



Analysis of Licensure Examination Performance of Bachelor of Secondary Education in Mathematics: Basis for a Comprehensive Review Program

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ABSTRACT

The Philippine Higher Education Institutions (HEIs) continually exert efforts to produce quality and competent graduates. While there are various parameters for evaluating program performance, the licensure examination is the sole recognized qualification standard in the country. In the case of teacher education programs, the licensure examination for teachers (LET) assesses the quality of education graduates acquire. As a result, HEIs consistently seek ways to enhance their graduates' LET performance. The Mindoro State University College of Teacher Education employs various strategies to improve institutional LET performance, including integrating a review class into the curriculum. However, interventions should also be extended to graduates and repeaters, as their performance contributes to institutional outcomes. Accordingly, the researchers conducted this study to analyze trends in LET performance among BSEd Mathematics graduates. The study aimed to evaluate LET performance status from March 2016 to September 2019, utilizing documentary analysis of LET and academic performance. Data collected were analyzed using mean, frequency percentage, and cross-product analysis. Results indicate that repeater performance significantly influences overall performance, underscoring the need for targeted interventions. Academic performance is closely related to LET performance, with the exception of non-passers' professional education subjects. The study's findings serve as a basis for designing a comprehensive review program and can be used ex-ante to assess program effectiveness.

Keywords: descriptive research, education, general education, licensure examination for teachers, ex-ante analysis, mathematics, Oriental Mindoro, professional education, review classes



Introduction

The Philippine Higher Education Institutions (HEIs) are continually committed to producing quality and competent graduates through effective teaching. While various parameters are considered in evaluating program performance (Laguador & Refozar, 2020), the sole recognized qualification standard in the country is graduates' performance in the licensure examination.

In the Philippines, passing the Licensure Examination for Teachers (LET) is a prerequisite for teaching (RA 7836 or the Philippine Teachers Professionalization Act of 1994). This examination serves as conclusive evidence to gauge the quality and standard of education provided by a college. Consequently, HEIs consistently offer programs and services to enhance their graduates' performance in licensure examinations.

A teaching license is legally required to work as a teacher (Toktamysov, 2021), distinguishing those who can enter the classroom based on standardized exams (Abdallah & Musah, 2021). The licensure examination ensures the quality of teacher education by identifying those with the minimum degree of competence required for the teaching profession (Cahapay, 2020). LET serves as an initial measure of teaching competence (Acosta & Acosta, 2016).

Mindoro State University (MinSU) offers Bachelor in Elementary Education (BEEd) and Bachelor in Secondary Education (BSEd) majors in English Language Teaching, Mathematics, and Science under the College of Teacher Education. While a significant number of graduates pass the LET, the institution's passing percentage falls short of the 50% required for Level IV accreditation. Consequently, the institution is developing plans to improve graduates' LET performance. Initiatives include the incorporation of a review/refresher course in the curriculum for pre-service teachers and the implementation of the Review Classes amidst the Pandemic project (ReCAP) for graduates and pre-service students. However, an analysis of LET performance trends is essential to identify priority areas for intervention programs such as review classes. A comprehensive plan should be formulated as a guide for the systematic implementation of the program.

Review of Related Literature

This section presents a review and discussion of the literature to provide a solid background on the research topic. It includes discussions on the mandates for LET, performance in LET, and extension programs.

Mandates for Licensure Examination for Teachers

Before entering the teaching profession, graduates of any education course are required to take and pass the Licensure Examination for Teachers (LET). No person shall practice the teaching profession or offer related services without a valid license from the Professional Regulation Commission (PRC), as stipulated in Republic Act 7836 (Philippine Teachers Professionalization Act of 1994, Article IV, Section 27). The Licensure Examination for Teachers requires examinees to pass the test in general education (40%) and professional education (60%) for the elementary level, and general education (20%), professional education (40%), and specialization courses (40%) for secondary education (RA 7836).

According to Memorandum Order (CMO) No. 30, series of 2004, issued by the Commission on Higher Education (CHED), Higher Education Institutions (HEIs) are reminded of their function and responsibility to ensure the highest standards in defining the objectives, components, and processes of the pre-service teacher education curriculum (CMO No. 30, s. 2004, Art. I, Sec. I, pp. 1). This is because the quality of education in the Philippines depends on the quality of service provided by teachers who are prepared and trained by HEIs.

In addition to performance in the LET, the curriculum's effectiveness is also measured in terms of graduates' employability (Malaluan, 2017). However, employability is dependent on LET performance. Thus, increasing LET performance is the duty and responsibility of every HEI. Performance in the LET serves as an indicator of the quality of teacher education (Bongalosa et al., 2021; Gerundio & Balagtas, 2014), essential to meet the demands of accreditation, State Universities and Colleges (SUC) leveling, and international marketability (Chan-Rabandal & Manzano, 2018).

Performance in Licensure Examination for Teachers

There have been various studies conducted on the performance in the Licensure Examination for



Teachers (LET), as the licensing of teachers is crucial for the acquisition of quality education. Among the most conducted studies are those determining the contributory factors to the performance of graduates (Amanonce & Maramag, 2020; Bongalosa et al., 2021; Cahapay, 2020) as well as investigating possible hindrances in producing quality and competitive teacher-education graduates (Delos Angeles, 2019). According to the Philippine Business for Education (PBED Report 2020), a study on licensure examinations from 2009 to 2017 revealed that around 50% of schools offering teacher education programs in the Philippines performed poorly. It is essential to understand various factors contributing to the dismal passing percentage, with one such factor being curriculum misalignment (Irene, 2023). This misalignment signifies a disparity between what is taught in college, what is tested by the Professional Regulation Commission (PRC), and what is needed by the Department of Education (PBED State of Philippine Education Report 2023).

Results of the studies also revealed that the performance in the specialization courses of BSEd LET takers is low (Antiojo, 2017; Cadiente, 2019). Some graduates face challenges attending review classes due to financial issues and time conflicts (Aquino & Balilla, 2015). Additionally, repeaters were found to drag down the institution's overall performance in the LET (Antiojo, 2017). According to Quito (2006), the longer the respondents took to finish the course, the poorer their performance in the LET. Moreover, Teacher Education Institutions (TEIs) show low confidence in predicting LET results (Fiscal & Roman, 2022). Hence, conducting studies on how to increase the LET performance of repeaters is of great significance.

In addition to identifying reasons for low performance, some studies provide recommendations on how to improve LET performance. These include offering intensive review programs for the three main areas of the LET (Refugio, 2017), especially in specialization courses (Antiojo, 2017; Bongalosa et al., 2017; Cadiente, 2019; Delos Angeles, 2019), and conducting online and face-to-face mentoring and coaching (Malaluan, 2017).

Furthermore, it is important to study previous LET performances to comprehensively assess trends in students' licensure examination performance (Kalaw, 2017) and continuously track the LET performance of graduates (Amanonce & Maramag, 2020). Accord-

ing to Orlanda-Ventayen (2020), continuous intervention should be done, such as surveying students and identifying weaknesses for training and development. Moreover, an intervention should be implemented among repeaters (Antiojo, 2017), such as providing a refresher course before allowing them to retake the LET (Malaluan, 2017).

Framework

The theory related to this study is Thorndike's (1932) Law of Effect, Readiness, and Exercise. The Law of Effect states that if the response is revealed and the reward is satisfying or pleasant, the connection is strengthened. Achieving success in the licensure examination is the goal of every teacher education graduate. Therefore, graduates prepare for the examination as part of their career plan. On the other hand, the Law of Readiness posits that when an individual is not ready for action, the activity consonant with the set is annoying or frustrating. Thus, it is crucial that test takers adequately prepare before taking the LET. The Law of Exercise simply means that learning is further strengthened through repetition and correct practice. In this sense, a review and refresher course play a vital role in preparing for examinations like the LET.

Research Objectives

The study aims to determine the trends in the licensure examination performance of BSEd Mathematics graduates from March 2017 to September 2019. Specifically, the study aims to determine: 1) the LET average performance of MBC BSEd Mathematics graduates; 2) performance in the three LET areas; 3) academic performance of the graduates; and 4) the relationship between the academic and LET performance of the graduates.

Methodology

This section outlines the methodology of the study, encompassing research design, setting, data sources and analysis, and ethical considerations. Each of these elements is discussed to address the presented research questions.

Research Design. The study employed a descriptive



research design using the data aggregation method. Descriptive design was chosen to provide a detailed explanation and description (Creswell, 2012) of the LET performance of the BSEd Mathematics graduates. Additionally, data aggregation was utilized to understand the common and variable features (Cai et al., 2019) of the LET performance.

Setting. The research setting is the Mindoro State University Bongabong Campus (MBC). The university comprises three campuses located in Calapan City, Victoria, and Bongabong. The researchers chose to conduct the study at MBC due to its having the lowest LET performance among the three campuses. Additionally, the Bachelor of Secondary Education program at this campus recently underwent Level IV Accreditation evaluation. However, re-accreditation was not granted because the LET performance did not surpass 50% of the national passing percentage, which is the minimum requirement for Level IV. The study focused solely on BSEd Mathematics majors as it aligns with the specialization of the researchers.

Data Sources. The data utilized in this study include LET performance from March 2017 to September 2019 and the General Weighted Average of the BSEd graduates from 2016 to 2019. The data were tabulated, segregated, analyzed, and interpreted using descriptive and inferential statistics.

Data Analysis. Data required for the study includes documents related to the list of graduates from 2016 to 2019, which were obtained from the Office of the Registrar. Documents regarding MBC LET performance were acquired from the Records Office. Data derived from these documents were analyzed using descriptive analysis presented in graphs, mean, and frequency count. To determine the significant relationship between LET and GWA performances, Cross-Product Analysis was employed.

Ethical Considerations. Before conducting the study, permission was obtained from the College President through the Research and Development unit. Additionally, permission to access data from the registrar and records office was secured. The Data Privacy Act of 2012 was strictly observed throughout the entire study.

Results. This section presents the results and discussion of the data analysis. The presentation of results follows the order of the research questions previously stated.

BSEd Mathematics Average LET Performance

Table 1 presents the passing percentage status for the secondary level, from the national to institution-

Testing Schedule	National	Institutional			BSEd Mathematics		
		First Timers	Repeaters	Overall	First Timers	Repeaters	Overall
Sept. 2016	33.78%	45.28%	2.70%	27.78%	81.81%	0	81.81%
March 2017	24.46%	28.57%	21.74%	23.33%	0	16.67%	11.11%
Sept. 2017	46.37%	52.12%	23.21%	44.80%	73.68%	25%	69.05%
March 2018	29.91%	31.43%	17.39%	22.12%	0	28.57%	22.22%
Sept. 2018	49.03%	71.25%	25.40%	58.03%	90.32%	58.33%	81.40%
March 2019	25.95%	48.00%	11.59%	21.28%	50%	0	20%
Sept. 2019	39.69%	63.56%	15.71%	45.74%	83.33%	40%	78.86%

Table 1. Status of Passing Percentage

al levels, including MBC BEd Mathematics. As shown, except in March 2017, the performance of BEd Mathematics is higher than the institutional passing percentage and sometimes even surpasses the national passing percentage. Additionally, first-time takers performed well in all schedules except in March 2017. It is also noteworthy that the performance of repeaters significantly influences the overall performance. This observation implies a clear connection between the performance of repeaters and the passing percentage of BEd Mathematics in the Bonga-bong Campus. The results align with the findings of Antiojo (2017), indicating that repeaters have an impact on and can drag down institutional performance in the LET.

Figure 1 presents the LET performance of BEd Mathematics graduates from MBC spanning from March 2017 to September 2019. As can be observed from the figure, an increasing number of students are passing the LET. While the instances of failing are relatively few, it remains crucial to investigate the possible reasons for test failures and devise a plan to improve the passing percentage of BEd Mathematics.

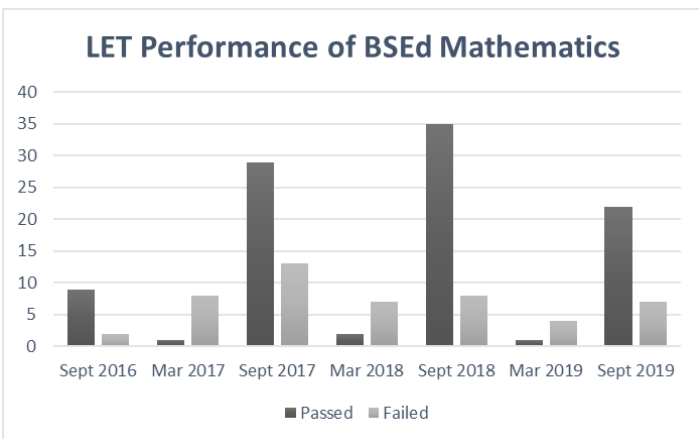


Figure 2.
LET Performance from March 2017—September 2019

Examining Figure 2, where first-timers and repeaters are segregated per testing schedule, it is evident that there were more first-timers than repeaters during the September exams. Additionally, it is noteworthy that the majority of takers during the March exams are repeaters, and during these examination schedules, the passing rate is low.

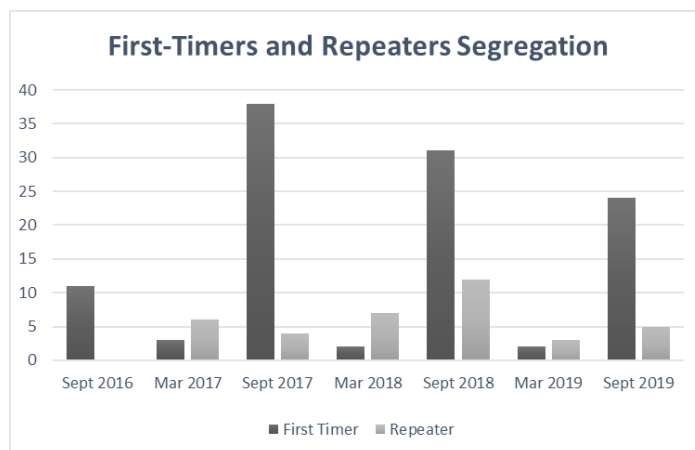


Figure 3.
LET Performance when segregated as first-timers and repeaters

On this note, conducting interventions among repeaters could assist them in successfully passing the LET and contribute to an overall improvement in the passing percentage. An intervention should be implemented for repeaters, as suggested by Antiojo (2017), such as a refresher course before taking the LET, as recommended by Malaluan (2017).

BEd Mathematics Performance in Three LET Areas

To evaluate the performance of the test-takers in the three areas, data were presented based on their performance in general education, professional education, and major subjects. Furthermore, to clearly identify the areas that need improvement, the data were grouped into two categories – passers and non-passers.

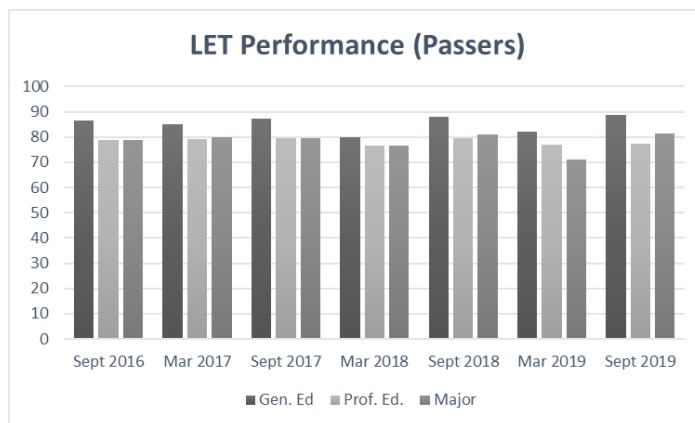


Figure 4.
LET performance of passers in the 3 subjects

Figure 4 illustrates that in all examination schedules, performance in General Education (Gen Ed) consistently received the highest ratings. While performance in Professional Education (Prof Ed) and Major courses is nearly comparable, it is noticeable that during March 2019, the average performance in Major courses did not reach the passing rate.

(2006), which suggests that the longer respondents take to finish the course, the poorer their performance in the LET. Therefore, offering a refresher course or review class is essential for these graduates. The institution can provide this by conducting extension services not only for its graduates but also for graduates from other institutions.

Academic Performance of the Graduates

Figure 6 presents the academic performance of the graduates in terms of their general weighted average in the three subject areas. The university employs numerical ratings as follows: 5.00 (Failing), 3.00 (Passing), 2.75 (Fair), 2.50 (Satisfactory), 2.25 (Thoroughly Satisfactory), 2.00 (Very Satisfactory), 1.75 (Good), 1.50 (Very Good), 1.25 (Outstanding), and 1.00 (Excellent).

As shown, LET passers performed very satisfactorily in Gen Ed and Prof Ed but showed good performance in the major subject. On the other hand, non-passers demonstrated very satisfactory performance in Gen Ed and Major subjects while they exhibited thorough satisfactory performance in Prof Ed. Moreover, the figure shows that passers performed better than non-passers in the three areas, with the Major subject recorded as the highest. It can also be noticed that graduates' performance in General Education and Professional Education, for both passers and non-passers, is almost the same.

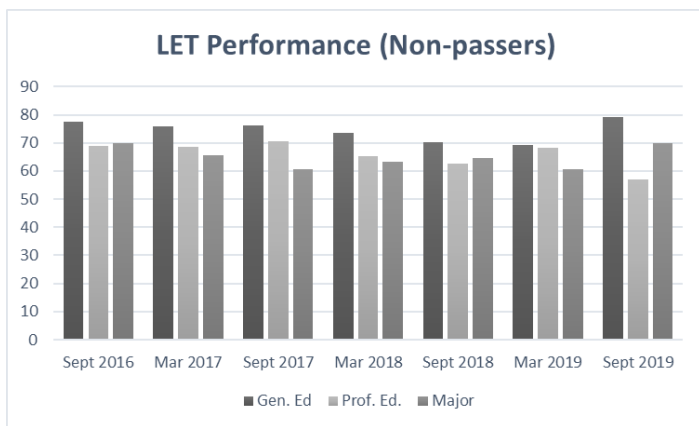


Figure 5.
LET performance of non-passers in the 3 subjects

When analyzing the performance in the three subject areas of the non-passers (Fig. 5), their averages indicate that their highest scores are from the General Education subject. Concerning the Professional Education subject, it is generally higher than the major subjects, except for March 2018, September 2018, and September 2019. However, during the last test, the difference in scores is quite significant. The results also demonstrate that non-passers exhibited low performance in specialized courses. These findings align

When considering the number of times the examinees took the LET, 72 of them, equivalent to 86%, passed the LET on the first attempt. However, there are seven (8%) graduates who took it twice, and approximately 6% (five graduates) took the exam three times before passing.

In the analysis of the number of attempts made by non-passers, findings reveal that 18 (41%) of them only took the test once. Twenty-two of them, comprising 50% of the non-passers, have taken the LET twice. Additionally, two non-passers took the test three times, and one non-passer has attempted the LET six times without success. These results strongly indicate the need for intervention for non-passers, as they are likely to retake the LET. Without assistance, they could continue to adversely impact institutional performance. This aligns with the findings of Quitos' study

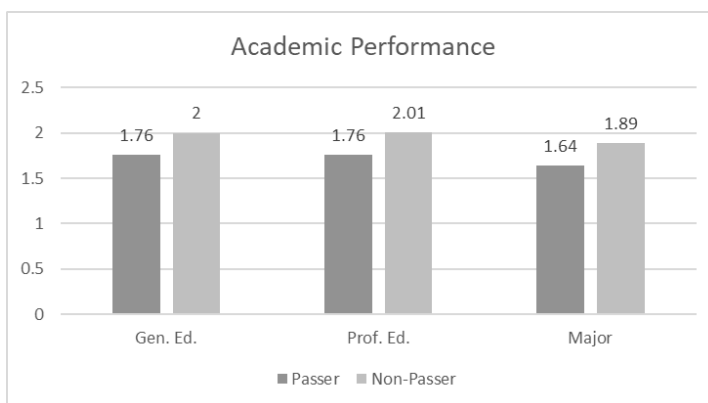


Figure 6.
Academic Performance of the Based Mathematics Graduates

Relationship between GWA and LET Performance

Table 2 depicts the cross-product results between and among the General Weighted Average (GWA) and LET performance of the graduates. As can



be gleaned from the table, all values are significantly correlated at the 0.1 level. This implies that there exists a moderate to high correlation between and among the variables under study.

The negative correlation denotes the inverse relationship between GWA and LET performance. Since the university follows the diminishing grading system, a lower GWA means a higher performance. This suggests that higher academic performance leads to higher LET ratings. The negative covariance signifies a strong correlation between and among the areas. Therefore, implementing interventions to improve the academic performance of pre-service teachers is of high significance.

The result of the study aligns with the findings of Amanonce and Maramag (2020), Valle and Brobo (2022), and Chan-Rabanal (2018), concluding that academic performance significantly affects the LET performance of graduates.

Conclusion

Conducting an analysis of successive LET performances could assist in identifying trends and formulating plans to improve graduates' performance. The LET performance of graduates from March 2017 to September 2019 indicates that there were more passers during the September exams, with a higher number of first-time takers compared to repeaters during these periods. This implies that most LET takers performed well

Note: ** Correlation is significant at 0.01 (2-tailed), * Correlation is significant at 0.05 (2-tailed)

General Weighted Average	Licensure Examination for Teachers		
	Gen Ed	Prof Ed	Major
Gen Ed	-0.641 **	-0.567 **	-0.537 **
Prof Ed	-0.57 **	-0.459 **	-0.531 **
Major	-0.665 **	-0.633 **	-0.603 **

Table 2. Cross-Product Result between academic and LET Performance of the Graduates

during their initial attempt. The results also reveal that the performance of repeaters significantly influences the overall LET performance of the institution. Since more repeaters failed the LET, implementing intervention programs for them is crucial.

Given that the performance in major subjects and professional education was among the lowest, a comprehensive review plan should be devised with a special focus on these two areas. Academic performance and LET performance are correlated in terms of General Education and major subjects for both passers and non-passers. However, professional education does not seem to affect the performance of non-passers. Therefore, considering other factors in predicting LET performance is essential.

Future Directions

To address the issue of repeaters negatively impacting institutional LET performance, an intervention program should be implemented. Refresher courses or review classes may be offered by the College of Teacher Education through the university's extension unit. To effectively reach the target participants, conducting interviews to gather insights into their experiences and challenges while taking the LET is essential. This information can aid in determining strategies to be employed in conducting review classes.

Additional data sources, such as pre-board exam performance, are needed to enhance the analysis. An impact assessment of the Review Classes



amidst the Pandemic (ReCAP) program should be conducted by performing regression analysis on the pre-board exam results, General Weighted Average (GWA), and the results of the March 2023 exams. This comprehensive approach will provide a more thorough understanding of the program's effectiveness and areas for improvement.

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