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RESEARCH ARTICLE

ENHANCING LICENSURE EXAMINATION READINESS AMONG PRE-SERVICE BACHELOR OF ELEMENTARY AND SECONDARY EDUCATION STUDENTS AT CITY COLLEGE OF CALAMBA, PHILIPPINES: A PRETEST–POSTTEST STUDY OF STRUCTURED REVIEW LECTURES IN GENERAL AND PROFESSIONAL EDUCATION

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Abstract

This study examined the effectiveness of structured Licensure Examin ation for Teachers (LET) review lectures in improving the examination readiness of pre-service teacher education students at City College of Calamba, Philippines, specifically in General Education and Professio nal Education. Using a quasi-experimental pretest–posttest design, the study involved 78 pre-service teachers from the Department of Teacher Education of the City College of Calamba, comprising Bachelor of Elementary Education (BEED) and selected Bachelor of Secondary Education (BSED) graduates. LET-aligned diagnostic tests were administered before and after the implementation of structured review lectures. Data was analyzed using paired-sample t-tests and effect size calculations to determine learning gains, while score dispersion analysis was conducted to assess consistency across programs. Results showed statistically significant improvements in Professional Education, while gains in General Education were minimal. Reliability analysis demonstrated strong internal consistency of the assessment instruments (Cronbach's $\alpha = 0.87$).The findings indicate that structured review lectures are more effective in enhancing pedagogical content knowledge, with variations observed across domains due to differences in prior academic exposure, practicum experiences, and curriculum emphasis. The study underscores the importance of targeted, domain-sensitive review interventions that integrate active learning strategies,repeated practice,and individualized feedback to achieve balanced licensure examination readiness and strengthen pre-service teacher preparation.

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

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teaching profession. Performance in the LET reflects the extent to which pre-service teachers have developed essential competencies in General Education and Professional Education, including foundational content knowledge, pedagogical principles, and informed instructional decision-making. Despite the comprehensive design of teacher education programs, uneven performance across these domains persists, suggesting that formal coursework alone may not sufficiently ensure balanced readiness for licensure. This persistent challenge highlights the need for structured review interventions that are systematically evaluated using controlled and evidence-based measurement approaches (Abao et al., 2023).From an instructional and assessment perspective, teacher readiness may be viewed as a measurable change in knowledge and competence resulting from targeted educational interventions. Central to this construct are content knowledge (CK) and pedagogical content knowledge (PCK), which research indicates development at varying rates among pre-service teachers. While pedagogical understanding is often strengthened through professional education courses, field experiences, and practice teaching, mastery of foundational and integrative content knowledge—particularly in cognitively demanding areas of General Education—remains inconsistent (Delpuso et al., 2024; Copur-Gençtürk & Li, 2023). Imbalances between CK and PCK have been shown to constrain instructional effectiveness, reinforcing the importance of evaluating licensure readiness across multiple domains using reliable, comparative, and diagnostic assessment measures (Quilang, 2023).

In response to these challenges, LET review lectures have become a widely implemented intervention in teacher education institutions, designed to consolidate prior learning, address content gaps, and enhance examinees' test readiness. Empirical studies have demonstrated that structured review programs can lead to significant improvements in examination performance when evaluated through pretest–posttest designs, particularly when review sessions incorporate content reinforcement, test-taking strategies, and active learning approaches (Paz, Cobrador, & Pendon, 2024; Merin & William, 2023). However, while existing studies affirm the general effectiveness of review interventions, many provide limited analysis of domain-specific learning gains and score variability. Consequently, questions remain regarding the consistency of outcomes across General Education and Professional Education, as well as the differential responsiveness of these domains to structured review instruction (Jaji & Russell, 2025).Recent scholarship in educational measurement emphasizes the value of diagnostic assessment and pretest–posttest designs as mechanisms for monitoring instructional impact and informing program improvement. Assessment-driven instructional planning enables educators to establish baseline competencies, track learning progression, and refine instructional strategies based on empirical evidence (Hattie, 2017; Black & Wiliam, 2018). In teacher preparation contexts, such approaches support data-informed decision-making and help address disparities arising from differences in prior knowledge, academic exposure, and practicum experiences (Darling-Hammond et al., 2020; OECD, 2019). Despite these insights, the systematic use of controlled diagnostic measurement in evaluating LET review programs—particularly as a basis for targeted instructional enhancement—remains underexplored.

Given this gap, the present study systematically examines the effectiveness of structured LET review lectures in enhancing licensure examination readiness among pre-service teacher education students in the Philippines. Using a quantitative pretest–posttest design, the study compares participants' performance in General Education and Professional Education before and after the review intervention to identify learning gains, assess domain-specific strengths and weaknesses, and examine score consistency across programs. Specifically, this paper (1) analyzes pretest and posttest score differences, (2) evaluates the relative effectiveness of review lectures across examination domains, and (3) generates evidence-based recommendations for improving the design and delivery of LET review programs. By integrating empirical findings with established literature on assessment-driven instruction and teacher readiness, the study contributes to the preparation of competent, confident, and well-rounded pre-service teachers equipped not only to pass the LET but also to sustain effective professional practice.

Scope and Limitations:-

Given the challenges in ensuring balanced readiness across General Education and Professional Education domains, and the limited research on domain-specific outcomes of structured LET review lectures is important to define the focus and boundaries of the present study. This research examines the effectiveness of structured Licensure Examination for Teachers (LET) review lectures in enhancing the readiness of pre-service teacher education students in the Philippines. Participants included graduates from the Department of Teacher Education at the City College of Calamba, comprising Bachelor of Elementary Education (BEED) students and selected Bachelor of Secondary Education (BSED) majors in English, Mathematics, and Science. Learning gains in General Education and Professional Education were measured using a quantitative pretest–posttest design, with data analyzed through paired-sample t-tests, effect size calculations, and score dispersion analysis to assess both overall improvements and

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consistency across programs.Several limitations should be considered. Some program subgroups, particularly BSED–Science (n = 4), were small, making program-level comparisons statistically unstable; such comparisons are reported descriptively, while primary analyses focus on overall pretest–posttest differences. The study was conducted in a single institution, limiting generalizability to other teacher education programs. The pretest–posttest design measures immediate learning gains only and does not assess long-term retention of knowledge or pedagogical skills. Total enumeration was employed instead of random assignment, limiting causal inferences, and the study evaluated only structured review lectures, excluding other interventions such as peer tutoring, online modules, or simulation exercises. External factors, including prior academic preparation, practicum experience, individual study habits, and access to resources, may have also influenced performance.Despite these limitations, the study provides practical insights into improving LET readiness and offers evidence-based recommendations for the design and implementation of structured review programs in teacher education.

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 (Revised):-

The study involved 78 Licensure Examination for Teachers (LET) takers from the Department of Teacher Education at the City College of Calamba. Participants included 42 graduates of the Bachelor of Elementary Education (BEED) program, and 36 graduates of Bachelor of Secondary Education (BSED) programs, comprising 18 majoring in English, 14 in Mathematics, and 4 in Science.A total enumeration sampling technique was employed, including all eligible LET takers who participated in the institutional review program during the study period. This approach minimized selection bias and ensured full representation of the accessible population.It should be noted, however, that the program subgroups were unevenly distributed, with some subgroups being relatively small, particularly the BSED–Science cohort (n = 4). As a result, program-level comparisons are reported descriptively and should be interpreted with caution, while the primary statistical analysis focuses on overall pretest–posttest differences across the total sample (n = 78).Although the sample size was bound by institutional enrollment, 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). Consequently, the sample is sufficient for detecting meaningful pretest–posttest learning gains while acknowledging subgroup limitations.

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 Cronbach's alpha, yielding a coefficient of $\alpha = 0.87$, which indicates high reliability and demonstrates that the instrument has strong internal consistency and is suitable for repeated measurement and

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comparative analyses (Taber, 2018). This reliability level exceeds the commonly accepted threshold of 0.70, supporting the dependability of the test scores for evaluating changes in participants' performance over time.

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).

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**

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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	59.24616495	67.13145604
Variance	85.02691437	46.5999111
Observations	78	78
Pearson Correlation	0.323041658	
Hypothesized Mean Difference	0	
df	77	
t Stat	-7.30203744	
P(T<=t) one-tail	1.10841 x 10-10	
t Critical one-tail	1.664884537	
P(T<=t) two-tail	2.21682 x 10-10	
t Critical two-tail	1.991254395	

Table 2 presents the results of the paired-sample **t**-test comparing pretest scores in General Education and Professional Education. The findings show that participants obtained significantly higher pretest scores in Professional Education (M = 67.13) than in General Education (M = 59.25), indicating stronger baseline pedagogical knowledge relative to general content knowledge.The computed t value ($t = -7.30$, df = 77) exceeded the critical t value (±1.99), and the two-tailed p value ($p = 2.22 \times 10^{-10}$) was far below the 0.05 significance level. This result leads to the rejection of the null hypothesis, confirming a statistically significant difference between the two domains at pretest.

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 obtained an overall posttest mean score of 68.37%, with Professional Education (M = 70.76%) outperforming General Education (M = 65.97%), indicating stronger post-intervention performance in pedagogical competencies. Program-level comparisons show that BSED-English (M = 72.69%) and BSED-Mathematics (M = 72.68%) registered the highest overall posttest performance, followed by BEED (M = 67.85%). In contrast, BSED-Science (M = 60.25%) obtained the lowest overall posttest mean, suggesting comparatively weaker posttest outcomes in both General and Professional Education domains.

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

	General Education	Professional Education
Mean	66.8974359	71.98717949
Variance	169.4698635	263.5712621
Observations	78	78
Pearson Correlation	0.434621661	
Hypothesized Mean Difference	0	
df	77	
t Stat	-2.846796145	
P(T<=t) one-tail	0.002829108	
t Critical one-tail	1.664884537	
P(T<=t) two-tail	0.005658216	
t Critical two-tail	1.991254395	

Table 4 presents the paired sample t-test results comparing posttest scores in General Education and Professional Education. The analysis revealed a statistically significant difference between the two domains ($t = -2.85$, $df = 77$, $p = 0.0057$). Participants scored significantly higher in Professional Education ($M = 71.99$) than in General Education ($M = 66.90$), indicating stronger performance in Professional Education. The Pearson correlation of $r = 0.435$ suggests a moderate positive relationship between the two sets of scores, indicating that participants' performance in one domain is moderately associated with performance in the other.

Pretest–Posttest Comparisons by Domain:-
General Education:-

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

	Pre-Test	Posttest
Mean	59.24616495	66.8974359
Variance	85.02691437	169.4698635
Observations	78	78
Pearson Correlation	0.084147422	
Hypothesized Mean Difference	0	
df	77	
t Stat	-4.414683946	
P(T<=t) one-tail	1.62728x10-05	
t Critical one-tail	1.664884537	
P(T<=t) two-tail	3.25457x10-05	
t Critical two-tail	1.991254395	

The posttest mean score in General Education ($M = 66.90$) was higher than the pretest mean ($M = 59.25$). A paired-sample t-test revealed that this increase was statistically significant ($t = -4.41$, $df = 77$, $p = 0.00003 < 0.05$). This indicates that the structured LET review lectures were effective in improving participants' knowledge in General Education. The Pearson correlation ($r = 0.084$) suggests a very weak positive relationship between pretest and posttest scores, indicating that the improvement occurred largely independently of participants' initial performance.

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Professional Education:-

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

	Pre-Test	Posttest
Mean	67.13145604	71.98717949
Variance	46.5999111	263.5712621
Observations	78	78
Pearson Correlation	0.351190941	
Hypothesized Mean Difference	0	
df	77	
t Stat	-2.813516848	
P(T<=t) one-tail	0.003108134	
t Critical one-tail	1.664884537	
P(T<=t) two-tail	0.006216268	
t Critical two-tail	1.991254395	

Table 6 presents the pretest and posttest scores for Professional Education. Participants' mean scores increased from 67.13 on the pretest to 71.99 on the posttest. A paired sample t-test indicated that this increase was statistically significant ($t = -2.81$, $df = 77$, $p = 0.0062 < 0.05$), demonstrating that the structured LET review lectures effectively enhanced participants' professional knowledge. The Pearson correlation ($r = 0.351$) indicates a moderate positive relationship between pretest and posttest scores, suggesting that participants who performed relatively well on the pretest tended to also perform well on the posttest. Overall, these results support the effectiveness of the LET review lectures in improving knowledge in Professional Education, consistent with the findings in General Education.

Discussion:-

This study examined the effectiveness of structured Licensure Examination for Teachers (LET) review lectures in enhancing pre-service teachers' readiness in General Education and Professional Education using a pretest–posttest design. The results demonstrate that review intervention produced statistically and practically meaningful learning gains, while also revealing clear domain-specific differences in baseline competence and post-intervention outcomes.Pretest results indicated moderate baseline readiness, with participants scoring significantly higher in Professional Education ($M = 66.90$) than in General Education ($M = 59.25$). This finding suggests that pre-service teachers entered the review program with stronger pedagogical foundations than general content mastery. Similar patterns have been reported in recent teacher education research, which notes that professional education courses and practicum experiences tend to strengthen pedagogical understanding more consistently than broad content knowledge (Darling-Hammond et al., 2017; König et al., 2021).

Posttest results showed significant improvements in both domains, with mean scores increasing to 66.90 in General Education and 71.99 in Professional Education. Paired-sample **t**-tests confirmed these gains (General Education: $t(77) = -4.41$, $p < .001$; Professional Education: $t(77) = -2.85$, $p = .006$), accompanied by moderate effect sizes (Cohen's $d = 0.50$ and 0.32, respectively). These findings indicate that the structured review lectures had both statistical and practical significance, reinforcing evidence that well-designed review interventions can meaningfully enhance licensure examination readiness (Koh et al., 2018; Lyu, 2021).Despite gains in both domains, posttest comparisons revealed that Professional Education scores remained significantly higher than General Education scores, indicating stronger responsiveness of pedagogical knowledge to the review intervention. This outcome aligns with contemporary studies emphasizing that pedagogical content knowledge develops more readily when instruction integrates applied teaching scenarios, assessment literacy, and reflective practice—elements commonly emphasized in professional education reviews (Depaepe et al., 2020; Oztay& Boz, 2022).

Variability across program subgroups was also observed. Some groups demonstrated higher baseline scores but smaller gains, while others showed lower initial performance followed by greater improvement. Such patterns

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suggest that remedial gains are influenced by prior exposure, curriculum alignment, and practicum experiences, rather than by review participation alone (König et al., 2021; Sarı& Duran, 2022). Given the imbalanced subgroup sizes, these program-level observations were interpreted descriptively to contextualize trends rather than to support inferential claims, addressing concerns about subgroup instability.Measurement quality was supported by strong internal consistency of the LET-aligned diagnostic tests (Cronbach's $\alpha = 0.87$), indicating reliable assessment of learning gains. The inclusion of effect sizes alongside significance testing strengthens interpretability and responds to calls in educational research for transparent reporting of both statistical and practical impact (Lakens, 2017; Field, 2018). Overall, the coherence of results across tables supports the conclusion that structured LET review lectures are effective, particularly for strengthening pedagogical readiness, while highlighting persistent challenges in General Education mastery.

Educational Implications:-

The findings of this study yield several important implications for teacher education institutions and LET review program developers. First, the consistently lower performance in General Education underscores the need for instructional strategies that emphasize conceptual understanding and active learning, rather than memorization-based review approaches. Second, program-specific review support may help address variability arising from differences in curricular exposure and practicum experience. Third, the demonstrated effectiveness of structured reviews highlights the importance of repeated practice, mock examinations, and immediate feedback as core components of licensure preparation. Finally, the use of diagnostic assessments with established reliability supports data-informed program improvement, enabling institutions to refine review interventions based on empirical evidence and learner needs (Black & Wiliam, 2018; OECD, 2019).

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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