

ASSESSMENT ON THE PERFORMANCE OF TEACHER EDUCATION GRADUATES IN THE LICENSURE EXAMINATION FOR TEACHERS (LET) USING STATISTICAL QUALITY CONTROL: A CASE STUDY OF UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES-CAGAYAN DE ORO

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ABSTRACT. One of the indicators of whether the institution is going on the right path is the passing rate of the graduates who took up the board examination like in the Philippines, the Professional Regulation Commission (PRC) is the licensing authority for various professional. This study aims to assess the licensure examination performance of the education graduates of the University of Science and Technology of Southern Philippines-Cagayan de Oro campus (USTP-CDO) who took the Licensure Examination for Teachers (LET) in the PRC using Statistical Quality Control (SQC). Graduates of the USTP-CDO campus who took the LET in the year 2019, 2021, and 2022 were the study's respondents. Specifically, P-Chart was used to determine the conforming and nonconforming outcomes of the education graduates during the licensure examination in the year 2019, 2021, and 2022. Out of 950 takers in 4 consecutive examinations conducted by the PRC, there were 244 failed with a total fraction of defective of 1.1375 in general education, 431 failed with a total fraction of defective of 1.2388 in professional education courses, and 694 failed with the total fraction of defective of 2.6071 in Major Courses. There are cases where the result of the board examination of the graduates in the PRC examinations is out of control. Therefore, it is recommended to conduct a study to investigate the causes of the non-conformants of the students in the licensure examination for teachers in PRC.

Key Words: *Statistical Quality Control, Licensure Examination for Teachers, Teacher Education Program*

1. INTRODUCTION

Any training institution's quality depends on the success indicators such as employability and productivity of the graduates and performance in the board examinations [1]. One of the indicators of whether the institution is going on the right path is the passing rate of the graduates who took up the board examination in the Philippines Regulation Commission (PRC). The percentage of passing from the board examination tells the institution what kind of training they gave their students. As observed, the institutions provide all means to deliver the program effectively. At the University of Science and Technology of Southern Philippines (USTP), graduates in the education program are encouraged and motivated to take and pass the Licensure Examination for Teachers (LET) after graduation.

In the Philippines and worldwide, having the license to teach is a primary step for every education graduate to acquire to practice the teaching profession. It is clearly stated in the Republic Act No. 9293, also known as the Philippine Teachers Professional Act of 1994 [2],

"Except as otherwise allowed under this Act, no person shall practice or offer to practice the teaching profession in the Philippines or be appointed as teacher to any position without having previously obtained a valid certificate of registration and a valid professional license from the Commission." p1.

In connection with this, all individuals teaching in the Basic Education sector must have a license before practicing teaching anywhere in the country.

In the present March 2019 LET in both Elementary and Secondary levels, 19,659 elementary teachers out of 72,054 examinees (27.28%) and 22,271 secondary teachers out of 85,823 examinees (25.95%) successfully passed [3]. Although there are institutions that demonstrated a higher percentage of passing, the national passing rate in elementary and high school Licensure Examination was small. Going back to this data, institutions must look at the result carefully for investigation.

The code of ethics for teachers in the Philippines clearly states that teachers are duly licensed professionals with dignity and reputation with high moral values and technical and professional competence in their noble profession. Teachers should strictly observe and practice these ethical and moral principles, standards, and values. Teachers who have comprehensive knowledge of their subject matters let their students actively participate in the lessons [4]. To be called a professional teacher, one should have a license. To be called a professional teacher, each education graduate needs to pass the said LET. With this, the education department faculty must learn how to examine the trends of the board examinations. This is a crucial factor in analyzing variables that affect the performance of the said LET performance so that policies and interventions can be effectively delivered to the students for the LET's success.

The study's main problem is to examine if the institution, specifically the education program, provides a quality outcome in passing the licensure examination. The P-chart result will give the college ideas on the LET result's status,

eventually preparing steps to reduce the number of failing examinees in the licensure examination. More so, this will give knowledge to the policymaker and the department's faculty on how they can use the data to improve the performance of the graduate in taking the LET. To be the best deliverer in the country's teacher education program, indicators in LET will be one of the primary bases. In SUC leveling, one of the success indicators of a University is to check the performance of the graduates in the board examination. The RA 8981, otherwise known as PRC Modernization Act of 2000 Section 7(m), PRC is tasked to monitor schools' performance in licensure examinations and publish in a national circulation newspaper. It is a pride of the institution if their board examination is above the national level and best if the institution belongs to the top-performing school in the said examination. On the contrary, it is a wicked image for the University if the result is below the national score.

2. METHODOLOGY

This study aims to assess the licensure examination performance of the education graduates of the USTP CDO campus who took the Licensure Examination for Teachers (LET) in the Professional Regulation Commission (PRC) using Statistical Quality Control (SQC). SQC is commonly used in determining the source of errors by identifying the causes of variations (common or special). Moreover, seven (7) SQC tools are commonly used in monitoring and analyzing outputs for quality improvement, one of which is the Control Chart. This tool is used to study how the process changes over time and if the process is within the control limit. It always has a center line which indicates the average, an upper line for Upper Control Limit (UCL), and a lower line for Lower Control Limit (LCL). One of the types of a control chart is the P-Chart. P- Chart is used for data that is counted. P chart can display the fraction of conforming or percent of nonconforming data values. This study used P-Chart to determine the conforming and nonconforming outcomes of the education graduates during the licensure examination in the years 2019, 2021, and 2022. However, there were no examination results in the year 2020 included due to Covid-19 health restrictions. Graduates of the USTP CDO campus who took the licensure examination for teachers in the years 2019, 2021, and 2022 were the study's respondents. The data used in this research were obtained from the PRC through the request from the Dean's office of the College of Science and Technology Education (CSTE). A complete record of the passers and failures from four consecutive years are sent directly to the Dean's office after the approval of the request.

Nonconforming or defective means that the outcome did not meet the desired criteria [5]. In the context of this study, the nonconforming outcome was referred to as the failure rates of the LET in three (3) major areas, namely, Major course, Professional Education course, and General Education course.

Data were analyzed using P- Chart in order to identify the conformance and non-conformance ratings of the LET. P-chart is used to monitor the fraction of defective (conforming and nonconforming) units in different sample sizes [6]. The subgroups in this study are shown in Tables 1, 2, and 3, categorized as Major courses, Professional Education courses, and General Education courses, and the population size, failing rate, and the fraction of defects. To calculate the fraction of nonconforming units in each subgroup, the formula and procedure were benchmarked from the study of Taiwo, O. J., & Ayansola Olufemi, A. (2019) entitled, Assessment of Student's Performance Tertiary Education In Nigeria Using Statistical Quality Control. The researchers are very particular and interested in the Upper Control Limit, which signifies that the result is low and beyond the control limit. The upper control limit is calculated from the data that is plotted on the control chart. It is placed 3- sigma (of the data being plotted) away from the average line. The upper control limit is used to mark the point beyond which a sample value is considered a special cause of variation.

To calculate each subgroup of the nonconforming units, the below formula was used:

$$P_i = \frac{d_i}{n_i}$$

d is the total number of failed students

n is the total number of examinees

P-Chart Procedure:

1. Compute the proportion of defectives.
 P_1 (March 2019), P_2 (Sept 2019), P_3 (Sept 2021), P_3 (Sept 2022)
2. Determine the control limits values which are:

For equal sample size.

$$UCL = \bar{P} + 3\sqrt{\frac{\bar{P}(1-\bar{P})}{n}}$$

$$LCL = \bar{P} - 3\sqrt{\frac{\bar{P}(1-\bar{P})}{n}}$$

For unequal sample size,

$$UCL = \bar{P} + 3\sqrt{\frac{\bar{P}(1-\bar{P})}{\bar{n}}}$$

$$LCL = \bar{P} - 3\sqrt{\frac{\bar{P}(1-\bar{P})}{\bar{n}}}$$

3. Input the values in Microsoft excel to obtain the graph.
 - a. Input in the X-axis the samples and Y – axis the fractions of defectives.

3. RESULTS AND DISCUSSION

The three courses of the Licensure Examination for Teachers

Table. 1: Data on the Performance of the graduates in General Education Courses

Year	Sample Size	No. of Failed	Fractions of Defective
2019 (MARCH)	244	112	0.4590
2019 (SEPTEMBER)	489	54	0.1104
2021 (SEPTEMBER)	59	7	0.1186
2022 (JANUARY)	158	71	0.4494
TOTAL	950	244	1.1375

Table. 2: Data on the Performance of the graduates in Professional Education Courses

Year	Sample Size	No. of Failed	Fractions of Defective
2019 (MARCH)	244	123	0.5041
2019 (SEPTEMBER)	489	286	0.5849
2021 (SEPTEMBER)	59	1	0.0169
2022 (JANUARY)	158	21	0.1329
TOTAL	950	431	1.2388

Table. 3: Data on the Performance of the graduates in Major Courses

Year	Sample Size	No. of Failed	Fractions of Defective
2019 (MARCH)	244	158	0.6475
2019 (SEPTEMBER)	489	389	0.7955
2021 (SEPTEMBER)	59	22	0.3729
2022 (JANUARY)	158	125	0.7911
TOTAL	950	694	2.6071

Table 1-3 shows the data on the performance of the graduates in general education, professional education courses, and major courses. Out of 950 takers in 4 consecutive examinations conducted by the Professional Regulation Commission PRC, there were 244 failed with a total fraction of defective of 1.1375 in general education, 431 failed with a total fraction of defective of 1.2388 in professional education courses, and 694 failed with the total fraction of defective of 2.6070 in Major Courses. Among the three courses, the Major courses got the highest fractions of defective.

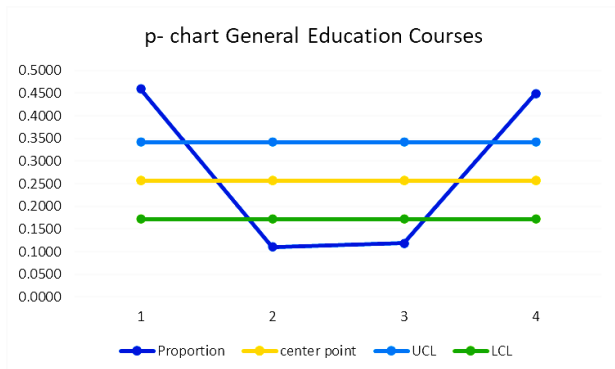
**Fig. 1- P chart of General Education Courses**

Figure 1 shows the p-chart of General Education Courses. The upper control limit, UCL (upper line), is 26.2% (0.2622) and the lower control limit, LCL (lower line) is 25.1% (0.2514). The center line CL (center point) represents a specified rate of 74.3%. The empirical line of fractions for March 2019 and January 2022 is above the UCL, which signifies that the result is very low in terms of general education courses.

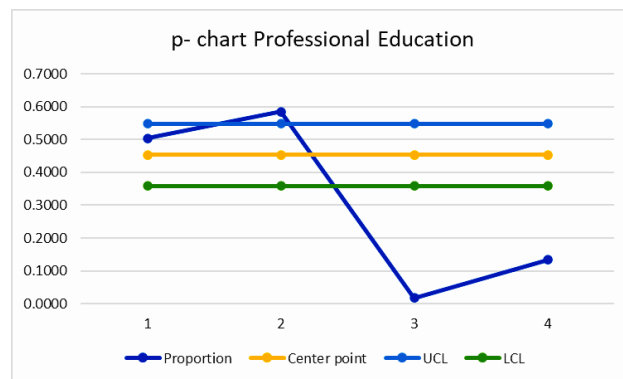
**Fig. 2- P chart in Professional Education**

Figure 2 shows the p-chart of Professional Education Courses. The upper control limit, UCL (upper line), is 46% (0.4600) and the lower control limit, LCL (lower line) is 6.3% (0.0063). The center line CL (center point) represents a specified rate of 54.6%. The empirical line of fractions for March 2019 and September 2019 is above the UCL, which signifies that the result is very low in terms of professional education courses.

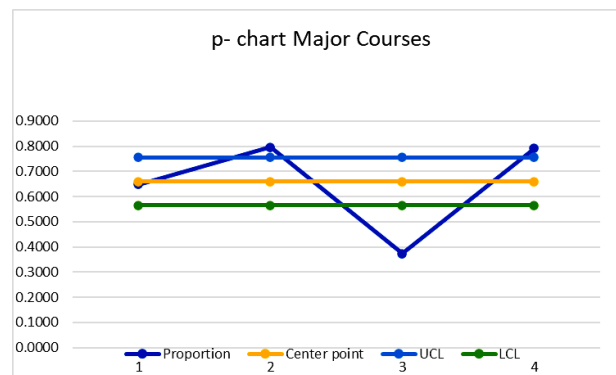
**Fig. 3- P chart in Major Courses**

Figure 3 shows the p-chart of Major Courses. The upper control limit, UCL (upper line), is 75.5% (0.7549) and the lower control limit, LCL (lower line) is 56.1% (0.5651). The center line CL (center point) represents a specified rate of 66%. The empirical line of fractions for September 2019 and January 2022 is above the UCL, which signifies that the result is very low in terms of Major courses.

CONCLUSION

The data presented shows that there is really a problem in board examinations of the graduates in the four consecutive years of examinations conducted by the PRC. There were years that results were beyond the control limits, which shows the negative impact of the board examinations on the graduate who took the board exam. Also, the out-of-control results show the nonconformant in the said examination.

RECOMMENDATION

Therefore, it is recommended to conduct a study to investigate the causes of the non-conformants of the students in the Licensure Examination for Teachers in PRC. Colleges and Universities that offer teacher education programs may establish a comprehensive policy for admission, retention, and graduation of the students who will enter the program. Also, it is suggested to look carefully at the courses that align with the competency set by the PRC in the teacher board examination.

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