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Enhancing Licensure Examination Readiness in General and Professional Education: Evidence from a Pretest–Posttest Study of Structured Review Lectures

ABSTRACT

This study examined the effectiveness of structured Licensure Examination for Teachers (LET) review lectures in improving pre-service teachers' readiness in General Education and Professional Education. Employing a quasi-experimental pretest–posttest design, 78 participants from BEED and selected BSED programs completed LET-aligned diagnostic tests before and after review lectures. Paired-sample t-tests and effect size calculations were used to assess learning gains, while score dispersion was analyzed to evaluate consistency across programs. Findings revealed significant improvements in Professional Education but minimal gains in General Education, highlighting the impact of structured review lectures on pedagogical content knowledge (PCK) development. Domain-specific variability was observed, linked to prior experience, curriculum exposure, and practicum participation. The study provides evidence that targeted, domain-sensitive interventions, incorporating active learning, repeated practice, and individualized feedback, are essential to achieving balanced competence. These findings contribute to the literature on teacher preparation, offering actionable guidance for enhancing LET readiness and professional teaching effectiveness.

Keywords: pretest–posttest design; LET readiness; pedagogical content knowledge; teacher education assessment; review program effectiveness

1.0 INTRODUCTION

The Licensure Examination for Teachers (LET) is a critical milestone for aspiring educators in the Philippines, serving both as a national benchmark of professional competence and a gatekeeping mechanism for entry into the teaching profession. Performance in the LET reflects the extent to which pre-service teachers have developed essential competencies in General Education and Professional Education, encompassing foundational content knowledge, pedagogical principles, and instructional decision-making skills. Despite the comprehensive nature of teacher education programs, uneven performance in these domains continues to be observed, suggesting that formal coursework alone may not sufficiently ensure balanced readiness for licensure. This condition highlights the need for structured review interventions evaluated through systematic and controlled measurement approaches (Abao et al., 2023).

From a measurement and control perspective, teacher readiness can be conceptualized as a measurable change in knowledge and competence resulting from targeted instructional intervention. Central to this construct are content knowledge (CK) and pedagogical content knowledge (PCK), which research has shown to develop at varying rates among pre-service teachers. While pedagogical understanding is often strengthened through professional education courses and teaching experiences, mastery of foundational and integrative content knowledge—particularly in cognitively demanding areas—remains inconsistent (Delpuso et al., 2024; Copur-Gençtürk & Li, 2023). Quilang (2023) emphasized that imbalances between CK and PCK can constrain effective instructional practice, reinforcing the importance of evaluating readiness across multiple domains using reliable and comparative assessment measures.

In response to these challenges, LET review lectures have become a widely implemented intervention aimed at consolidating prior learning, addressing content gaps, and improving examinees' test readiness. Empirical evidence indicates that structured review programs can lead to significant improvements in examinees' performance when assessed through pretest–posttest comparisons, particularly when review sessions integrate content reinforcement, test-taking strategies, and active engagement techniques (Paz, Cobrador, & Pendon, 2024; Merin & William, 2023). However, while these studies affirm the general effectiveness of review interventions, they often provide limited analysis of domain-specific learning

gains and score variability, leaving unanswered questions regarding consistency of outcomes and differential responsiveness between General Education and Professional Education. Notably, several studies report stronger gains in Professional Education than in General Education, suggesting the need for closer examination of domain-focused instructional effectiveness (Jaji & Russell, 2025).

Recent scholarship in educational measurement underscores the value of diagnostic assessment and pretest–posttest designs as control mechanisms for monitoring instructional impact and informing program improvement. Assessment-driven instructional planning enables educators to identify baseline competencies, track learning progression, and adjust instructional strategies based on empirical evidence (Hattie, 2017; Black & Wiliam, 2018). In the context of teacher preparation, such approaches support data-informed decision-making and promote more equitable learning outcomes by addressing variability in prior knowledge and engagement (Darling-Hammond et al., 2020; OECD, 2019). Despite these insights, the application of controlled diagnostic measurement in evaluating LET review programs remains underexplored, particularly in terms of its potential to guide targeted instructional enhancements.

Given this context, the present study, titled "LET Readiness in General and Professional Education: A Pretest–Posttest Study," systematically examines the effectiveness of LET review lectures using a quantitative pretest–posttest design. Specifically, the study compares participants' pretest and posttest scores in General Education and Professional Education to identify learning gains, determine domain-specific strengths and weaknesses, and generate evidence-based recommendations for improving review program design and delivery. Grounded in established research on assessment-driven instruction and teacher readiness (Hattie, 2017; Black & Wiliam, 2018; Darling-Hammond et al., 2020), this study positions pretest–posttest measurement not only as an evaluative tool but also as a control mechanism for monitoring readiness and instructional effectiveness. By integrating empirical data from LET takers with contemporary literature on teacher education and assessment, the study contributes to the preparation of competent, confident, and well-rounded pre-service teachers who are equipped not only to pass the LET but also to sustain effective professional practice in their future teaching careers.

2.0 METHODOLOGY

Research Design

This study employed a quasi-experimental pretest–posttest design with repeated measures, an approach widely used in educational research when random assignment is impractical but systematic measurement of intervention effects is required (Creswell & Creswell, 2018; Shadish et al., 2020). This design allows each participant to serve as their own control, thereby reducing the influence of individual differences and strengthening internal validity through within-subject comparison.

A diagnostic pretest was administered to establish baseline competencies in General Education and Professional Education. Results from the pretest informed the emphasis and pacing of the intervention, consistent with assessment-driven instructional models (Black & Wiliam, 2018; Hattie, 2017). The intervention consisted of structured LET review lectures, guided drills, and mock examinations, implemented uniformly across all participants following a standardized instructional plan.

Upon completion of the intervention, a parallel-form posttest was administered. The use of parallel instruments minimized testing effects and enhanced measurement validity by ensuring equivalence in content coverage, cognitive demand, and difficulty level between pretest and posttest (DeVellis, 2017). This design aligns with contemporary recommendations for strengthening quasi-experimental studies in applied educational settings (Salkind, 2023).

Participants and Sampling Technique

The participants consisted of 78 LET takers from the Department of Teacher Education at the City College of Calamba, comprising 42 Bachelor of Elementary Education (BEED) graduates, 18 Bachelor of Secondary Education major in English, 14 BSED–Mathematics, and 4 BSED–Science graduates. A total enumeration sampling technique was employed, wherein all eligible LET takers enrolled in the institutional review program during the study period were included.

Although the sample size was bound by institutional enrollment, total enumeration minimized selection bias and ensured full representation of the accessible population. Methodological literature supports the adequacy of moderate sample sizes in paired-sample and repeated-measures designs, as statistical power is derived from within-subject comparisons rather than group size alone (Field, 2018; Gravetter et al., 2020). Thus, the sample was sufficient for detecting meaningful pretest–posttest differences.

Research Instrument

The study utilized researcher-adapted, LET-aligned diagnostic tests for both pretest and posttest administration. The instruments were patterned after Philippine Normal University (PNU) LET review materials and structured according to the official LET competency framework for General Education and Professional Education. To strengthen measurement rigor, the pretest and posttest were developed as parallel forms, maintaining equivalence in the number of items, domain distribution, and cognitive levels assessed.

Content validity was established through expert review by teacher education specialists, consistent with recommended validation procedures for educational assessments (DeVellis, 2017). Pilot testing and item analysis were conducted to examine item difficulty and discrimination indices, and necessary revisions were made prior to full administration. Internal consistency reliability was computed using appropriate reliability coefficients, confirming the instruments' suitability for repeated measurement (Taber, 2018).

Data Collection Procedure

Data collection followed a standardized and replicable protocol. The pretest was administered at the beginning of the review program under controlled testing conditions. Based on diagnostic results, the review intervention was implemented with emphasis on identified weak areas while maintaining balanced coverage across both domains. All sessions followed a common instructional outline, learning objectives, and assessment schedule to ensure consistency of implementation.

The posttest was administered at the conclusion of the intervention under conditions identical to those of the pretest. Standardized administration, scoring procedures, and data recording methods were strictly observed to minimize procedural bias and measurement error, as recommended in applied educational research (Creswell & Creswell, 2018).

Data Analysis

Data was analyzed using descriptive and inferential statistical techniques. Means and standard deviations were computed to summarize performance levels and score dispersion before and after the intervention. Paired-sample t-tests were employed to determine whether observed differences between pretest and posttest scores were statistically significant, an appropriate method for repeated-measures designs (Field, 2018).

To address reviewer concerns regarding robustness and practical significance, effect sizes (Cohen's d) were calculated to quantify the magnitude of learning gains (Lakens, 2017). Assumptions of normality were examined prior to inferential testing to ensure the appropriateness of parametric analysis. All statistical tests were conducted at a 0.05 level of significance.

Ethical Considerations

This study adhered to established ethical standards in educational research, ensuring the protection of participants' rights, privacy, and well-being. Prior to data collection, ethical clearance was obtained from the City College of Calamba Research Ethics Committee, confirming that the study complied with institutional and national guidelines for research involving human participants.

In addition, informed consent was secured from all LET review participants. They were fully briefed on the purpose, procedures, and potential benefits of the study, as well as their right to voluntarily withdraw at any time without penalty. Participants were assured that their responses and test scores would remain strictly confidential and would be used solely for research and program improvement purposes.

All data were handled in accordance with principles of respect, integrity, and academic honesty, and individual results were not disclosed to anyone outside the research team. The study's procedures were designed to minimize any risk of harm or discomfort, in alignment with ethical guidelines for human-subject research in education (American Educational Research Association [AERA], 2018).

3.0 RESULTS OF THE STUDY

The study examined the effectiveness of LET review lectures in improving pre-service teachers' performance in General Education and Professional Education. Both descriptive and inferential statistics were employed to assess participants' baseline competence, post-intervention gains, and domain-specific differences.

Baseline Performance

Table 1. Program-Level Mean Pretest Scores of LET Review Participants in General and Professional Education

Program	N (Students)	Gen Ed Mean (%)	Prof Ed Mean (%)	Overall Domain Average (%)
BEED	42	59.70757232	67.61929327	63.6634328
BSED-English	18	58.92736626	66.35271164	62.64003895
BSED-Mathematics	14	56.53898509	65.31388889	60.92643699
BSED-Science	4	65.31111111	71.875	68.59305556
Overall	**78**	**60.12125869**	**67.79022345**	**63.95574107**

Participants (N = 78) demonstrated moderate readiness prior to the review sessions, with an overall mean pretest score of 63.96%. Performance in Professional Education (67.79%) was higher than in General Education (60.12%), indicating stronger initial pedagogical competence than content knowledge. Across programs, BSED-Science students showed the highest baseline proficiency (68.59%), while BEED (63.66%), BSED-English (62.64%), and BSED-Mathematics (60.93%) scored lower, reflecting differences in curriculum exposure and program focus.

Table 2. Paired-Sample t-Test Comparing Pre-Test Scores Between General Education and Professional Education

	General Education	*Professional Education*
Mean	65.5389612	65.44605996
Variance	62.27001758	69.70305942
Observations	75	75
Pearson Correlation	0.656337945	
Hypothesized Mean Difference	0	
df	74	
t Stat	0.11928514	
P(T<=t) one-tail	0.452686349	

t Critical one-tail	1.665706893
P(T<=t) two-tail	0.905372698
t Critical two-tail	1.992543495

A paired-sample t-test confirmed that pretest scores between domains were not significantly different (t (74) = 0.119, p = 0.905), validating that participants began the review on relatively equal footing. This aligns with prior studies indicating that pre-service teachers often exhibit moderate but uneven competence across content and pedagogical domains (Delpuso, Lumbocan, Yanggo, & Cubillas, 2024; Rubio & Saenz, 2023).

Post-Intervention Performance

Table 3. Program-Level Mean Posttest Scores of LET Review Participants in General and Professional Education

Program	N (Students)	GenEd Mean (%)	ProfEd Mean (%)	Overall Domain Average (%)
BEED	42	67.0714286	68.61904762	67.8452381
BSED-English	18	66.3888889	79	72.6944444
BSED-Mathematics	14	68.4285714	76.92857143	72.6785714
BSED-Science	4	62	58.5	60.25
Overall	**78**	**65.9722222**	**70.76190476**	**68.3670635**

After the LET review lectures, participants' overall posttest mean increased to 68.37%, with Professional Education (70.76%) outperforming General Education (65.97%). Differences across programs revealed that BSED-English (72.69%) and BSED-Mathematics (72.68%) achieved the highest gains, while BEED (67.85%) and BSED-Science (60.25%) had lower improvements.

Table 4. Paired-Sample t-Test Comparing Post-Test Scores Between General Education and Professional Education Domains

	General Education	*Professional Education*
Mean	66.61333333	71.70666667
Variance	168.1863063	264.0479279
Observations	75	75
Pearson Correlation	0.414283145	
Hypothesized Mean Difference	0	
df	74	
t Stat	-2.748132244	
P(T<=t) one-tail	0.00376247	
t Critical one-tail	1.665706893	
P(T<=t) two-tail	0.007524939	
t Critical two-tail	1.992543495	

The paired-sample t-test comparing posttest scores between domains indicated a significant difference (t (74) = -2.748, p = 0.008), suggesting that review lectures were particularly effective in enhancing pedagogical knowledge. Conversely, the improvement in General Education was not statistically significant (t (74) = -0.738, p = 0.463), indicating that the review sessions may need additional content-focused strategies to strengthen general knowledge acquisition.

Pretest–Posttest Comparisons by Domain

General Education

Table 5. Paired-Sample t-Test Results for Pre-Test and Post-Test Scores in General Education

	Pretest	*Posttest*
Mean	65.5389612	66.61333333
Variance	62.27001758	168.1863063
Observations	75	75
Pearson Correlation	0.34860297	
Hypothesized Mean Difference	0	
df	74	
t Stat	-0.737635951	
P(T<=t) one-tail	0.231534178	
t Critical one-tail	1.665706893	
P(T<=t) two-tail	0.463068356	
t Critical two-tail	1.992543495	

The paired-sample t-test (Table 5) comparing pretest and posttest scores in General Education showed no significant improvement (t (74) = -0.738, p = 0.463). The minimal gain (65.54% → 66.61%) suggests that the current review lectures were insufficient to substantially improve content knowledge. This observation mirrors prior studies highlighting that content mastery in pre-service teachers develops gradually and requires repeated, targeted practice (Njiku, 2025; Diamah, Gaffor, & San Jose, 2022; Mafa-Theledi, 2024).

Professional Education

Table 6. Paired-Sample t-Test of Pre-Test and Post-Test Scores in Professional Education

	Pretest	*Posttest*
Mean	65.44605996	71.70666667
Variance	69.70305942	264.0479279
Observations	75	75
Pearson Correlation	0.264972401	
Hypothesized Mean Difference	0	
df	74	
t Stat	-3.350546861	
P(T<=t) one-tail	0.00063609	

t Critical one-tail	1.665706893
P(T<=t) two-tail	0.001272181
t Critical two-tail	1.992543495

In contrast, the paired-sample t-test for Professional Education (Table 6) showed a statistically significant improvement (t (74) = -3.35, p = 0.001), with the mean increasing from 65.45% to 71.71%. This demonstrates the effectiveness of structured review sessions in enhancing pedagogical knowledge, consistent with literature emphasizing the impact of active, well-designed teacher training programs on PCK development (Siregar, Puspitasari, & Santoso, 2024; Wahyudi, Prasetyo, & Lestari, 2022; Kaufman, Bell, & Hastings, 2023).

4.0 DISCUSSION AND IMPLICATIONS

The results of this study reveal important insights into the effectiveness of LET review lectures in enhancing pre-service teachers' readiness across General Education and Professional Education domains. Participants exhibited moderate baseline competence, with higher initial scores in Professional Education, suggesting that pre-service teachers generally enter review programs with stronger pedagogical knowledge than broad content knowledge. Posttest analyses confirmed significant improvements in Professional Education, while gains in General Education were minimal. This pattern highlights the central role of Pedagogical Content Knowledge (PCK) in teacher preparation and confirms that structured review interventions can meaningfully enhance the ability to integrate subject matter with effective teaching strategies (Hill, Ball, & Schilling, 2014; Lyu, 2021).

The domain-specific outcomes observed in this study emphasize that review programs are particularly effective in strengthening pedagogical competence. Participants' enhanced performance in Professional Education reflects the successful alignment of review lectures with practical teaching applications, providing repeated practice, mock exams, and targeted feedback. These results corroborate existing research on the significance of PCK in teacher effectiveness, which posits that mastery of content alone is insufficient for high-quality teaching; instead, the ability to translate content knowledge into actionable teaching strategies is crucial (Shulman, 1986; Oztay& Boz, 2022).

However, the study also uncovered notable variability across programs, particularly in Professional Education. Differences in posttest scores can be attributed to variations in prior experience, engagement, curriculum structure, and practicum exposure (Xia, Liu, & Qian, 2022; Sarı& Duran, 2022). For instance, BSED-Science students demonstrated higher baseline proficiency but smaller gains, indicating that prior exposure to pedagogical concepts influences both initial readiness and the extent of improvement. Similarly, participants in BEED, BSED-English, and BSED-Mathematics programs exhibited differential gains, underscoring the influence of program-specific factors on learning outcomes. These findings highlight the importance of tailoring review strategies to the unique characteristics and needs of each academic program.

The study's results provide several instructional implications for enhancing LET readiness. First, review programs should incorporate active learning strategies specifically targeting General Education concepts to address observed gaps in content knowledge. Second, providing program-specific supplementary materials and practice exercises can ensure that participants receive targeted support aligned with their academic backgrounds. Third, integrating repeated practice, mock examinations, and immediate feedback is essential to reinforce learning and promote retention. Finally, interventions should be designed to respond to individual learning differences, ensuring balanced development across both General and Professional Education domains.

From a practical perspective, the findings validate the effectiveness of LET review lectures in strengthening pedagogical competence while emphasizing the need for additional content-focused support. This reinforces the broader principle that teacher preparation programs must balance content mastery and pedagogical development to cultivate well-rounded, competent educators (Siregar, Puspitasari, & Santoso, 2024; Wahyudi, Prasetyo, & Lestari, 2022). By combining domain-sensitive instruction, active engagement, and targeted reinforcement, LET review programs can effectively prepare

pre-service teachers not only to pass licensure examinations but also to apply their knowledge confidently in classroom settings.

In sum, this study demonstrates that structured, domain-specific LET review interventions significantly enhance pedagogical knowledge, while highlighting the ongoing need for targeted interventions in General Education to achieve balanced teaching competence. These findings contribute to the literature on teacher preparation, providing empirical support for evidence-based strategies that promote both content mastery and pedagogical effectiveness among pre-service educators.

5.0 CONCLUSIONS

This study examined the effectiveness of structured LET review lectures in enhancing pre-service teachers' readiness in General Education and Professional Education. The findings indicate that participants entered the review program with moderate baseline competence, showing stronger initial performance in Professional Education than in General Education. Posttest results revealed significant improvement in Professional Education, while gains in General Education were not statistically significant, highlighting that review lectures were more effective in strengthening pedagogical knowledge than content knowledge.

The observed domain-specific outcomes underscore the importance of integrating content knowledge with pedagogy. By providing structured activities, mock exams, and reflective exercises, the LET review lectures enhanced participants' Pedagogical Content Knowledge (PCK), which is a critical determinant of teaching effectiveness (Shulman, 1986; Hill, Ball, & Schilling, 2014; Oztay& Boz, 2022). Conversely, the limited improvement in General Education suggests that content mastery requires sustained, targeted interventions and repeated practice for measurable gains, consistent with prior research on teacher preparation (Mafa-Theledi, 2024; Njiku, 2025; Diamah et al., 2022).

The study also highlights program-specific variability in learning outcomes. Differences in curriculum exposure, practicum experiences, and prior pedagogical training influenced both baseline readiness and post-intervention performance (Xia, Liu, & Qian, 2022; Peñaojas& Palomar, 2025; Sarı& Duran, 2022). For example, BSED-Science students demonstrated higher initial proficiency but smaller gains, reflecting the impact of prior knowledge and program structure on learning improvements. These findings suggest that LET review programs should adopt tailored, domain-sensitive approaches to meet the diverse needs of pre-service teachers across academic programs.

From a practical standpoint, the study provides evidence that LET review lectures can significantly enhance pedagogical competence, but achieving balanced teaching readiness across both domains requires additional interventions targeting General Education. Structured, active, and repetitive practice, along with program-specific materials and individualized feedback, can help pre-service teachers develop both content knowledge and pedagogical skills, ensuring they are well-prepared for licensure examinations and professional teaching practice (Siregar, Puspitasari, & Santoso, 2024; Wahyudi, Prasetyo, & Lestari, 2022; Kaufman, Bell, & Hastings, 2023).

In conclusion, this study demonstrates that domain-sensitive LET review programs are effective in improving pedagogical knowledge, while targeted content-focused strategies are essential to achieve comprehensive teacher competence. By integrating empirical evidence and pedagogical theory, the findings contribute to the literature on teacher preparation and provide actionable recommendations for designing LET review interventions that maximize both content mastery and instructional proficiency.

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