INTERNATIONAL JOURNAL OF RESEARCH AND SCIENTIFIC INNOVATION (IJRSI)
ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025

Correlation Study on the Board Exam Performance of BS in Geodetic Engineering Graduates in NVSU

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DOI: https://doi.org/10.51244/IJRSI.2025.1210000065

Received: 20 October 2025; Accepted: 27 October 2025; Published: 03 November 2025

ABSTRACT

This study aimed to correlate the academic achievements and the board exam performance rating of geodetic engineering graduates of Nueva Vizcaya State University from year 2018-2022. The study limits on to those graduates from year 2018-2022 who took the board exam, based on Professional Regulation Commission (PRC) data. The two-day board exam covers 5 Subjects, 3 Subjects during the first day and 2 Subjects on the second day. Simple Correlation and Linear Regression analysis were used to determine the relationship of the independent and dependent variables. Findings revealed a significant positive linear correlation between their academic achievements and their board exam performance rating. On the other hand, Subjects taken on the first day of the exam have greater coverage compared to those on the second day. This extensive coverage may contribute to examinee fatigue, potentially affecting performance on subsequent subjects. Moreover, results suggest that academic performance plays a significant role in predicting board exam success for geodetic engineering examinees in NVSU. Therefore, this study provides insight for both educators and future examinees to recognize the value of academic preparation and to strive for academic excellence in their pursuit of success in the board exam

Keywords – academic achievements, board exam performance, correlation, predictor, regression.

INTRODUCTION

Education is a vital tool that enables individuals to find their place in the world, pursue better employment opportunities, and achieve success in life. Consequently, academic institutions should respond positively and effectively to the educational needs and expectations of their graduates by providing high-quality instruction to their stakeholders (Raqueno & Yabut, 2013). Members of the academic system are also responsible for ensuring the success of their graduates. For example, in specific board courses like engineering, this can be achieved by implementing education and experience requirements as prerequisites for board exams (Mohammed & Mohammed, 2017).

The Licensure Examination for Engineering programs is a means of assessing and ensuring the quality of engineers entering the workforce of diverse manufacturing industries in the Philippines and abroad. Licensure examinations for professional practice serve as a regulatory mechanism implemented by the State. The Professional Regulations Commission (PRC) has consistently regulated graduates of all board courses, granting professional licenses to those graduate examinees who successfully pass the board exam.

Academic performance is an indicator of student outcomes, reflecting how students learn from the instruction of any course. It is a significant concern in universities, and teachers, as facilitators of science learning, play a crucial role in the success of the teaching and learning process. They act as catalysts in transferring knowledge and skills to the next generation of innovators. How students comprehend the subject matter and apply its principles to practical situations demonstrates their understanding of the intended learning outcomes. Student academic performance in professional courses and mathematics is considered vital in contributing to the outcomes of their future endeavors, particularly the licensure examination

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Furthermore, the assurance of engineering professionals' preparedness is an ongoing process facilitated by accreditation. Accreditation serves as a platform for collaboration between industry and engineering educators, enabling the development of assessment techniques to enhance classroom management, courses, and curricula. Accreditation also ensures that instructional strategies are adapted to prepare students for the expected outcomes of graduates. These strategies include assessing academic aptitude and self-image to predict board exam performance, offering intervention courses to help students prepare for the board examination, improving the curriculum, and analyzing the profiles of successful examinees (Tamayo & Canizares, 2014).

Additionally, evaluating, correlating, and assessing the board exam performance of engineering graduates helps us align with AACUP recommendations, provides essential data for the Regional Quality Assessment Team (RQUAT), contributes to SUC leveling, and ultimately establishes a foundation for curriculum development and enhancement of the engineering programs offered by the University.

A. Objective of the study

To correlate the academic achievement in terms of GWA and board examination performance of NVSU BS in Geodetic Engineering graduates

METHODS

A. Research Design

The study utilized mixed quantitative and qualitative method of research, the descriptive method is an approach that emphasizes the present status of a phenomenon, describes a current situation, determines the nature of prevailing conditions or practices, and seeks an accurate description of entities, objects, persons, and processes (Dulay, 2003).

Correlation and regression statics are the quantitative part of this research, while frequency, mean, and standard deviation falls under qualitative research method.

Moreover, the data on the academic grades and board rating is secondary type in nature as it is readily available from the University Registrar and Professional Regulation Commission (PRC) respectively.

Furthermore, descriptive statistics was used to generalized the result of this study.

B. Conceptual Framework

Figure 1 shows the conceptual framework of the study. This study used the Predictor-Interior-Model as it is predictive in nature. The predictors are the academic achievement of each examinee correlated with their board exam result and to determine the line of best fit, linear regression model was utilized.

There are five subjects' areas based on the table of specifications of the Board of Geodetic Engineering. Subjects 1,2, and 3 to be taken during the first day of board exam and subjects 4 and 5 on the second/last day. On the other hand, there are 16 academic subjects covered in Subject 1, 7 academic subjects covered in Subject 2, 10 academic subjects covered in Subject 3, while there are only 8 and 2 academic subjects covered in Subjects 4 and 5, respectively.

Predictor Interior Model

C. Research Respondents and Sampling Procedures

There were 66 examinees from NVSU across the 4-year board exam conducted from 2018 to 2022. Examinee/s who graduated earlier than year 2018 and took the board exam within the years of coverage is excluded from this study. Retakers were counted as long as they graduated within the years of coverage of this study. Likewise, the academic

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025

grades of the respondents were requested from the university registrar and the board exam result was request from the PRC

D. Statistical Tools and Analysis

The data were analyzed using the following statistical tools:

Frequency, and mean were used to determine the distribution of the data among the variables like academic grades in mathematics, allied and professional subjects and the board exam rating. The names of the examinees along with their academic grades and board exam result per subjects were encoded Microsoft Excel software.

Likewise, the Correlation and Regression Analysis were used to determine if there is significant relationship between the independent variables, the academic achievements in mathematics, allied and professional subjects and the dependent variables is the engineering board examination rating. All the formula were entered into the Microsoft Excel for the computations and generating of graphs

RESULTS AND DISCUSSION

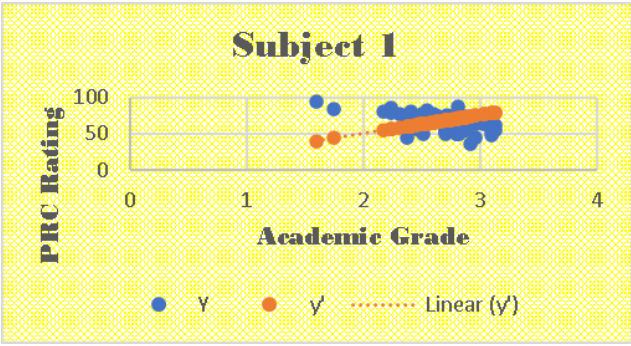
A. Correlation per Subject Area of Coverage of the Academic Achievement and Board Exam Rating of Examinees

Table 1 and Graphs 1 to 5, shows the relationship among the independent variables (academic achievement) and dependent variables (board exam rating). There are 5 Area of Coverage correlated accordingly across the 4-board exam conducted in year 2018, 2019, 2021 and 2022. There are 16, 7, 10, 8 and 2 academic subjects being covered in Subject 1,2,3,4 and 5 respectively.

The table below reveals that; the mean of independent variable (x) is directly proportional to the mean of dependent variable (y). Subject 5, has x mean of 2.028 and got a y mean of 76.091, while subject 1 has a lowest x mean of 2.684 and got a y mean of 66.864. This relationship emphasizes the importance of a strong academic foundation for board exam success.

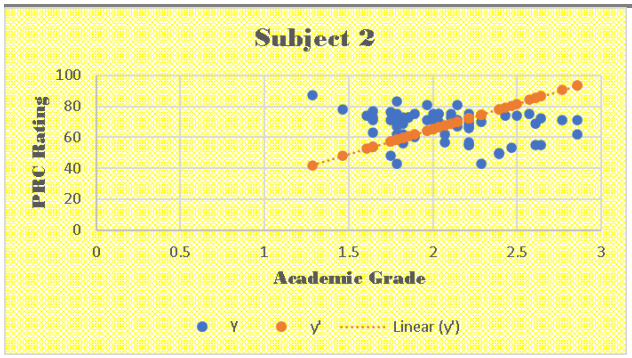
Additionally, all the 5 Subject areas show strong positive linear relationship, supported by the linear regression line in terms of b and y' values. This regression line is the data's line of best fit. The standard deviation of errors (Se), tells how widely the errors and the values of board exam rating (y) are spread for academic achievement (x). Subject 1, has a least value of Se, as compared to Subjects 3, 4, and 5. This implies that, the closer the y values to the line of best fit, the smaller the standard deviation of error will be.

Moreover, the coefficient of determination (r2), is a measure of variation of the dependent variable (y) that is explained by the regression line and the independent variable (x). As shown, in Table 1, the 5 Subjects obtains r2 equals to 1 or almost, this implies that the model perfectly predicts the outcome.

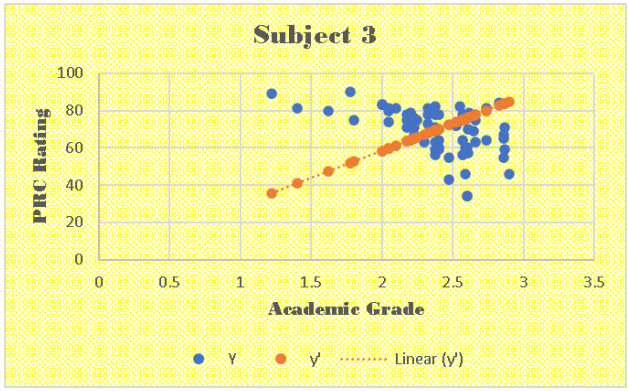


Graph 1: Correlation of Subject Area 1 from 2018-2022

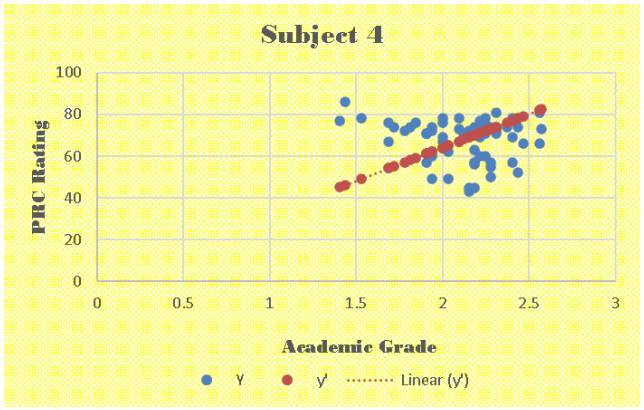
ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025



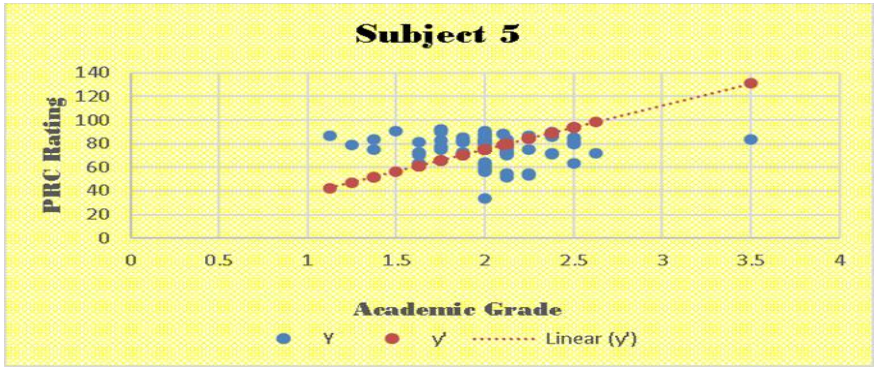
Graph 2: Correlation of Subject Area 2 from 2018-2022



Graph 3: Correlation of Subject Area 3 from 2018-2022



Graph 4: Correlation of Subject Area 4 from 2018-2022



Graph 5. Correlation of Subject Area 5 from 2018-2022

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025

Table 1. Correlation per Subject Performance

Area of Coverage	x	y	p	a	b	y' (mean)	S_e	r^2
Subject 1	2.684	66.864	1.000	-1.237	25.713	66.864	-6.508	1.000
Subject 2	2.078	67.924	1.000	-0.060	32.713	67.924	+7.005	0.999
Subject 3	2.380	69.545	0.998	-0.013	29.220	69.545	+19.703	0.995
Subject 4	2.126	68.106	0.998	+0.443	31.832	68.106	+15.274	0.997
Subject 5	2.028	76.091	0.998	+0.437	37.304	76.091	+16.897	0.997

*x-mean of independent variable**y-mean of dependent variable***p-correlation coefficient ****a-y' intercept

*****b-slope of the line ******y'-equation of the regression line *******S_e-Standard Deviation

********r^2-coefficient of determination

Table 2: General Average Correlation

Year	x (mean)	y (mean)	p	a	b	y' (mean)	S_e	r^2
2018	2.257	73.213	0.985	1.234	31.885	73.213	96.066	0.970
2019	2.219	71.467	0.996	1.658	31.453	71.467	46.499	0.993
2021	2.213	67.627	0.993	0.916	30.148	67.627	77.398	0.986
2022	2.343	67.328	0.978	1.820	27.955	67.328	101.261	0.957

*x-mean of independent variable**y-mean of dependent variable***p-correlation coefficient ****a-y' intercept

*****b-slope of the line ******y'-equation of the regression line *******S_e-Standard Deviation

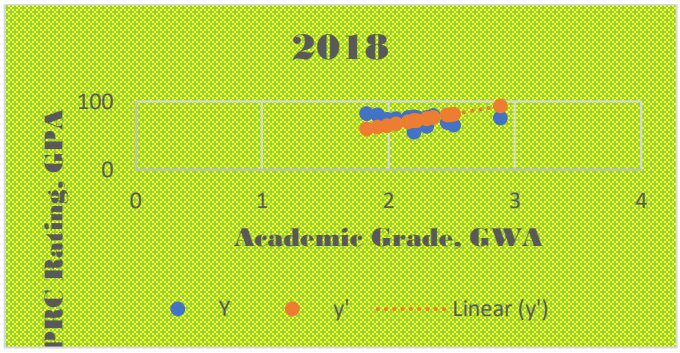
********r^2-coefficient of determination

B. Correlation of General Average of the Academic Achievement and Board Exam Rating of Examinees

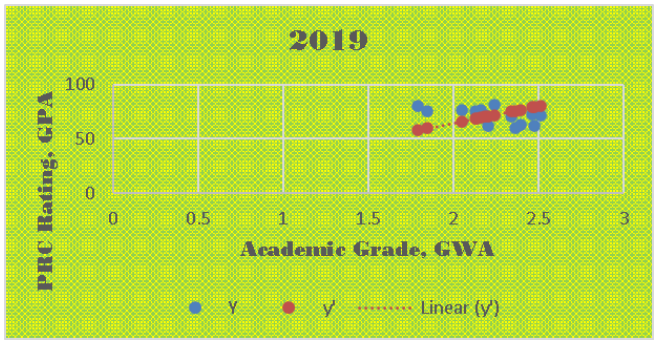
Table 2 and Graphs 6 to 9, represents the general average correlation across the 4-board exam conducted in year 2018, 2019, 2021, and 2022. The first 2 years were pre-pandemic, while year 2021 and 2022 were both covered by pandemic time. As shown in Table 2, x mean is inversely proportional to y mean. During the pre-pandemic year, the

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025

academic achievement (x) performs better in board exam (y), as compared to the pandemic time 2021 and 2022 respectively. This implies that, the methods of learning or distance learning affect the performance of examinee.



Graph 6: Correlation of GPA and GWA in 2018



Graph 7: Correlation of GPA and GWA in 2019

CONCLUSION

Based on the results of this study, the following conclusion were drawn:

1. Based on the result of this study, strong academic performance correlates better outcomes in board exam;

2. Distance learning directly affects the board exam performance of examinee;

3.Subjects taken on the first day of the exam have greater coverage compared to those on the second day. This extensive coverage may contribute to examinee fatigue, potentially affecting performance on subsequent subjects.

RECOMMENDATION

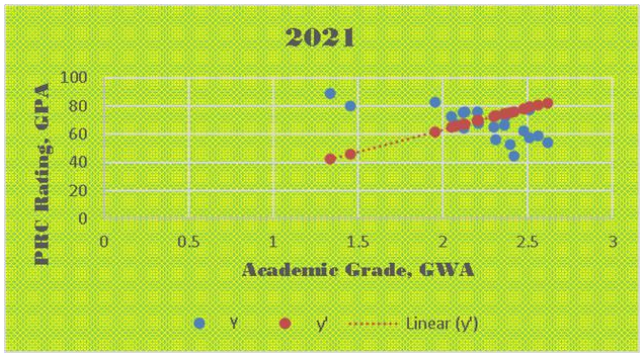
Based on the conclusion derived from the results of this study, the following are the recommendations:

1. Students should perform academically for it is a crucial factor in successfully passing the board exam. Consistent performance across all subjects not only builds a solid foundation of knowledge but also enhances confidence and readiness for the exam. By prioritizing their studies and striving for excellence in each subject, students can significantly improve their chances of success on the board exam;

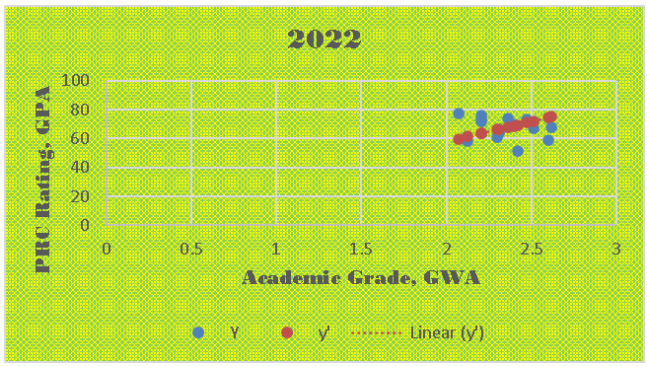
2. To the Faculty of Geodetic Engineering Department, the importance of maintaining effective learning strategies, especially during times of disruption is highly recommended to support student achievement towards better board exam performance; and

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025

3. To the Board of Geodetic Engineering Examiners of the PRC, to mitigate fatigue and improve performance, it may be beneficial to consider adjustments to the exam schedule, such as balancing the number of subjects across the 2 days board exam.



Graph 8: Correlation of GPA and GWA in 2021



Graph 9: Correlation of GPA and GWA in 2022

ACKNOWLEDGEMENT

The researchers would like to express their sincere gratitude to; NVSU SIAS, for providing essential data and to the PRC, for granting our request to access the individual performance rating of examinee, enabling a comprehensive analysis in correlation study of the academic achievement and board exam performance of the BSGE graduates of NVSU.

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ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025

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