From Diagnosis to Impact: A Framework for Addressing Teacher Licensure Challenges in Developing Country Contexts

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ABSTRACT:
Teacher licensure examinations are critical quality benchmarks in developing country educational systems, yet persistent underperformance remains a systemic institutional challenge. This mixed-methods study, employing an explanatory sequential design, diagnosed the root causes of low performance in the Licensure Examination for Teachers (LET) among education graduates of what is now Agusan del Sur State University (ADSSU, formerly ASSCAT), designed a comprehensive intervention program, and evaluated its impact across seventeen examination cycles. The qualitative strand applied Ishikawa's Fishbone Diagram integrated with the Five Whys technique through in-depth interviews, focus group discussions, and document analysis, categorizing root causes across four domains: Man, Machine, Materials, and Methods. The quantitative strand analyzed pre-intervention trend data from an eight-year baseline period (2008–2015) and projected expected performance trajectories as a counterfactual baseline. Findings revealed multidimensional root causes spanning faculty competence gaps, inadequate resources and facilities, systemic policy inefficiencies, and misaligned instructional methodologies. The resulting intervention produced a substantial and sustained institutional transformation: post-intervention data from March 2016 to March 2025 documented passing rates consistently surpassing national benchmarks by 15 to 51 percentage points — far exceeding the marginal gains projected without intervention — with the BEED program reaching 100% in March 2022 and producing seven nationally ranked topnotchers. These outcomes demonstrate that systematic diagnostic approaches integrating qualitative inquiry with trend analysis can drive transformational improvements in teacher licensure performance in developing-country contexts.

Keywords: teacher licensure performance, root cause analysis, educational intervention, mixed methods, developing countries.

1. Introduction

Teacher quality is one of the most critical determinants of educational outcomes worldwide. Research consistently demonstrates that effective teachers significantly shape student learning trajectories and long-term academic success (Hattie, 2009; Darling-Hammond et al., 2019). Recognizing this, education systems globally have established professional licensure examinations as quality assurance mechanisms to certify that prospective teachers possess the requisite knowledge and competencies (Tatto et al., 2018).

In the Philippines, the Licensure Examination for Teachers (LET), administered by the Professional Regulation Commission (PRC), serves as the primary certification standard. National passing rates have historically fluctuated between 30 and 40 percent annually, reflecting systemic challenges facing teacher education institutions (TEIs) in producing examination-ready graduates (Amanonce & Maramag, 2020). Persistent underperformance affects individual career prospects and perpetuates educational inequity, particularly in underserved regions (UNESCO, 2020).

Existing research has predominantly employed quantitative approaches that, while useful for identifying correlations, often fail to capture the complex, multifaceted nature of institutional factors contributing to licensure outcomes (Cortez et al., 2017; Bellen et al., 2017). Studies focusing on individual predictors such as pre-board performance, grade point averages, and faculty qualifications have yielded useful but partial insights (Malaluan, 2017; Visco, 2015). Qualitative investigations that illuminate root causes and guide evidence-based intervention design remain scarce in the Philippine context, and longitudinal studies documenting sustained post-intervention performance across multiple examination cycles are virtually absent from the literature.

Agusan del Sur State University (ADSSU), then operating as ASSCAT, exemplifies the challenges facing similar institutions. Performance data from eight consecutive years of LET cycles between 2008 and 2015 revealed that the Bachelor of Elementary Education (BEED) program exceeded the national passing rate only four times, while the Bachelor of Secondary Education (BSEd) program did so on just two occasions. Located in Mindanao, ADSSU serves a predominantly rural population with diverse socioeconomic backgrounds, making it representative of TEIs serving underserved communities nationwide.

This study addresses identified research gaps by employing a systematic diagnostic approach integrating qualitative phenomenological inquiry with structured cause-and-effect analysis. Grounded in the theoretical framework of causation theory and operationalized through Ishikawa's (1986) Fishbone Diagram, the study aims to: (1) diagnose root causes of persistent LET underperformance through stakeholder-informed analysis; (2) design a comprehensive, evidence-based intervention framework; and (3) evaluate the intervention's impact across seventeen examination cycles spanning nine years to provide transferable insights for similar institutional contexts. To the authors' knowledge, no published study has integrated phenomenological inquiry with Ishikawa's Fishbone Diagram as a unified diagnostic-to-intervention framework evaluated longitudinally across seventeen LET cycles within a single rural Philippine state university, making this study a methodological and empirical contribution to the teacher licensure literature.

2. Methodology

2.1 Research Design and Participants

This study employed a mixed-methods research design, specifically an explanatory sequential approach, to comprehensively investigate the root causes of persistent LET underperformance and evaluate the impact of the resulting intervention. The qualitative strand utilized phenomenological inquiry to deeply examine the lived experiences of LET takers, faculty, and administrators at ADSSU, prioritizing the capture of intrinsic meanings and perceptions of stakeholders directly involved in LET preparation (Creswell & Poth, 2018). The

quantitative strand involved time-series analysis of institutional LET passing rates spanning an eight-year baseline period (2008–2015), from which linear regression models were derived to project expected performance trajectories and establish a counterfactual baseline for post-intervention impact measurement against national benchmarks. Participants for the qualitative strand were purposively selected to represent diverse perspectives and included LET takers from the BEED and BSEd programs, faculty teaching board-related subjects, and academic administrators. Sampling continued until thematic saturation was reached.

2.2 Data Collection Instruments and Procedure

Data were gathered through three complementary methods. In-depth interviews were conducted individually to elicit personal accounts and experiential insights. Focus group discussions (FGDs) applied the Fishbone Diagram across four domains: Man, Machine, Materials, and Methods, enabling collaborative, categorized exploration of contributing factors. The Five Whys technique was integrated within both instruments to facilitate iterative probing of underlying causes beyond surface-level observations. Document analysis complemented primary data, drawing on LET performance records and relevant policy documents of the Professional Regulation Commission (2021).

2.3 Data Analysis

Transcripts were coded thematically within the Fishbone domains. Using constant comparative analysis, data were iteratively reviewed, clustered into themes, and cross-referenced with root-cause logic generated by the Five Whys technique. This analytical process directly informed the design of the tailored intervention program. For the quantitative strand, institutional LET passing rates for both BEED and BSEd programs across eight consecutive years (2008–2015) were compiled from PRC-released results and institutional records, yielding eight data points per program for regression modeling. Simple linear regression was applied separately for each program and for national passing rates to derive trend equations. For BEED, the institutional model was $y = 11.923 + 2.43t$, and the national model was $y = 22.03 + 1.38t$, where t represents the year number in the sequence. For BSEd, the institutional model was $y = 7.94 + 2.82t$ and the national model was $y = 25.17 + 1.38t$. These equations were used to project performance for the subsequent five years (2016–2020), providing a counterfactual baseline against which actual post-intervention results were measured. Post-intervention passing rates from March 2016 to March 2025 were subsequently compared against both the projected baseline and national passing rates to evaluate intervention impact.

2.4 Trustworthiness

Trustworthiness adhered to Guba's (1985) four criteria. Credibility was strengthened through prolonged engagement and member-checking during FGDs. Transferability was addressed by grounding findings in multiple prior studies and demonstrating contextual relevance. Dependability and confirmability were ensured through detailed audit trails, triangulation of data sources, and reflective memoing throughout the research process.

Ethical Considerations

This study was exempted from ethical review because it does not involve vulnerable populations, and all participation was voluntary. Informed consent for participation was obtained from all subjects involved in the study. The quantitative part used secondary data.

3. Results

3.1 Root Cause Analysis: The Fishbone Framework

Systematic analysis across the four Fishbone domains revealed multidimensional root causes of persistent LET underperformance at ADSSU.

Man: Faculty, Students, and Supervisors

Faculty-related issues included tardiness, lack of preparedness, absenteeism, and minimal instructional engagement. Contract of Service instructors lacked content-area specialization, while permanent faculty were burdened with

multiple administrative designations. Student-related factors included academic negligence, lack of commitment, and diminished self-confidence reinforced by an institutional culture of historical underperformance. Administrative oversight was also inadequate, with infrequent classroom monitoring and limited logistical support for LET takers.

Machine: Policies and Systems

Systemic inefficiencies included recurring delays in class schedules due to late grade submissions, excessive non-curricular activities disrupting instructional time, unregulated class sizes, and an open admission policy lacking proficiency benchmarks. The retention policy (GPA threshold of 2.75) was perceived as overly lenient, allowing academically underprepared students to remain in the program.

Materials: Resources and Facilities

Resource limitations included inadequate classroom conditions such as poor ventilation and overcrowding, scarcity of updated review materials, insufficient laboratory equipment, and limited library holdings relevant to LET preparation.

Methods: Instruction and LET Review

Instructional delivery was described as monotonous and disconnected from LET competencies. Misaligned syllabi, insufficient content mastery among some faculty, and the undervaluation of embedded LET review classes by both faculty and students contributed to poor preparation outcomes.

3.2 Pre-Intervention Trend Analysis

Analysis of eight years of institutional LET performance data (2008–2015) established the pre-intervention baseline. For the BEED program, passing rates across this period ranged from approximately 10% to 38%, with the program exceeding the national passing rate in only four of the eight years. For the BSEd program, passing rates ranged from roughly 14% to 42%, exceeding the national rate in only two of the eight years. Simple linear regression was applied separately to each program's passing rate series and to the national passing rate series to derive trend equations. For BEED, the institutional trend model was $y = 11.923 + 2.43t$, and the national trend model was $y = 22.03 + 1.38t$, where t denotes the year sequence number beginning at 1 for 2008. For BSEd, the institutional trend model was $y = 7.94 + 2.82t$, and the national trend model was $y = 25.17 + 1.38t$. These models were used to project institutional and national passing rates for the five years from 2016 to 2020, representing the expected trajectory absent any intervention.

Figure 1. Trend of the Licensure Examination Performance of Bachelor of Elementary Education for the Last 8 Years

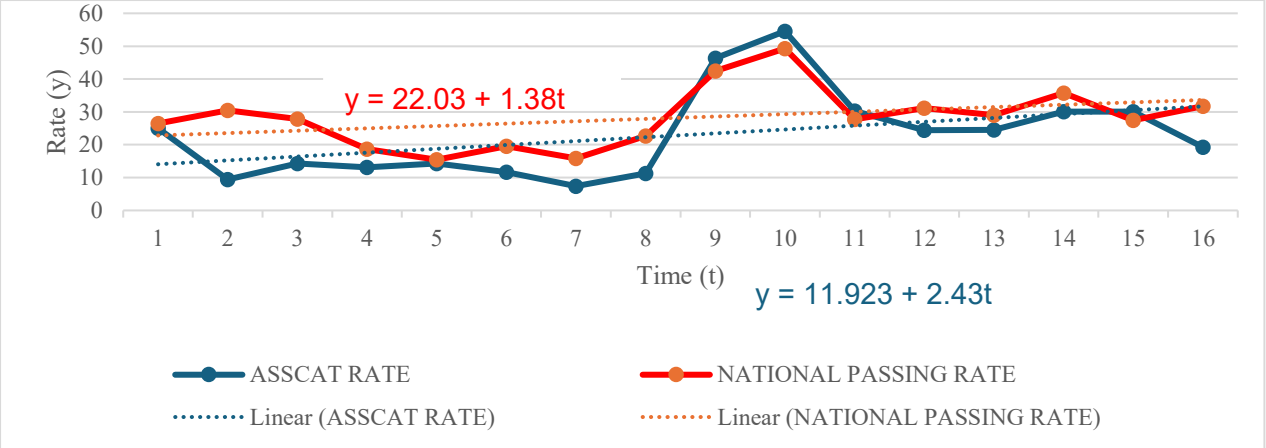

Table 1. Projected LET Passing Rates for BEED: ADSSU vs. National Benchmark (2016–2020)

	2016 (9th Year)	2017 (10th Year)	2018 (11th Year)	2019 (12th Year)	2020 (13th Year)
ADSSU (projected)	33.32%	36.27%	38.70%	41.13%	43.57%
National (PRC)	34.44%	35.82%	37.20%	38.58%	39.96%

Note. Projections derived from the ADSSU model y = 11.923 + 2.43t and the national model y = 22.03 + 1.38t. t = year sequence number (t = 9 for 2016 through t = 13 for 2020).

Figure 1 and Table 1 show that, on the prevailing trajectory, the BEED program was projected to reach 43.57% by 2020, with the national passing rate at 39.96%, yielding a projected margin of only 3.61 percentage points. While this represented a positive trend, the margin was modest and left the program well below the levels of performance that would reflect institutional excellence.

Figure 2. Trend of the Licensure Examination Performance of Bachelor of Secondary Education for the Last 8 Years

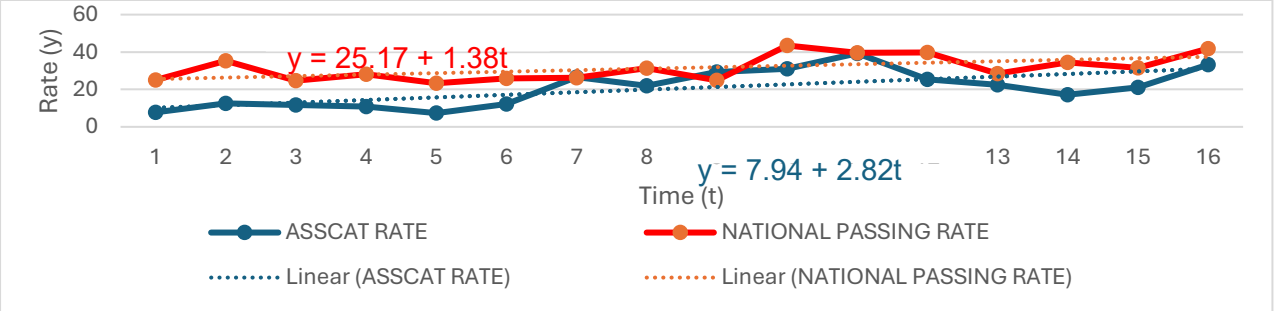

Table 2. Projected LET Passing Rates for BSEd: ADSSU vs. National Benchmark (2016–2020)

	2016 (9th Year)	2017 (10th Year)	2018 (11th Year)	2019 (12th Year)	2020 (13th Year)
ADSSU (projected)	33.30%	36.12%	38.94%	41.76%	44.58%
National (PRC)	37.59%	38.97%	40.34%	41.73%	43.10%

Note. Projections derived from the ADSSU model y = 7.94 + 2.82t and the national model y = 25.17 + 1.38t. t = year sequence number (t = 9 for 2016 through t = 13 for 2020).

Figure 2 and Table 2 show that the BSEd program was projected to reach 44.58% by 2020, against a national rate of 43.10%, a margin of only 1.48 percentage points. These projections, taken together, established a quantitative rationale for systematic intervention: without structural reform, both programs were on course for only marginal improvement relative to national standards over the next five years. The contrast between these projected trajectories and the actual post-intervention outcomes documented in Section 3.4 provides the empirical foundation for evaluating the scale of institutional transformation achieved.

3.3 Intervention Framework

The intervention program addressed all four Fishbone domains simultaneously through six interlinked components: (1) faculty competence development, (2) student preparedness support, (3) supervision and instructional quality enhancement, (4) enhanced LET review structures, (5) policy and systems reform, and (6)

resource and facility upgrades. Key measures included the institutionalization of academic counseling, mandatory external LET review programs, alignment of assessments with LET format, restriction of extracurricular activities to one designated day per week, revision and strict enforcement of admission and retention policies, and structured faculty professional development.

3.4 Post-Intervention LET Performance

Table 3 presents the impact of the intervention on LET passing rates for both programs across all examination periods from March 2016 to March 2025.

Table 3. LET Passing Rates: First-Time Takers vs. National Passing Rate (March 2016 to March 2025)

Exam Date	Program	Pass Rate (FTT) %	NPR %	Difference (FTT − NPR)	No. of Topnotchers	Rank
Mar-16	Elem	33.33	28.38	+4.95	0	—
	Sec	35.29	35.43	−0.14	—	—
Sep-16	Elem	28.00	30.18	−2.18	0	—
	Sec	22.22	33.78	−11.56	—	—
Mar-17	Elem	33.33	10.39	+22.94	0	—
	Sec	28.57	25.46	+3.11	—	—
Sep-17	Elem	25.23	26.33	−1.10	1	5th
	Sec	46.81	46.37	+0.44	—	—
Mar-18	Elem	40.00	23.62	+16.38	0	—
	Sec	28.57	29.91	−1.34	—	—
Sep-18	Elem	59.22	20.29	+38.93	2	4th, 10th
	Sec	74.10	48.03	+26.07	—	—
Mar-19	Elem	27.78	27.28	+0.50	0	—
	Sec	43.24	25.95	+17.29	—	—
Sep-19	Elem	80.48	31.34	+49.14	2	5th, 6th
	Sec	77.04	36.68	+40.36	—	—
Sep-21	Elem	75.00	55.96	+19.04	0	—
	Sec	83.33	57.76	+25.57	—	—
Mar-22	Elem	100.00	48.81	+51.19	—	—
	Sec	0.00	41.72	−41.72	—	—

Exam Date	Program	Pass Rate (FTT) %	NPR %	Difference (FTT − NPR)	No. of Topnotchers	Rank
Jun-22	Elem	0.00	50.54	−50.54	—	—
	Sec	50.00	50.48	−0.48	—	—
Oct-22	Elem	85.86	54.43	+31.43	2	7th, 8th
	Sec	69.71	50.94	+18.77	—	—
Mar-23	Elem	80.21	40.76	+39.45	—	—
	Sec	74.29	46.94	+27.35	—	—
Sep-23	Elem	87.60	47.01	+40.59	0	—
	Sec	77.17	56.26	+20.91	—	—
Mar-24	Elem	82.61	46.67	+35.94	—	—
	Sec	80.40	58.78	+21.62	—	—
Sep-24	Elem	82.73	45.51	+37.22	—	—
	Sec	80.61	56.88	+23.73	—	—
Mar-25	Elem	81.82	46.77	+35.05	—	—
	Sec	78.13	62.27	+15.86	—	—

Notes. (1) FTT = First-Time Takers; NPR = National Passing Rate; Elem = BEED; Sec = BSEd. (2) The September 2020 and March 2021 LET cycles were not administered due to the COVID-19 pandemic; these cycles are absent from the table.

The BEED program exhibited substantial improvement beginning in September 2018, reaching 80.48% in September 2019, a 49.14 percentage point advantage over the national passing rate. This trajectory culminated in a 100% passing rate in March 2022, the highest single-cycle result in ADSSU's history. It is noted that in June 2022, no first-time BEED takers were registered for that cycle, accounting for the 0.00% entry in the table. Sustained high performance continued from October 2022 through March 2025, with passing rates ranging from 80.21% to 87.60%. The BSEd program demonstrated similarly strong gains, peaking at 83.33% in September 2021 and sustaining rates above 70% in all but one subsequent cycle. The March 2022 BSEd result of 0.00% reflects a specific circumstance: only two first-time takers sat the examination that cycle, and neither passed; this isolated outcome is not representative of the program's overall performance trajectory. The September 2020 and March 2021 cycles were not administered due to the COVID-19 pandemic. Both programs collectively produced seven nationally ranked topnotchers across four examination periods, representing the first instances of such national recognition in the institution's history.

4. Discussion

The comprehensive intervention implemented at ADSSU demonstrates considerable effectiveness in transforming chronic LET underperformance into sustained institutional excellence — a shift that is both statistically demonstrable and institutionally significant. Pre-intervention trend

analysis established that, on the existing trajectory, the BEED and BSEd programs were projected to exceed national passing rates by only 3.61 and 1.48 percentage points, respectively, by 2020. Against this counterfactual baseline, the actual post-intervention achievements — consistently surpassing national benchmarks by 15 to 51 percentage points across seventeen examination cycles — represent a scale of transformation rarely documented in educational intervention literature.

This outcome validates research emphasizing comprehensive, multi-component approaches to institutional change. Avalos (2011) and Guskey (2020) argue that sustainable improvements in teacher preparation require simultaneous attention to professional development, systemic policy, and resource conditions rather than isolated reforms. The holistic strategy addressing faculty development, instructional quality, student support, systemic reform, and resource enhancement created synergistic effects that amplified individual intervention components, overcoming limitations of piecemeal reform efforts that typically yield modest, unsustainable gains (Hallinger, 2011). The sustained improvement over nine years further indicates that the changes have been institutionalized within organizational culture rather than remaining dependent on external circumstances.

The production of topnotchers represents a qualitative dimension of the transformation. Hattie (2009) identifies teacher expertise and high expectations as among the most powerful influences on student achievement, and the recognition of ADSSU graduates at the national level confirms that the intervention succeeded in raising both the floor and ceiling of student performance. This achievement affirms that systematic interventions can elevate performance across the entire student spectrum, creating conditions for exceptional outcomes while maintaining broad-based success. The positive feedback cycle generated by national recognition has further strengthened institutional identity, student confidence, and performance expectations, consistent with findings on the role of institutional culture in sustaining educational gains (Darling-Hammond et al., 2019).

The ADSSU model provides empirical evidence that well-designed, multi-domain interventions grounded in systematic diagnosis can produce rapid, substantial, and durable improvements. This has significant implications for educational policy in the Philippines and analogous developing country contexts, particularly regarding the utility of the Fishbone-Phenomenology integrated framework as a replicable diagnostic and planning tool for teacher education institutions facing similar challenges. The World Bank (2018) has called for stronger evidence-based quality assurance systems in developing country education, and the ADSSU experience offers a documented, transferable response to that imperative. The findings also align with Amanonce and Maramag (2020), who identify institutional factors as the most tractable targets for improving licensure outcomes, and with Manlangit (2018), who stresses the importance of structured and sustained LET review programs embedded within institutional systems.

A limitation of this study is that the specific contribution of individual intervention components remains unclear. The implementation was holistic and concurrent, precluding attribution of outcomes to discrete elements. Future research should employ factorial or sequential designs to identify the most critical intervention drivers. Replication studies across diverse institutional contexts would further strengthen the evidence base and validate the transferability of this framework.

5. Conclusion

This study demonstrates that systematic, evidence-based diagnosis using the Fishbone and Five Whys frameworks can identify the multidimensional root causes of persistent LET underperformance and inform a comprehensive intervention that produces substantial and sustained, rather than merely incremental, improvement. At ADSSU, addressing faculty competence, instructional quality, student preparedness, institutional systems, and resource

limitations simultaneously generated sustained passing rates consistently surpassing national benchmarks and produced nationally ranked topnotchers for the first time in institutional history.

The integrated Fishbone-Phenomenological framework offered in this study is both practically oriented and methodologically replicable. For teacher education institutions in developing countries grappling with systemic licensure challenges, this framework offers a structured diagnostic pathway toward evidence-based, multi-domain reform. Institutional leaders, policymakers, and educational development practitioners are encouraged to adapt and test this model within their own contexts, contributing to a growing evidence base for quality assurance in teacher education.

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