in Philippine TVET institutions (Almeida and Ferreira, 2023; Kim and Park, 2022).

### ***B. Program Effectiveness in TVET***

Program effectiveness in BTVTED consistently rests on three interconnected domains: program-resource alignment, pedagogy-assessment coherence, and teacher-institutional capacity. Updated equipment, modern learning environments, and integration of emerging technologies significantly strengthen student competency acquisition and practical performance (Mananita, 2021; Kobia et al., 2025). Employer and tracer studies affirm that graduates combining technical skills with transversal competencies are more competitive, even as program updates in many institutions lag behind emerging labor market demands (Hasan et al., 2025; Tee et al., 2024).

### ***C. Continuous Improvement in Higher Education***

Continuous improvement (CI) transforms evaluation findings into sustainable reforms using iterative Plan-Do-Check-Act (PDCA) cycles, structured review processes, and quality assurance mechanisms that promote data-informed decision-making (Anderson, 2025; Samuela and Farrerb, 2025). The success of CI initiatives depends on contextual alignment, institutional readiness, and the availability of adequate resources and support systems

(Regel, 2025; Aziz, 2023). Given persistent challenges in facilities, faculty development, and industry alignment within Philippine TVET institutions (Orbeta and Corpus, 2024; Edralin and Pastrana, 2023), developing and evaluating a CIP for BTVTED remains both strategic and necessary.

### **III. METHODOLOGY**

#### ***A. Research Design***

This study employed a mixed-methods research design integrating quantitative and qualitative approaches. The quantitative component generated measurable data on curriculum performance across inputs, activities, outputs, and outcomes, while the qualitative component explored stakeholder perspectives on curriculum alignment, implementation challenges, and areas for enhancement. Triangulation of data from both strands ensured validity and reliability, providing a solid evidence-based foundation for the development of the Continuous Improvement Plan.

#### ***B. Participants and Locale***

The study was conducted across the four main campuses of LSPU: San Pablo City, Sta. Cruz, Siniloan, and Los Banos. A total of 270 respondents participated. Of 353 BTVTED graduates from AY 2022-2024, 251 (71%) completed the quantitative survey. In addition, four program coordinators and 15 faculty members were identified through complete enumeration. For the qualitative phase, 16 participants were purposively selected: four coordinators, four faculty members, and eight graduates (two per campus, equally representing teaching and industry employment). The strong response rate enhanced the representativeness of findings across the LSPU system.

#### ***C. Instruments and Data Analysis***

A validated structured questionnaire with 40 indicators measured program effectiveness using a four-point Likert scale across the four Logic Model dimensions. Reliability analysis revealed excellent internal consistency across all subscales (Inputs:  $\alpha = 0.928$ ; Activities:  $\alpha = 0.955$ ; Outputs:  $\alpha = 0.946$ ; Outcomes:  $\alpha = 0.953$ ). A semi-structured interview guide explored program alignment, responsiveness, and implementation challenges.

Quantitative data were analyzed using descriptive statistics and inferential tests (t-test and ANOVA). Qualitative data were subjected to thematic analysis. The proposed CIP was evaluated by expert validators using a 10-indicator acceptability rubric.

### **IV. RESULTS AND DISCUSSION**

#### ***A. Demographic Profile of Respondents***

Respondents showed a diverse demographic distribution. Among graduates, 45% were aged 23-27 and 37% were aged 28-32, while coordinators (75%) and several faculty members fell within the 33 and above category. Female respondents outnumbered males across all groups, particularly among graduates (61%), mirroring national trends of higher female participation in higher education (UNESCO, 2022; CHED, 2023). Among graduates, 86% were single, while coordinators and faculty showed higher proportions of married respondents, reflecting life-stage differences that influence program experience and evaluation.



**Table I. Demographic Profile of Respondents**

Variable	Category	Coordinator f %	Faculty f %	Graduates f %
Age	23-27	-- --	3 20%	112 45%
	28-32	1 25%	6 40%	93 37%
	33 and above	3 75%	6 40%	46 18%
Sex	Male	2 50%	6 40%	97 39%
	Female	2 50%	9 60%	154 61%
Marital Status	Single	3 75%	7 47%	217 86%
	Married	1 25%	8 53%	34 14%

**B. Perceived Level of Effectiveness of the BTVTED Program**

The perceived effectiveness of the BTVTED program varied markedly across stakeholder groups. Coordinators consistently rated the program higher, with an overall mean of 3.14 (Effective), while faculty members (M = 2.09) and graduates (M = 1.90) rated the program as Ineffective. Among the dimensions, coordinators gave the highest rating to Activities (M = 3.35, Very Effective), while graduates rated Activities lowest (M = 1.82, Ineffective). These divergent assessments reflect structural differences in each group's relationship with the program: coordinators evaluate from a planning and compliance standpoint, while faculty and graduates reflect classroom realities and employment outcomes.

The consistently low ratings from faculty and graduates for Outcomes -- particularly the indicator on contributing to industry development and growth (Graduates: M = 1.64, Strongly Disagree) -- signal a critical disconnect between program design and graduate employment readiness. This aligns with Mariano and Tantoco (2023), who found that technical-vocational programs may meet institutional standards yet still fail to translate curricular objectives into workplace-ready competencies when industry participation is weak.

**Table II. Summary of Perceived Effectiveness of the BTVTED Program**

Dimension	Coordinator M	VI	Faculty M	VI	Graduates M	VI
Inputs	3.15	E	1.93	I	2.06	I
Activities	3.35	VE	1.91	I	1.82	I
Outputs	3.00	E	2.27	I	1.86	I
Outcomes	3.05	E	2.24	I	1.85	I
Overall	3.14	E	2.09	I	1.90	I

Legend: 1.00-1.75 = Very Ineffective (VI); 1.76-2.50 = Ineffective (I); 2.51-3.25 = Effective (E); 3.26-4.00 = Very Effective (VE)

**C. Differences in Assessment by Profile Variables**

Table III presents the test of differences in program effectiveness assessments when respondents are grouped by profile variables. Age was the only variable that did not yield a significant difference (F = 2.11, p = 0.120), suggesting that respondents across age groups share similar structural experiences within the program. In



contrast, sex ( $t = 2.21, p = 0.030$ ), marital status ( $F = 3.96, p = 0.050$ ), and stakeholder group ( $F = 6.42, p = 0.002$ ) all showed significant differences. Female respondents rated the program higher, particularly in inputs and activities, consistent with Tran et al. (2022), who found that female educators engage more actively in collaborative teaching environments. Stakeholder group produced the largest effect, with coordinators significantly outrating faculty and graduates, confirming the null hypothesis is rejected for these variables.

**Table III. Test of Difference in Program Effectiveness Assessment by Profile**

Profile Variable	Test Statistic	p-value	Interpretation
Age	$F = 2.11$	0.120	Not Significant
Sex	$t = 2.21$	0.030	Significant
Marital Status	$F = 3.96$	0.050	Significant
Stakeholder Group	$F = 6.42$	0.002	Significant

Note:  $p < .05$  = significant

#### ***D. Alignment of BTVTED with School and Industry Needs***

Thematic analysis of key informant interviews yielded five major themes on program alignment. First, Mission Alignment: informants affirmed that the BTVTED program maintains a strong balance between theoretical grounding and practical application, aligning with the institutional mission to produce competent technical-vocational educators. Second, Industry Responsiveness: while the curriculum addresses foundational industry needs, it lacks exposure to updated technologies such as CAD and automation tools, and soft skills training requires stronger emphasis. Third, Technical-Digital Gap: the program demonstrates strength in traditional technical skills but requires integration of artificial intelligence, cybersecurity, renewable energy systems, and advanced digital competencies aligned with Industry 4.0. Fourth, Industry Linkages: existing partnerships through OJT and guest lectures require strengthening through formalized advisory boards and structured feedback mechanisms. Fifth, Curriculum Updating: while periodic reviews exist, more systematic and industry-driven revision cycles are needed, particularly following disruptions caused by the pandemic.

#### ***E. Implementation Challenges***

Five thematic challenges emerged. Resource Constraints encompassed outdated equipment, shared tools limiting individual practice time, and insufficient funding for facility upgrades. Faculty Competency Gaps included part-time instructors with limited industry experience, mismatched training assignments, and restricted access to professional development.

Limited Industry Exposure was exacerbated by the pandemic's shift to online immersion, which restricted access to actual workplace environments and reduced the effectiveness of the required 150-hour immersion. Curriculum-Industry Gap reflected the difficulty of keeping pace with rapidly evolving industry standards, with some modules focusing on outdated tools and methods. Student Barriers included financial constraints affecting immersion participation, low confidence from limited hands-on exposure, and persisting societal stigma toward TVET programs.

### ***F. Continuous Improvement Plan and Its Acceptability***

Based on integrated quantitative and qualitative findings, a Continuous Improvement Plan (CIP) anchored on the PDCA cycle was developed.

The CIP addresses four strategic pillars: curriculum enhancement and standards alignment; faculty development and capacity-building; industry partnership expansion and formalization; and facility modernization and digital integration.

The plan was evaluated by both external and internal evaluators across ten indicators including clarity, feasibility, sustainability, stakeholder involvement, innovation, accreditation alignment, equity, and overall acceptability.

**Table IV. Level of Acceptability of the Proposed CIP by External and Internal Evaluators**

Indicator	External Evaluators	Internal Evaluators
<b>1. Clarity of Objectives</b>	3.80 HA	3.63 HA
<b>2. Content, Coverage, and Relevance</b>	3.80 HA	3.75 HA
<b>3. Feasibility and Practicality</b>	3.20 A	3.50 HA
<b>4. Sustainability and Long-Term Impact</b>	3.80 HA	3.38 HA
<b>5. Stakeholder Involvement</b>	3.40 HA	3.25 A
<b>6. Innovation and Technology Integration</b>	3.40 HA	3.50 HA
<b>7. Alignment with Standards</b>	4.00 HA	3.88 HA
<b>8. Equity and Inclusivity</b>	3.20 A	3.50 HA
<b>9. Expected Outputs and Outcomes</b>	3.60 HA	3.75 HA
<b>10. Overall Value and Acceptability</b>	3.80 HA	3.88 HA
<b>Overall</b>	3.60 HA	3.60 HA

Legend: 1.00-1.75 = Highly Unacceptable (HU); 1.76-2.50 = Unacceptable (U); 2.51-3.25 = Acceptable (A); 3.26-4.00 = Highly Acceptable (HA)

Both external and internal evaluators rated the CIP as Highly Acceptable overall (M = 3.60). The highest-rated indicator was Alignment with Standards and Accreditation Requirements (External: M = 4.00; Internal: M = 3.88), affirming the plan's strong compliance with CHED mandates, TESDA requirements, and accreditation guidelines.

Evaluators described the CIP as comprehensive, systematic, and well-grounded in the PDCA framework. Minor recommendations included strengthening risk management provisions, adding measurable performance indicators for the ACT phase, and incorporating enhanced equity and inclusivity mechanisms.

These findings are consistent with Asif et al. (2022), who found that institutional improvement initiatives aligned with national frameworks yield enhanced stakeholder engagement and long-term program sustainability.

## **V. CONCLUSIONS**

This study evaluated the BTVTED program of LSPU using a mixed-methods design anchored on the Logic Model, Multidimensional Analysis Framework, and PDCA Cycle. The following conclusions are drawn from the findings:

1. The diverse demographic profile of respondents -- spanning different ages, sexes, marital statuses, and stakeholder roles -- ensured a balanced evaluative lens, with younger graduates offering fresh perspectives on employability while seasoned faculty and coordinators contributed institutional depth.
2. A significant perception gap exists between coordinators and faculty-graduate groups: coordinators rated the program as Effective to Very Effective, while faculty and graduates consistently rated it as Ineffective, particularly in activities and outcome-related dimensions affecting employability, critical thinking, and industry contribution.
3. Significant differences in program assessments were found by sex, marital status, and stakeholder group, confirming that program experiences are mediated by respondents' roles and life contexts. Age did not yield significant differences.
4. While the program aligns conceptually with LSPU's institutional mission, it falls short in industry responsiveness due to outdated tools, limited immersion hours, insufficient digital skills integration, and weak industry feedback systems.
5. The proposed Continuous Improvement Plan, rated as Highly Acceptable by both external and internal evaluators, provides a structured, evidence-based, and PDCA-anchored framework for addressing identified program gaps and sustaining quality in BTVTED education.

## VI. RECOMMENDATIONS

Based on the findings, the following recommendations are offered: (1) All stakeholder groups -- graduates, faculty, and coordinators -- should be maintained in program evaluation processes to ensure both fresh and experienced perspectives inform reforms. (2) The program should be recalibrated toward employability, critical thinking, collaboration, and industry contribution through outcome-based revisions, strengthened soft skills integration, and enhanced work-integrated learning. (3) Tailored professional development and mentoring programs should address the needs of younger and male respondents who rated the curriculum less favorably. (4) Program delivery should be modernized by updating instructional tools, extending immersion hours, embedding TESDA National Certificates, integrating advanced digital competencies, and institutionalizing industry feedback mechanisms. (5) The proposed CIP should be formally implemented and subjected to iterative evaluation under the PDCA cycle, involving experts from academe, industry, and regulatory bodies to assess long-term feasibility and impact.

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## REFERENCES

- [27] Alinea, J. M. L. (2021). Evaluation of technical-vocational teacher education program towards an academe- and industry-responsive curriculum. *Journal of Technical Education and Training*, 13(4). doi:10.30880/jtet.2021.13.04.006
- [28] Alinea, J. M. L., and Reyes, W. S. (2023). A gender and industry-responsive curriculum model for technical-vocational teacher education. *Journal of Research, Policy and Practice of Teachers and Teacher Education*, 13(2), 1-27. doi:10.37134/jrpptte.vol13.2.1.2023
- [29] Almeida, P., and Ferreira, C. (2023). Stakeholder heterogeneity in program evaluation: Evidence from TVET. *International Journal of Vocational Education and Training*, 31(1), 55-74.
- [30] Anderson, E. (2025). Preparing improvement teams to manage complex change in a continuous improvement program. *Frontiers in Education*, 10, 1566862. doi:10.3389/educ.2025.1566862
- [31] Asif, M., Raouf, A., and Searcy, C. (2022). Achieving excellence in service quality management. *International Journal of Quality and Reliability Management*, 39(2), 430-448.
- [32] Aziz, R. (2023). Contextual factors in educational continuous improvement: A systems perspective. *Journal of Educational Change*, 24(1), 45-62.
- [33] Cedefop. (2022). Vocational education and training for the future of work. Publications Office of the European Union.
- [34] CHED. (2023). Higher education statistical bulletin. Commission on Higher Education, Philippines.
- [35] Derr, J., and Derr, K. (2024). Logic model components for program evaluation. *Journal of Program Evaluation*, 45(1), 12-28.
- [36] Edralin, D., and Pastrana, A. (2023). Challenges in Philippine TVET: Resources, faculty, and industry alignment. *Philippine Journal of Technical Education*, 15(2), 33-48.
- [37] Fidalgo-Blanco, A., Sein-Echaluce, M. L., and Garcia-Penalvo, F. J. (2023). Continuous improvement in higher education. *Computers in Human Behavior*, 141, 107621.
- [38] Generalao, R., Santos, M., and Cruz, A. (2025). Industry-academe partnerships and TVET graduate employability. *Journal of Vocational Education and Training*, 77(1), 78-95.
- [39] Hasan, A., Ibrahim, R., and Ahmad, N. (2025). Transversal competencies and technical graduate employability. *Asian Journal of TVET Research*, 8(1), 12-27.
- [40] Karyanto, U. H., Widiarso, W., and Hadi, S. (2023). Multidimensional analysis framework for curriculum evaluation. *Journal of Educational Research*, 116(2), 88-102.
- [41] Kim, H., and Park, J. (2022). Faculty and student perceptions of program effectiveness: Divergence and convergence. *Higher Education Studies*, 12(4), 101-115.
- [42] Kobia, E., Kirathe, J., and Mwangi, I. (2025). Equipment adequacy and vocational competency development. *International Journal of TVET*, 11(1), 44-58.
- [43] Legusov, O., Orr, B., and Plakhotnik, M. (2022). Industry-academe collaboration and resource access in vocational programs. *Journal of Vocational Education Research*, 47(3), 200-218.
- [44] Mananita, L. (2021). Technology integration in TVET: Effects on student competency acquisition. *Philippine TVET Research Journal*, 5(2), 10-25.



- [45] Mariano, R., and Tantoco, L. (2023). Misalignment between BTVTED curriculum and workplace demands. *Asia-Pacific Journal of Vocational Education*, 12(2), 55-70.
- [46] Nguyen, T., and Pham, Q. (2023). Demographic characteristics and program evaluation in vocational education. *International Review of Education*, 69(1), 33-52.
- [47] Okoye, K. R., and Arimonu, M. O. (2022). Competency-based vocational education: Aligning outputs with labor market needs. *Journal of Vocational Education*, 36(4), 289-305.
- [48] Orbeta, A., and Corpus, D. (2024). TVET equity and access in the Philippines: Persistent disparities and policy gaps. *Philippine Institute for Development Studies Discussion Paper No. 2024-01*.
- [49] Rauner, F., and Maclean, R. (2021). *Handbook of technical and vocational education and training research* (2nd ed.). Springer.
- [50] Regel, K. (2025). Institutional readiness for continuous improvement: A multi-case study. *Educational Management Administration and Leadership*, 53(2), 201-218.
- [51] Samuela, L., and Farrerb, P. (2025). Evidence-based continuous improvement in vocational programs. *Vocational Education and Training Research*, 3(1), 1-18.
- [52] Schuman, H., and Wholey, J. S. (1995). The logic model: A tool for program evaluation. *Evaluation and Program Planning*, 18(3), 19-28.
- [53] Tee, K., Ahmad, N., and Ismail, A. (2024). TVET graduate competitiveness and industry expectations. *Journal of Technical and Vocational Education*, 18(1), 25-40.
- [54] Tran, L. T., Nguyen, N. T., and Ho, H. T. (2022). Gender, teaching engagement, and program evaluation in vocational education. *Gender and Education*, 34(3), 215-231.
- [55] Tuenpusa, T., Phucharoenworakul, K., and Nampila, T. (2021). Curriculum innovation and digital technology in TVET. *International Journal of Educational Technology*, 18(4), 110-125.
- [56] UNESCO. (2022). *Global education monitoring report 2022: Non-state actors in education*. UNESCO Publishing.