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Gender Difference in the Performance of the 2018 UNP Civil Engineering Graduates in the Licensure Exam

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Abstract **Original Research Article**

Through the years, female enrollees to the civil engineering program increase. The BSCE program which was once male-dominated has gradually developed into a co-ed profession. Nevertheless, doubts as to how competitive the female civil engineers are still exist despite the non-significant difference in the abilities of males and females in other programs resulting from research findings. This bias could have originated from the years they were in college. This study aims to discover gender difference in the scholastic and board performances among the 2018 BSCE graduates in the College of Engineering, University of Northern Philippines.The college grades and board ratings of 88 male and 64 female graduates who took the board examination in this same year were analyzed. The college grades, called scholastic performance, were requested from the University Registrar. Board ratings, taken as the board performance, were requested from the Professional Regulation Commission (PRC). These ratings were analyzed as to their mean, significant difference and correlation. The findings reveal that the female graduates performed the same as their male counterparts in college, as suggested by the not significant difference in their scholastic performance. In the board examination, the female and male graduates performed the same in the Mathematics, Surveying and Transportation Engineering and Hydraulics and Geotechnical Engineering components of the board examination, but not anymore in the Structural Engineering and Construction component. As a whole, there is significant difference in the board performance of the 2018 female and male BSCE graduates, with more male graduates passing the licensure, meaning, they are not on the same level of capability in solving problems in the board examination. It was also found out that there exists significant relationship between their scholastic and board performances, suggesting that the subjects covering the three board components taken in college; namely: Mathematics, Surveying and Transportation Engineering, Hydraulics and Geotechnical Engineering and Structural Engineering and Construction, are significantly related to the board performance. In conclusion, there is no gender difference among the 2018 BSCE graduates in as far as their scholastic performance is concerned, meaning the female students could cope up with the rigors of the civil engineering education. There is also no gender difference in their scholastic performance and board performance along Mathematics, Surveying and Transportation Engineering and Hydraulics and Geotechnical Engineering. However, there exists gender difference in Structural Engineering and Construction, leading to the existence of gender difference in the board examination, taken as a whole. This suggests that the male graduates performed better in the board examination than the female graduates in one or more aspects, which may be due to lack of preparation or insufficient exposure to certain structural design and construction topics.

Keywords: scholastic performance, board performance, gender difference, significant difference, significant relationship.

INTRODUCTION

RA 544, otherwise known as the Civil Engineering Law defines civil engineering as a profession that embraces services in the form of consultation, design, preparation of plans, specifications, estimates, erection, installation and supervision of the construction of streets, bridges, highways, railroads, airports and hangars, port works, canals, river and shore improvements, lighthouses, and dry docks; buildings, fixed structures for irrigation, flood protection, drainage, water supply and sewerage works and all other forms of infrastructure. A board

examination so provided in the said Act, covers subjects categorized under three (3) components; namely: Mathematics, Surveying and Transportation Engineering, Hydraulics and Geotechnical Engineering, and Structural Engineering and Construction. It bestows upon the passer the license to practice the civil engineering profession. The body tasked to manage this licensing mandate is bestowed upon the Profession Regulation Commission (PRC).

Having specified the above-stated subject coverages to be the required scope of knowledge and skills to be developed, the Commission, through its Board of Examiners per profession, therefore, set the level of playing field to evaluate all Civil Engineering schools. These subject coverages are the bases of framing their respective curricula to prepare the prospective civil engineer.

In the early 70's, very few females enroll in civil engineering. In a class of 50, just one or two would be female enrollees, or none at all. Civil engineering was once a male-dominated course. But as years went by, more female students enrolled in the course. Nowadays, their number is almost one-half of the total classroom population. This could have been strengthened by the passage of the Women in Development and Nation Building Act (RA 7192) on February 12, 1992, recognizing the role of women in nation building, thus ensuring the fundamental equality before the law of women and men.

The old culture of gender inequality emphasizes that men are smart, fast learners, better in academics, strong in person, brave, and more deserving for a professional education. On the other hand, women are weak, timid, dumb, and need not be sent to school to become professional, since women are meant to stay at home, rear up children, keep the house. Siblings may compete and accept defeat because of stereotyping. This tendency limits the potential of individuals to grow and reach their goals in life. It already kills the opportunities of women to pursue their dreams, though they could outgrow and even go beyond the capacities of men.

Learning is a common process that takes place among individuals, male and female alike. Educational psychologists have not yet dichotomized specific learning theories that the males tend to be inclined with which the females are hard up with, and vice versa. However, there may be differences in their performance if exposed to varied teaching styles. Such a reality is true in the study of Aguillon, *et al.*, (2020), as cited by Katewood (2020) in the Cornell University Chronicle. One of their findings of the researchers claimed that the males were reportedly better in an active learning situation in mathematics, science, engineering and technology, where the classroom mode is group discussion, laboratory work and other similar modes of teaching strategies. https://doi.org/10.1187/cbe.19-03-0048. Likewise, the study of Akpotor and Egbule (2020) also found out that the males are performing better in physics than the females among adolescents in their Scholastic Achievement Test in Delta University, Abraka, Nigeria. https://doi.org/10.5430/wje.v10n1p97. Another research by Salehi, *et al.*, (2019) found out that females are underperforming in examinations in physics, chemistry, materials science and math over their male counterparts among Biology and Engineering students in Standford University, California, USA.

There have been instances where women have proven themselves to be deserving of the trust and confidence of the common *tao*, in leading the community, in serving the weak, in raising a family, in practicing professions, and most significantly, in providing inspiration and hope.

Self-efficacy and persistence have been significant factors in shaping a student's engineering identity. Buontempo, Riegle-Crumb, Patrick, and Peng (2017) were able to establish this among a group of 459 students in the University of Texas. Engineering identity is how one sees himself or herself while studying. For example, knowing that one is good in mathematics, the math identity is developed. In other words, excelling in engineering subjects because of self-efficacy and persistence, a student is endorsing the engineering identity, thereby, conditioning the mind to stay in the course. Buontempo, *et al.*, found that their women respondents had lower self-efficacy and persistence than the men. Starting in adolescence, girls and young women are less likely to identify themselves with science, technology, engineering or mathematics or envision themselves to be scientists compared to men. This gender gap explains differences among male and female engineering students.

OBJECTIVES OF THE STUDY

This study aims to compare the performance of the male and female graduates of the UNP-CoE in the 2018 Civil Licensure Examinations.

Specifically, the following questions were answered to see the overall picture:

1. What is the level of the average scholastic grades of the BSCE male and female graduates of 2018 in:
    a) Mathematics, Surveying, and Transportation Engineering?
    b) Geotechnical Engineering and Hydraulics?
    c) Structural Engineering and Construction?

2. Is there significant difference in the scholastic grades of the BSCE male and female graduates of 2018, taken singly and as a whole, in:
    a) Mathematics, Surveying and Transportation?
    b) Geotechnical Engineering and Hydraulics?
    c) Structural Engineering and Construction?

3. What is the level of the board exam performance of the BSCE male and female graduates of 2018 in:
   a. Mathematics, Surveying and Transportation?
   b. Geotechnical Engineering and Hydraulics?
   c. Structural Engineering and Construction?

4. Is there significant difference in the board performance of the 2018 BSCE male and female graduates of 2018, taken singly and as a whole in?
   a. Mathematics, Surveying and Transportation?
   b. Geotechnical Engineering and Hydraulics?
   c. Structural Engineering and Construction?

5. Is there significant relationship in the scholastic and board performances of the female and male graduates, taken singly and as a whole?

METHODOLOGY

A. Research Design

The study adopts the descriptive-comparative and correlational methods of research. The levels of scholastic performance and board performance are described in terms of the scholastic grades and board examination ratings of the 2018 BSCE graduates, male and female, who took the licensure examination in the same year. The same scholastic grades and board ratings obtained by them were compared to describe the performances of both groups. Further, the scholastic and board ratings were correlated to determine the significant relationship of both performances between and among the male and female groups of respondents.

B. Population/Sampling

This study originally aimed to analyze the scholastic and board examination ratings of UNP BSCE graduates, both male and female, from 2016-2018, but there occurred difficulty of gathering data because of the COVID 19 pandemic. The Records Section of the Professional Regulation Commission could not attend to requests on board examination ratings during the data-gathering schedule. The 2018 board ratings were gathered before the pandemic occurred. Thus, the researchers downsized the number of respondents to the available 2018 board ratings and paired them to their scholastic grades. There were 152 identified respondents who graduated in 2018 and took the licensure examination in this same year: 88 males and 64 females.

Since time immemorial, the Civil Engineering curriculum prepares students for the course within five years. However, the implementation of the K-12 education system in School Year 2017-2018 created a significant curricular revision in all course offerings. The Civil Engineering curriculum which has been taken within five (5) years was reduced to just four (4) years starting School Year 2018-2019. Nevertheless, this study still utilizes school data under the five-year curriculum.

C. Data Gathering Procedure

This study gathered records from the UNP Registrar and the scores obtained by the graduates in the board examination.

Data gathering started by requesting the University Registrar to provide the grades of the graduates in the subjects covered by Mathematics, Surveying and Transportation Engineering, Hydraulics and Geotechnics, Design and Construction.

Likewise, a copy of the board examination ratings per examinee along the same components was requested from the Professional Regulations Commission.

D. Statistical Treatment of Data

The following statistical treatments were used in the study: the mean to describe the level of performance of the male and female graduates in their scholastic grades and in their level of performance in the board examination. The t-test will determine the significant relationship between the scholastic grades and the board examination scores of both groups and to determine the difference or similarity of the performance of the same group of female and male graduates.

To describe the scholastic grades of the students, the following range of grades and description was used.

Range	Description
1.49 - up	Very Satisfactory (VS)
1.50 – 1.74	Satisfactory
1.75 – 1.99	Fairly Satisfactory
2.00 – 2.24	Good
2.25 – 2.49	Fairly Good
2.5 – 2.74	Fair
2.75 – 2.99	Below Fair

To describe the board performance rating, the researchers merely stated if the grade is below passing, passed or above passing. To pass the board, the examinee should get a score of 70 in all the component subjects covered by the examination; namely: Mathematics, Surveying and Transportation Engineering, Hydraulics and Geotechnical Engineering, and Structural Engineering and Construction, in order to ensure an average of 70 from all of the components. However, if an examinee gets one low score in one component (at least 50), and more than 70 in the other components, the examinee can still pass the board as long as the average of 70 among the subject components is attained. Any rating from the Professional Regulation Commission of below 70 was described as “below passing”. Any board rating higher than 70 is “above passing”.

Theoretical Framework

Basic educational concepts, theories and significant findings of related studies laid the foundation in proceeding with the study.

Edward Thorndike, the father of educational psychology, developed three laws of learning; namely: law of readiness, law of exercise and law of effect. His law of readiness claims that an individual is more likely to learn if one is physically, emotionally and psychologically healthy- man's basic needs must first be satisfied. His law of exercise explains how learning is facilitated by constant practice, while his law of effect proposes that activities that create a favorable effect in a particular situation become more likely to be replicated in that situation, and activities that create otherwise become less likely to be done again in that situation.
https://education.stateuniversity.com/pages/2509/Thorndike-Edward-L-1874-1949.html.

Thorndike's second law applies to the type of learning that is very fitting to the engineering course. Theories are best applied through problem solving, thus the need for students to develop the skill to solve engineering problems, called exercises in the form of problem sets. The third law is the principle that governs to seek favorable practices to ensure good results in developing high performances. This law mandates many researchers to come up with effective formula for students to excel in order to compete with each other, to compare groups of students- between females and males, and for schools to compete with one another, thus the need to study factors that determine their performance in the board- the target among educational institutions for recognition and self-preservation.

In cognizant to the third law of Thorndike, researchers look for favorable indicators that would be helpful in attaining high turnout of graduates when securing their licensure. This is how the law on effect is manifested. Mallari and Bueno (2018) came out with their findings that indicators of board performance are high school grade in Mathematics, Science, and English, college entrance examination results, college grade in Mathematics, Science, and English, as well as the average grade in the major subjects were also considered to be correlated with the performance in the licensure examination.

In the study of Ajai and Imoko (2015), 261 male students and 167 female students were taught Algebra using problem-based learning (PBL) method of instruction. Algebra Achievement Test (AAT) constructed by the researchers was the main instrument used for data collection. Two hypotheses were raised for the study and tested using t-test at .05 level of significance. It was found out that male and female groups of students taught algebra using the PBL method did not significantly differ in achievement and retention scores. The authors thereby concluded that male and female students are capable of competing and collaborating in mathematics. In addition, this finding showed that performance is a function of orientation, not gender.

According to Halpern, gender differences in cognitive abilities can be caused by a "stereotype threat", or "the fear of conforming to a negative stereotype associated with one's group membership. This fear influences the individual to behave in line with the stereotype". If an individual is made aware of a stereotype then "the activation of stereotypes might explain why the magnitude of sex differences in sex-sensitive cognitive task varies across studies, depending on whether participants gender-stereotypes are activated or not".

Simmons (2010), in her dissertation entitled " Academic Performance Differences among Male and Female African American Students: An Urban High School Study", found out that there exist moderate positive correlations between (a) attitudes toward school and attitudes toward teachers, (b) academic self-perception and motivation/self- regulation, and (c) goal valuation and motivation/self-regulation. The means scores for academic self-perception and goal valuation were significantly more positive for African American females than African American males.

Goni, Yagana, Ali and Bularafa (2015) examined the differences between students' gender and academic achievement in Colleges of Education in Borno State in their research entitled "Gender Difference in Students' Academic Performance in Colleges of Education in Borno State, Nigeria: Implications for Counselling". The results indicated that there exist no significant differences between gender and academic performance in Colleges of Education in Borno State, in favour of female students.

Musa (2018) investigated gender performance in architectural education in Ahmadu Bello University, Nigeria. Using 992 students in three major architecture core courses, namely: Architectural Design; Building Structures and Building Construction and Pearson Product Correlation technique, it was found out that female students outperform their male counterparts in Building Structures while male students are better in Building construction and their performance in Architectural Design are the same. Furthermore, it was observed that the performance of male students was consistent based on mode of entry while their female counterparts were not. It was also found out that if a student passes Architectural Design there is strong tendency to also pass Building Construction and Building Structures, the reverse is also true. The study concludes that, gender has impacts on the performance of students in architectural education. It further

recommended that admission policy into schools of architecture should be gender sensitive.

The researchers found no study devoted to gender difference of board examination performance of schools, particularly in civil engineering. What have been found are studies predicting board exam performance and those that correlate academic performance and the board performance of graduates. Such research studies did not consider the gender perspective. Findings of the study of Quiambao, *et al.*, (2015) revealed teachers' educational attainment, teachers' length of service, quality of library facilities, quality of laboratory facilities, students' intelligence quotient, and students' grade point average formed a very significant set of predictors for passing the licensure examination for teachers. Quite similar are the findings of Dayaday (2018) who identified that faculty/teaching strategy, curriculum, instructional materials, facilities/laboratory equipment/laboratory activities, admission and retention policy, review preparation and mental/study behavior through survey are significant considerations in predicting board performance. However, among the listed factors, faculty and instructional materials stood out to have favorably affected the performance of the ECE – USM Examinees from October 2011 – October 2016. Meanwhile, poor performance of the examinees was largely attributed to the lack of laboratory facilities/equipment.

On the other hand, studies on the relationship of academic performance and board examination on any profession confirm their high correlation. Amanonce and Maramag (2020) found out that a significant and strong correlation exists between the graduates' grade weighted average in college and LET performance. Banluta (2013) concluded in her study that there is a substantial relationship between the academic achievement and the board examination rating of the ECE students of Ateneo de Davao, Davao City, Philippines.

Ferrer (2018) found out that the performance of the engineering (civil, mechanical, electronics and electrical) graduates of the Pamantasan ng Lungsod ng Maynila in the licensure examinations may be attributed to the following: their grades in all their subjects in the baccalaureate, from the general education subjects to the professional engineering subjects; how serious they are in engaging in intervention programs like the review classes; their skills and affective domain.

The study of Garcia (2013) had a slight bearing on gender performance. Among 58 examinees in Licensure Examination for Teachers (LET), he found out that women are more dominant than men in the field of education in terms of numbers. There was a very high correlation coefficient between examinee's academic performance and licensure examination rating among the Specialization subjects, but weak positive correlation in the Professional Education subjects. The overall correlation of the examinees' academic and board ratings is moderately significant. Academic performance (grade average) of examinees gives no assurance (not a determinant) on passing PRC (LET) examination.

Conceptual Framework

This study proceeded with the following research paradigm below. The performance of the male and female graduates in Civil Engineering Licensure Examination was analyzed in terms of their scores in the licensure examinations and grades in college, which are covered by the areas in the board examination.

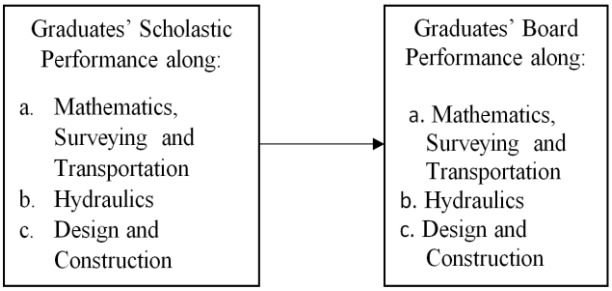

Figure 1: The Research Paradigm

The scholastic grades of the BSCE graduates in 2018 cover the areas of Mathematics, Surveying and Transportation, Geotechnical Engineering and Hydraulics, and Structural Engineering and Construction to be compared to their scores in the board examination also covering the same areas. The scholastic grade in Mathematics, Surveying and Transportation are computed average of the different subjects; namely: Mathematics, Surveying and Transportation, College Algebra, Plane and Spherical Trigonometry, Advanced Algebra, Analytic Geometry, Solid Mensuration, Differential Calculus, Integral Calculus, Differential Equation, Advanced Engineering Mathematics, Engineering Economy, Elementary and Higher Surveying Lecture, Elementary and Higher Surveying Lab, Engineering Surveys Lec, Engineering Surveys Lab, Highway Engineering, and Transportation Engineering.

The scholastic grade in Geotechnical Engineering and Hydraulics are the computed average of the following subjects: Mechanics of Fluid Lec, Mechanics of Fluid Lab, Hydraulics Lec, Hydraulics Lab, Soil Mechanics Lec, Soil Mechanics Lab, Foundation Engineering Lec, and Foundation Engineering Lab.

Lastly, the scholastic grade in Structural Engineering and Design are computed average of the different subjects; namely: Static of Rigid Bodies, Dynamics of Rigid Bodies, Mechanics of Deformable Bodies, Structural Theory 1 Lec, Structural Theory 1

Lab, Structural Theory 2 Lec, Structural Theory 2 Lab, Structural Design 1 (Reinforced Concrete Design) Lec, Structural Design 1 (Reinforced Concrete Design) Lab, Structural Design 2 (Steel and Timber Design) Lec, Structural Design 1 (Reinforced Concrete Design) Lab, Construction Materials and Testing Lec, and Construction Materials and Testing Lab.

Assumptions

To proceed with the study, the researchers had to assume the following:

1. The researchers excluded other factors that could further describe the students' performance in college, and used only the ratings reflected from the grade sheets submitted by their instructors at the University Registrar.
2. The scholastic grades per subject were thoroughly computed to represent the graduates' performance in college.
3. The subjects in college as categorized above properly represent the areas covered by the board examination.

RESULTS AND DISCUSSION

After a thorough analysis of the gathered data, the researchers have the following analyses:

1. On the level of the average scholastic grades of the BSCE male and female graduates of 2018 in:
   a. Mathematics, Surveying, and Transportation.
   b. Geotechnical Engineering and Hydraulics.
   c. Structural Engineering and Construction.

Table 1 presents the average scholastic grades of the 2018 BSCE graduates in all the subjects that constitute Mathematics, Surveying and Transportation as listed earlier.

From the gathered information, it can be seen from Table 1 that the highest average scholastic grade of female graduates is from Transportation Engineering with a mean value of 2.38, described as "Fairly Good"; while for the male, the highest average scholastic grade is from the Engineering Surveys Lab with a mean value of 2.45 (Fairly Good). As a whole, the highest scholastic grade is from Advanced Algebra with a mean value of 2.39 (Fairly Good).

The lowest average grade for Mathematics, Surveying and Transportation, on the other hand, with mean values of 2.88 (Below Fair) and 2.84 (Below Fair) are from Differential Calculus and Analytic Geometry for male and female graduates, respectively. As a whole, the lowest average grade with a mean value of 2.91 (Below Fair) is from Differential Calculus.

The overall average scholastic grades for Mathematics, Transportation and Engineering are 2.49 (Fairly Good) for the male, 2.55 (Fair) for the female and as a whole, 2.52 (Fair).

Table 1: Level of the Average Scholastic Grades of the BSCE Male and Female Graduates of 2018 in Mathematics, Surveying and Transportation

Mathematics, Surveying and Transportation Category	Female		Male		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
College Algebra	2.49	FG	2.72	F	2.62	F
Plane and Spherical Trigonometry	2.49	FG	2.52	F	2.51	F
Advanced Algebra	2.27	FG	2.48	FG	2.39	FG
Analytic Geometry	2.60	F	2.84	BF	2.74	F
Solid Mensuration	2.74	F	2.67	F	2.70	F
Differential Calculus	2.88	BF	2.92	BF	2.91	BF
Integral Calculus	2.69	F	2.72	F	2.71	F
Differential Equation	2.59	F	2.58	F	2.58	F
Advanced Engineering Mathematics	2.40	FG	2.51	F	2.46	FG
Engineering Economy	2.60	F	2.47	FG	2.53	F
Elementary and Higher Surveying Lecture	2.60	F	2.61	F	2.60	F
Elementary and Higher Surveying Lab	2.56	F	2.54	F	2.55	F
Engineering Surveys Lec	2.46	FG	2.48	FG	2.47	FG
Engineering Surveys Lab	2.49	FG	2.45	FG	2.46	FG
Highway Engineering	2.45	FG	2.58	F	2.52	F
Transportation Engineering	2.38	FG	2.46	FG	2.43	FG
Overall	2.49	FG	2.55	F	2.52	F

VS-Very Satisfactory, S-Satisfactory, FS – Fairly Satisfactory, G-Good FG-Fairly Good, F-Fair, Bf-Below Fair

Table 2 presents the mean scholastic grades of the respondents in Hydraulics and Geotechnical Engineering.

For the Hydraulics and Geotechnical Engineering area, Table 2 shows that the highest average scholastic grade of female graduates is from Foundation Engineering Lab and Soil Mechanics Lab with a mean value of both 1.75, while for male; the

highest average scholastic grade is from the Foundation Engineering Lab with a mean value of 1.75. Highest average scholastic grade as a whole is from Foundation Engineering Lab with a mean value of 1.75. The mean ratings are described as Fairly Satisfactory.

Meanwhile, the lowest average grade for the male graduates is from Foundation Engineering Lec with mean value of 2.97 (Below Fair). For the female graduates is from the Lecture subjects of Foundation Engineering and Soil Mechanics with a mean value for both of 2.92 (Below Fair). The lowest average as a whole is from Foundation Engineering Lec with a mean value of 2.95 (Below Fair).

Table 2: Level of the Average Scholastic Grades of the BSCE Male and Female Graduates of 2018 in Hydraulics and Geotechnical Engineering

Scholastics Grades						
Geotechnical Engineering and Hydraulics Category	**Female**		**Male**		**As a Whole**	
	Mean	**DR**	**Mean**	**DR**	**Mean**	**DR**
Mechanics of Fluid Lec	2.78	BF	2.69	F	2.73	F
Mechanics of Fluid Lab	2.64	F	2.55	F	2.59	F
Hydraulics Lec	2.70	F	2.63	F	2.66	F
Hydraulics Lab	2.71	F	2.66	F	2.68	F
Soil Mechanics Lec	2.92	BF	2.89	BF	2.90	BF
Soil Mechanics Lab	1.75	FS	1.77	FS	1.76	FS
Foundation Engineering Lec	2.92	BF	2.97	BF	2.95	BF
Foundation Engineering Lab	1.75	FS	1.75	FS	1.75	FS
Overall	2.67	F	2.64	F	2.65	F

VS-Very Satisfactory, S-Satisfactory, FS – Fairly Satisfactory, G-Good, FG-Fairly Good, F-Fair, Bf-Below Fair

The overall average scholastic grade for Geotechnical Engineering and Hydraulics female, male and as a whole have a mean rating of 2.67 (Fair), 2.64 (Fair), and 2.65 (Fair), respectively.

Table 3 shows the average scholastic grades of the respondents in Structural Engineering and Construction.

As shown in Table 3, the highest average scholastic grade of the female graduates is from Structural Theory 1 Lab and Structural Design 1 (Reinforced Concrete Design) Lab with a mean value of both 2.13 (Fairly Satisfactory) while for the male graduates the highest average scholastic grade is from the Structural Theory 1 Lab with a mean value of 2.08 (Good). Highest average scholastic grade, as a whole, is from Structural Theory 1 Lab with a mean value of 2.10 (Good).

On the other hand, the lowest average grade for both female, male and as whole, is from Static of Rigid Bodies with mean value of 2.71 (Fair), 2.73 (Fair), and 2.72 (Fair), respectively.

Table 3: Level of the Average Scholastic Grades of the BSCE Male and Female Graduates of 2018 in Structural Engineering and Construction

Scholastic Grades						
Structural Engineering and Construction Category	**Female**		**Male**		**As a Whole**	
	Mean	**DR**	**Mean**	**DR**	**Mean**	**DR**
Static of Rigid Bodies	2.71	F	2.73	F	2.72	F
Dynamics of Rigid of Bodies	2.50	F	2.67	F	2.60	F
Mechanics of Deformable Bodies	2.68	F	2.67	F	2.68	F
Structural Theory 1 Lec	2.62	F	2.60	F	2.61	F
Structural Theory 1 Lab	2.13	G	2.08	G	2.10	G
Structural Theory 2 Lec	2.66	F	2.70	F	2.68	F
Structural Theory 2 Lab	2.16	G	2.17	G	2.16	G
Structural Design 1 (Reinforced Concrete Design) Lec	2.43	FG	2.55	FG	2.50	F
Structural Design 1 (Reinforced Concrete Design) Lab	2.13	G	2.14	G	2.13	G
Structural Design 2 (Steel and Timber Design) Lec	2.30	FG	2.38	FG	2.35	FG
Structural Design 2 (Steel and Timber Design) Lab	2.19	G	2.23	G	2.21	G
Construction Materials and Testing Lec	2.43	FG	2.55	F	2.50	F
Construction Materials and Testing Lab	2.24	G	2.26	FG	2.25	FG
Overall	2.47	FG	2.52	F	2.50	F

VS-Very Satisfactory, S-Satisfactory, FS – Fairly Satisfactory, G-Good, FG-Fairly Good, F-Fair, Bf-Below Fair

The overall average scholastic grade for Structural Engineering and Construction for female, male and as a whole has a mean rating of 2.47 (Fairly Good), 2.52 (Fair), and 2.50 (Fair), respectively.

Table 4 summarizes the average scholastic grades of the respondents. It shows that the highest average scholastic grade for the female graduates is from Structural Engineering and Construction, at 2.47 (Fairly Good). Similarly, the highest average scholastic grade of the male graduates is also in the same subject at 2.52 (Fair). As a whole, the highest mean value of the graduates is also along the same area at 2.50 (Fair). The lowest average scholastic grades, on the other hand, is Geotechnical Engineering and Hydraulics from for female, male and, as a whole, with mean values of 2.67 (Fair), 2.64 (Fair) and 2.65 (Fair), respectively.

Table 4: Summary of the Level of the Average Scholastic Grades of the 2018 BSCE Male and Female Graduates

Scholastics Grades						
Category	**Female**		**Male**		**As a Whole**	
	Mean	**DR**	**Mean**	**DR**	**Mean**	**DR**
Mathematics, Surveying and Transportation	2.49	FG	2.55	F	2.52	F
Geotechnical Engineering and Hydraulics	2.67	F	2.64	F	2.65	F
Structural Engineering and Construction	2.47	FG	2.52	F	2.50	F
Grand Mean	2.50	F	2.53	F	2.52	F

VS-Very Satisfactory, S-Satisfactory, FS – Fairly Satisfactory, G-Good, FG-Fairly Good, F-Fair, Bf-Below Fair

The raw data from which Tables 1 to 3 came from disclose that the scholastic grades range from "Fairly Good" to "Fair". Evidently, most of the grades are close to 3.0, which may indicate an insufficient capability to pass the board. The study of Ferrer found out that the performance of the engineering graduates of the Pamantasan ng Lungsod ng Maynila in the licensure examinations may be attributed to their grades in all their subjects in the baccalaureate, from the general education subjects to the professional engineering subjects.

Further, this finding is evident that the graduates do not excel in Mathematics which is the foundation or key to all engineering subjects. If one is not good in Mathematics and its allied subjects, the students' level of absorption about the lesson would be affected. It could also be that the cut-off score set for the course during college entrance examinations is too low that most students allowed to take the course could not cope up with the intellectual requirements of the course. Another point is that there is no minimum grade requirement other than the University-wide grading system set by the college to be maintained by the students to stay in the program that is why, the students proceeded to complete the course by just being contented with a passing mark of 3.0. All programs with required licensure should be "one-step" higher in standard than ordinary programs with none.

A higher scholastic performance to be attained by a student would provide a larger factor of safety to obtain a passing mark in the board examination.

2. On the Significant Difference in the Scholastic Grades of the BSCE Male and Female Graduates of 2018, taken singly and as a whole, in:

a) Mathematics, Surveying and Transportation?
b) Geotechnical Engineering and Hydraulics?
c) Structural Engineering and Construction?

Table 5 reveals the computed t-test for equality of means to determine the significant difference in the scholastic performance of the male and female graduates.

As shown in Table 5, there is no significant difference in the average scholastic grades of the BSCE male and female graduates in the Mathematics, Surveying and Transportation Engineering, Hydraulics and Geotechnical Engineering and Structural Engineering and Construction categories. This could be attributable to the similarity of principles applied in solving problems under the three categories. Oftentimes, exercises are given as plates to solve. It could be that the students work together to solve the problems, thus, the commonality of solutions may prompt the instructor to give the same grades.

Similarly, along the category of Hydraulics and Geotechnical Engineering, Table 5 also discloses no significant difference in the scholastic performance of the males and females. This would also suggest that the respondents' level of performance is the same.

This is also true for the third category-Structural Engineering and Construction. There exists no significant difference in the scholastic performance of the graduates, both male and female, suggesting that they have the same level of capability in solving problems, thus they score the same in submitted projects and examinations.

As a whole, the t-test for equality of means shows that there is no significant difference in the grades of the female and male BSCE graduates. This means that the grades are almost similar or close to being the same. Their scholastic performance, in other

words, is of the same level. This finding is similar to the study of Ajai and Imoko who found out that females are capable of competing with males, and that performance is a matter of orientation, not gender. The study of Goni, Yagana, Ali and Bularafa is also similar with this result when they found out that there is no significant difference between gender and academic performance in Colleges of Education in Borno State, in favour of female students.

Table 5: The Significant Difference in the Scholastic Performance Between and Among the 2018 Male and Female Graduates

		t-test for Equality of Means				
		t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Decision**
Mathematics, Surveying and Transportation	Equal variances assumed	-1.028	150	0.306	-0.05703	Not Significant
Hydraulics and Geotechnical Engineering	Equal variances assumed	1.318	150	0.190	0.02768	Not Significant
Structural Engineering and Construction	Equal variances assumed	-1.414	150	0.177	-0.05307	Not Significant
Overall	Equal variances assumed	-1.144	150	0.255	-0.03651	Not Significant

3. On the Level of the Board Exam Performance of the BSCE Male and Female Graduates of 2018 in:

a. Mathematics, Surveying and Transportation.
b. Geotechnical Engineering and Hydraulics.
c. Structural Engineering and Construction.

Table 6a reveals the mean board ratings of the 2018 graduates, male and female, which is, at the same time, disclosing the level of board performance of the graduates in this same year.

Table 6a: Level of the Board Exam Performance of the 2018 BSCE Male and Female Graduates

Board Exam Performance of the BSCE Graduates						
Category	**Female**		**Male**		**As a Whole**	
	Mean	**DR**	**Mean**	**DR**	**Mean**	**DR**
Mathematics, Surveying and Transportation Engineering	66.20	BP	69.17	BP	67.92	BP
Hydraulics and Geotechnical Engineering	67.45	BP	71.67	AP	69.89	BP
Structural Engineering and Construction	48.06	BP	54.89	BP	52.01	BP
Overall	60.23	BP	64.92	BP	62.95	BP

**BP-Below Passing, **P-Passing, ***AP-Above Passing*

Table 6a shows that the highest board exam rating for both 2018 BSCE male and female graduates is from Hydraulics and Geotechnical Engineering at 67.45 (Below Passing) for the females, and 71.67 (Above Passing) for the males. The lowest mean rating is along Structural Engineering and Construction for both of them- 48.06 (Below Passing) and 54.89 (Below Passing), respectively. This is in contrast to their scholastic performance, when the highest average grade fell on Structural Engineering and Construction, also for both male and female groups. On the overall, the female graduates got a mean rating of 60.23 (Below Passing), while the male graduates obtained a mean rating of 64.92 (Below Passing), yielding to an overall mean of 62.95 (Below Passing).

Having traced the board ratings of the graduates were lowest under the Structural Engineering and Construction component implies that there is something lacking in providing instruction therein.

The reflected mean board ratings imply that very few of the 2018 graduates passed in the board examination, as shown from the scores which are described as Below Passing. Details of Table 6a are further analyzed in Tables 6b and 6c, and discussed subsequently.

Table 6b reveals the number of 2018 BSCE male and female graduates who took the board examination, indicating there in the number who passed in every board component.

Among the 64 female graduates who took the 2018 board examination, there were more who passed in the first component- Mathematics, Surveying and Transportation Engineering (48.44%) than in the other two components- Hydraulics and Geotechnical Engineering (42.19%) and Structural Engineering and Construction (9.38%). Among the male counterparts, there were more who passed in the second component- Hydraulics and Geotechnical Engineering (69.32%) than in the other two components- Mathematics, Surveying and Transportation Engineering (62.5%) and Structural Engineering and Construction (26.14%). It was observed that in both the male and female groups,

the lowest percentage of passing among the three (3) board components is Structural Engineering and Construction. This could mean that the graduates are good in the Mathematics, Surveying and Transportation Engineering component, but lack the skill to apply the theories which should be carried to the Structural Engineering and Construction component. This could also mean that there were missing information given to the students by their instructors, or the instructors did not bring out the best in the students which may be brought about by absenteeism by the instructor in class, uncovered syllabus, or lack of time to inculcate a theory or concept to students.

When taken as a whole, it was in the Structural Engineering and Construction component that have really lowered the average of the examinees. 19.08% failed in this component despite the fact that majority of them passed in the first two components at 55.92% and 57.89% in Mathematics, Surveying and Transportation Engineering and Hydraulics and Geotechnical Engineering, respectively.

Table 6b: Breakdown of Board Performance of the 2018 BSCE Graduates by Component, by Gender

Category	Female			Male			Grand Total		
	Passed	Failed	Total	Passed	Failed	Total	Passed	Failed	Total
Mathematics, Surveying and Transportation Engineering	31	33	64	54	34	88	85	67	152
% of Passers	48.44			62.5			55.92		
Hydraulics and Geotechnical Engineering	27	37	64	61	27	88	88	64	152
% of Passers	42.19			69.32			57.89		
Structural Engineering and Construction	6	58	64	23	45	88	29	133	152
% of Passers	9.38			26.14			19.08		
Total No of Board Passers	12	52	64	37	51	88	49	103	152
% of Passers over Takers	18.75			42.04			32.24		

A more in-depth analysis is done in Table 6c by determining how many did not pass at all in any of the components and how many were only able to pass one or two components. Likewise, the number of those who were able to pass all the three board components was also noted.

It was revealed in Table 6c that only 7.8% among the female graduates and 24% among the male graduates were able to pass all the three board components. So few were ready to take the board, as implied in the low turnout. This suggests that so many are still to be improved in the overall instructional aspect of the College; particularly in the instructors' classroom management skills to bring out the best in the students, and to develop in them the correct attitude of learning, that is- absorbing and mastering the Engineering principles through constant usage and practice by solving related problems. On one point, the low turnout may be attributable to the low admission standards of the College. Instructors may be teaching well, but the students' absorptive capacity is poor which may be brought about by enrolling in Engineering out of ambition, rather than keeping up with the mathematical requirements of the course. This concerns males and females alike. The students' scholastic grades alone would suffice to support this possibility. If this point of view is considerable, then there is a need for the College to increase its cut-off rating for first year entrants.

Table 6c: Summary of Passers, by Board Component, by Gender

Particulars	Female	Total	Male	Total	Grand Total	
No of Takers who did not pass any board component	25	64	20	88	45	152
% of examinees	39.06		22.73			
No of Takers who passed 1 board component	18	64	19	88	37	152
% of examinees	28.13		21.59			
No of Takers who passed 2 board components	16	64	28	88	44	152
% of examinees	25.00		31.82			
No of Takers who passed only 2 board components but attained passing average	7	n/a	16	n/a	23	n/a
No of Takers who passed 3 board components	5	64	21	88	26	152
% of examinees	7.80		24.00			
Total No of Passers	12	64	37	88	49	152

4. On the Significant Difference in the Board Performance of the BSCE Male and Female Graduates of 2016-2018, taken singly and as a whole in:

a. Mathematics, Surveying and Transportation.
b. Geotechnical Engineering and Hydraulics.
c. Structural Engineering and Construction.

Table 7 shows the basis of the decision as to whether the null hypothesis should be accepted or rejected.

Table 7: Significant Difference in the Board Performance of the 2018 BSCE Male and Female graduates

		t-test for Equality of Means				
		t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Decision**
Mathematics, Surveying and Transportation	Equal variances assumed	-1.657	150	0.100	-2.96733	Not significant
Hydraulics and Geotechnical Engineering	Equal variances assumed	-1.682	150	0.095	-4.21733	Not significant
Structural Engineering and Construction	Equal variances assumed	-2.922	150	0.004	-6.82386	Significant
As a whole	Equal variances assumed	-2.439	150	0.016	-4.69212	Significant

Table 7 shows that there is no significant difference in the board ratings of the female and male graduates along Mathematics, Surveying and Transportation and Hydraulics and Geotechnical Engineering categories. This implies that the board ratings of the male and female graduates are similar, which suggests that they have the same level of capability in solving problems along these categories. However, there is significant difference in the board ratings of the female and male graduates in Structural Design Engineering and Construction. This suggests that the male and female graduates differed in scores along Structural Engineering and Construction, thus, it could be that generally the level of capability of both groups differ. As a whole, the t-test result shows significant difference in the board performance of the BSCE male and female graduates in the board examination, suggesting that, generally, the level of capability of both groups to solve board examination problems differ. Therefore, there exists gender difference in the Structural Engineering and Construction component. This also led to the existence of gender difference in the overall board performance. In other words, the male graduates performed better than the female graduates in the Structural Engineering and Construction and in the board performance, as a whole.

5. On the Significant Relationship between the Scholastic and Board Performances of the Female and Male Graduates taken singly, and as a whole

The computed Pearson coefficients in Table 8 measure the significant relationship of the scholastic grades and the board performance of the female graduates in all the board components. To explain the negative correlation, the computed scholastic grades were not expressed like those in the board ratings. Both are of different scales of magnitude. For the scholastic grades, the higher the grades, the higher the scholastic performance. The scale is from 1.0 (maximum) down to 5 (minimum), while in the board performance, the scale is from 100 (maximum) down to 0 (minimum). The scoring scheme in the board examination is the other way around. The higher the score, the lower is the board performance. Unless the two sets of ratings are similar, the computed coefficients would be negative. In the process of data analysis, the scholastic grades were inputted as is, thus, negative correlation coefficients were computed. If only the ratings in the board are converted into the scale used in the scholastic performance, or vice versa, positive r values could have been computed. Therefore, the negative sign only means the different scales of the variables considered. Setting aside the negative sign, the computed Pearson coefficients suggest positive correlation. In other words, the higher the scholastic grade, the higher is the chance to pass the board. The lower the scholastic grade, the slimmer is the chance to pass the board.

When the average scholastic grades of the female examinees in Mathematics, Surveying and Transportation Engineering are correlated to the board ratings in the same component, significant correlation exists at 0.01 level of confidence ($r = 0.36$), and so with the Hydraulics and Geotechnical Engineering and Structural Engineering and Construction components. As a whole, Mathematics, Surveying and Transportation Engineering among the female examinees is significantly related at 0.01 level of confidence ($r = 0.339$) to the board performance. Evidently, a good grade in Mathematics, Surveying and Transportation Engineering helps in ensuring success in the board examination.

Table 8: Pearson Correlation between the Scholastic and Board Performance of the 2018 Female Graduates

Board Performance		Scholastic Performance of the Female Graduates			
		Mathematics, Surveying and Transp Eng'g	**Hydraulics and Geotechnical Eng'g**	**Structural Engineering and Construction**	**As a Whole**
Mathematics, Surveying and Transp Eng'g	Pearson Correlation	-.360**	-.281*	-.252*	-.339**
	Sig. (2-tailed)	0.003	0.025	0.044	0.006
Hydraulics and Geotechnical Eng'g	Pearson Correlation	-.368**	-.446**	-.537**	-.524**
	Sig. (2-tailed)	0.003	0	0	0
Structural Engineering and Construction	Pearson Correlation	-.385**	-.469**	-.515**	-.530**
	Sig. (2-tailed)	0.002	0	0	0
Overall	Pearson Correlation	-.394**	-.480**	-.532**	-.544**
	Sig. (2-tailed)	0.001	0	0	0
***. Correlation is significant at the 0.01 level (2-tailed).*					
**. Correlation is significant at the 0.05 level (2-tailed).*					

Similarly, when the scholastic grades of the female respondents in Hydraulics and Geotechnical Engineering is correlated to the board performance along this same component, there exists significant correlation at 0.01 level of confidence (r = 0.446). Likewise, this same scholastic component when correlated to the other two, significant correlation also exists. As a whole, there exists a highly significant correlation at 0.01 level of confidence (r = 0.524) of this component to the board performance.

Again, there exists significantly high relationship at 0.01 level of confidence (r = 0.515) for the scholastic and board performances of the female examinees along Structural Engineering and Construction when correlated together on the same component. Still, the correlation is significant when this same component is correlated to the other two board components. As a whole, there exists a highly significant correlation at 0.01 level of confidence (r = 0.530) of this component to the board performance.

On the overall, the mean scholastic grade of the female examinees has a high significant relationship to their mean board rating as shown by the computed r value of 0.544. This finding suggests the significant relationship of the scholastic performance in all areas with the board performance. The female graduates experienced the fact that the learnings they acquired in college directly affected their performance in the board.

Table 9 shows the correlation coefficient of the mean ratings of the board examination categories of the 2018 male graduates who took the board examination in the same year. Similar to Table 8, Table 9 also discloses negative correlation, because of the dissimilarity of the rating system of the inputted ratings. In like manner, the negative sign is also disregarded.

When the average scholastic grades of the male examinees in Mathematics, Surveying and Transportation Engineering are correlated to the board ratings in the same component, significant correlation exists at 0.01 level of confidence (r = 0.361), and so with the Hydraulics and Geotechnical Engineering and Structural Engineering and Construction components. As a whole, Mathematics, Surveying and Transportation Engineering among the male examinees is significantly related at 0.01 level of confidence (r = 0.358) to the board performance. Similarly, the scholastic performance in Mathematics, Surveying and Transportation Engineering ensures success in passing this board examination component.

When the scholastic grades of the male respondents in Hydraulics and Geotechnical Engineering is correlated to the board performance along this same component, there exists significant correlation at 0.01 level of confidence (r = 0.454). Likewise, this same scholastic component when correlated to the other two, significant correlation also exists. As a whole, there exists a significant correlation at 0.01 level of confidence (r = 0.492) of this component to the board performance.

Again, there exists significant relationship at 0.01 level of confidence (r = 0.392) for the scholastic and board performances of the male examinees along Structural Engineering and Construction when correlated together on the same component. Still, the correlation is significant when this same component is correlated to the other two board components. As a whole, there exists a highly significant correlation at 0.01 level of confidence (r = 0.448) of this component to the board performance.

Table 9: Summary of Pearson Correlation between the Mean Scholastic and Board Performance of the 2018 Male Graduates

Scholastic Performance		Board Performance			
		Mathematics, Surveying and Transportation Engineering	Hydraulics and Geotechnical Engineering	Structural Engineering and Construction	As a Whole
Mathematics, Surveying and Transportation	Pearson Correlation	-.361**	-.332**	-.268*	-.358**
	Sig. (2-tailed)	0.001	0.002	0.012	0.001
Hydraulics and Geotechnical Engineering	Pearson Correlation	-.454**	-.431**	-.422**	-.492**
	Sig. (2-tailed)	0	0	0	0
Structural Engineering and Construction	Pearson Correlation	-.392**	-.355**	-.431**	-.448**
	Sig. (2-tailed)	0	0.001	0	0
Overall	Pearson Correlation	-.442**	-.404**	-.471**	-.500**
	Sig. (2-tailed)	0	0	0	0
***. Correlation is significant at the 0.01 level (2-tailed).*					
**. Correlation is significant at the 0.05 level (2-tailed).*					

On the overall, the mean scholastic grade of the male examinees has significant relationship to their mean board rating as shown by the computed r value of 0.50. This finding suggests the significant relationship of the scholastic performance in all areas with the board performance. The male graduates experienced the fact that the learnings they acquired in college directly affected their performance in the board.

Table 10 reveals the computed Pearson coefficients when the mean scholastic performance is correlated to the board performance. Similarly, the negative signs are neglected.

Table 10: Summary of Pearson Correlation to the Overall Mean Scholastic and Board Ratings of the 2018 Graduates

Scholastic Performance		Board Performance			
		Mathematics, Surveying and Transportation Engineering	Hydraulics and Geotechnical Engineering	Structural Engineering and Construction	As a Whole
Mathematics, Surveying and Transportation Engineering	Pearson Correlation	-.345**	-.295**	-.234**	-.325**
	Sig. (2-tailed)	0	0	0.004	0
	N	152	152	152	152
Hydraulics and Geotechnical Engineering	Pearson Correlation	-.426**	-.445**	-.475**	-.513**
	Sig. (2-tailed)	0	0	0	0
	N	152	152	152	152
Structural Engineering and Construction	Pearson Correlation	-.365**	-.384**	-.419**	-.446**
	Sig. (2-tailed)	0	0	0	0
	N	152	152	152	152
Overall	Pearson Correlation	-.397**	-.417**	-.453**	-.483**
	Sig. (2-tailed)	0	0	0	0
	N	152	152	152	152
***. Correlation is significant at the 0.01 level (2-tailed).*					

Analyzing the computed Pearson coefficients by board component reveals the succeeding findings. There exists significant relationship in the mean scholastic performance for Mathematics, Surveying and Transportation Engineering and the board performance (r = 0.345). The mean grade in this component is also significantly related to the other two board components at 0.01 level of confidence. As a whole, there is also significant relationship between this scholastic mean and the overall mean board rating (r = 0.325). This finding is consistent with the established significant relationship of the scholastic and board performances in Mathematics, Surveying and Transportation Engineering among the female and male groups. Consistently, this component is also significantly related to the other two components in the board.

The computed correlation coefficient of the scholastic and board rating means in Hydraulics and Geotechnical Engineering also confirms the significant relationship between them (r = 0.426) at 0.01 level of significance. Also, the correlation coefficients of the scholastic and board rating means of the other two components reveal significant relationship. As a whole, the computed r value of 0.513 suggests high significant relation of the scholastic mean in Hydraulics and Geotechnical Engineering with the overall board rating mean.

The computed correlation coefficient of the scholastic and board rating means in Structural Engineering and Construction is also suggestive of the significant relationship between them (r = 0.365) at 0.01 level of significance. Also, the correlation coefficients of the scholastic and board rating means of the other two components reveal significant relationship. As a whole, the computed r value of 0.446 suggests high significant relation of the scholastic mean in Structural Engineering and Construction with the overall board rating mean.

On the overall, the mean scholastic grade of the examinees has significant relationship to their mean board rating as shown by the computed r value of 0.483. This finding denotes the significant relationship of the scholastic performance in all areas with the board performance. To summarize the results, the consistent significant relationship of each scholastic mean of every board component to the mean board ratings is highly signifying that the learnings the graduates acquired in college directly affected their performance in the board. The higher the scholastic performance suggests a higher possibility of success in the board examination. Similarly, the finding of Amanonce and Maramag also discovered a significant and strong correlation that exists between the graduates' grade weighted average in college and LET performance. Still in teachers' board, the study of Garcia found the same that the overall correlation of the examinees' academic and board ratings is moderately significant. Likewise, the significant relationship of the scholastic grade and board rating in this study agrees with Banluta's finding that there is a substantial relationship between the academic achievement and the board examination rating of the ECE students of Ateneo de Davao, Davao City, Philippines. Similar to this is that of Bueno and Mallari, who also considered the average grade in the major subjects to be correlated with the performance in the licensure examination.

SUMMARY OF FINDINGS

After a thorough analysis of the data, the following are the highlights of the findings:

1. The female graduates have an overall mean scholastic grade of 2.50 (Fair), while that of the male graduates is 2.53 (Fair), or an overall rating of 2.52 (Fair).
2. There is no significant difference of the average scholastic grades of the BSCE male and female graduates in each subject.
3. The mean board performance of the female graduates is 60.23 (Below Passing), while for the male graduates is 64.92 (Below Passing), making the overall mean board performance at 62.95 (Below Passing).
4. 31 out of 64 (48.44%) among the female graduates passed the Mathematics, Surveying and Transportation Engineering component of the board examination, while 54 out of 88 (62.5%) passed among the male graduates, in the Hydraulics and Geotechnical Engineering component, 27 (42.19%) among the females, 61 (69.32%) among the males passed, and 6 (9.38%) passed in the Structural Engineering and Construction among the female graduates, 23 (26.14%) passed among the males.
5. Among the female graduates, 25 (39.06%) while 20 (22.73%) among the male graduates did not pass in any board component, 18 among the females and 19 among the males passed one (1) board component only, while 16 (25%) among the females and 28 (31.82%) among the males passed in two (2) board components. Luckily, 7 among the 16 females and 16 among the 28 male graduates who passed 2 board components, passed because they attained more than 70% overall rating. Only 5 among the female graduates and 21 among the males passed all of the three board components.
6. There is no significant difference in the board performance of the BSCE male and female graduates in along the Mathematics, Surveying and Transportation Engineering and Hydraulics and Geotechnical Engineering board components, but there exists significant difference in their board performance along Structural Engineering and Construction. As a whole, there exist significant difference in the board performance of the 64 female graduates and 88 male graduates.
7. The scholastic grades of the 2018 BSCE female graduates in each of the board components are significantly related to their performance in the board.
8. The scholastic grades of the 2018 BSCE male graduates in each of the board components are significantly related to their performance in the board.
9. The mean scholastic grades of the 2018 BSCE graduates in each of the board components are significantly related to their performance in the board.

CONCLUSION

From the foregoing discussions, the following generalizations are drawn:

1. The 2018 female graduates performed the same as the male graduates in college academically in all the board components of Mathematics, Surveying and Transportation Engineering, Hydraulics and Geotechnical Engineering and Structural Engineering and Construction.
2. The 2018 female graduates performed the same as the male graduates in the board examination along Mathematics, Surveying and Transportation Engineering and Hydraulics and Geotechnical Engineering components, but not in Structural Engineering and Construction, where so few passed, leading to their lower performance than the male
3. The overall performance of the 2018 Graduates of "Fair", male and female alike, does not guarantee a passing rating in the board, as this may indicate that the graduates passed their subjects just near the borderline, which means that they still lack knowledge and skills to be applied in solving a variety of Engineering problems that cover all the three board components.
4. The 2018 graduates, male and female alike, got low scores in Structural Engineering and Construction, which led more to fail, after the passing of Mathematics, Surveying and Transportation Engineering and Hydraulics and Geotechnical Engineering by the majority.
5. The knowledge and skills they acquired in college are related to the theories and concepts they applied in solving the board problems.
6. The board passing rate of the 2018 graduates is low.

RECOMMENDATIONS

To address the findings of this study, the following actions are recommended:

To Students

1. A graduate with "Fair" scholastic grade should double time in his/her review class to ensure success in the board.

To The Faculty

2. Bring out the best in your students by seeing to it that teaching methodologies are effective:
   a. Experiment for better teaching delivery,
   b. Use updated materials,
   c. Imbibe values of determination and perseverance to the students,
   d. Cover the syllabus per subject taught so that the students are provided all information they need for the board examination;
   e. Strive not to miss any class, as absence destroys the momentum of learning among students.
   f. Induce students for independent thinking, without discounting the need for teamwork. Design activities to attain this.

3. Recognize in equal regard the capability of female and male civil engineering students in their scholastic performance.

To the Middle Level Administrator

4. Monitor strictly the faculty in their daily teaching schedules to ensure that
   a. Teaching assignments are done religiously;
   b. The syllabus is covered;
   c. Adopt a common mid-term and final exams for subjects taught by two or more faculty members

5. Propose for a higher cut-off in the UNP College Admission Test for BSCE (the present CAT cut-off is 83);
6. Propose a minimum lowest grade to be maintained by students to be retained in the program in addition to approved existing retention policies of the College; and
7. More research should be conducted to improve scholastic and board performance of students. Pick up from the findings of Dayaday who identified that faculty/teaching strategy, curriculum, instructional materials, facilities/laboratory equipment/laboratory activities, admission and retention policy, review preparation and mental/study behavior through survey are significant considerations in predicting board performance.

REFERENCES

- Aguillon, S. M., Siegmund, G. F., Petipas, R. H., Drake, A. G., Cotner, S., & Ballen, C. J. (2020). Gender differences in student participation in an active-learning classroom. *CBE—Life Sciences Education*, 19(2), ar12. https://doi.org/10.1187/cbe.19-03-0048
- Akpotor, J., & Egbule, E. (2020). Gender Difference in the Scholastic Achievement Test (SAT) among School Adolescents. *World Journal of Education*, 10(1), 97-101. doi:10.5430/wje.v10n1p97 URL: https://doi.org/10.5430/wje.v10n1p97
- Amanonce, J. C. T., & Maramag, A. M. (2020). Licensure Examination Performance and Academic Achievement of Teacher Education Graduates. *International Journal of Evaluation and Research in Education*, 9(3), 510-516. DOI: 10.11591/ijere.v9i3.20614 https://files.eric.ed.gov/fulltext/EJ1274723.pdf

- Amanonce, J. C. T., & Maramag, A. M. (2020). Licensure Examination Performance and Academic Achievement of Teacher Education Graduates. *International Journal of Evaluation and Research in Education*, 9(3), 510-516. ISSN: 2252-8822, DOI: 10.11591/ijere.v9i3.20614
- Buontempo, J., Riegle-Crumb, C., Patrick, A., & Peng, M. (2017). Examining gender differences in engineering identity among high school engineering students. *Journal of Women and Minorities in Science and Engineering*, 23(3). See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/320251346
- Dolores T. Quiambao, Enrique G. Baking, Laura Miriam B. Buenviaje, Alvin V. Nuqui, Reynaldo C. Cruz, Predictors of Board Exam Performance of the DHVTSU College Of Education Graduates, https://www.academia.edu/30430969/PREDICTORS_OF_BOARD_EXAM_PERFORMANCE_OF_THE_DHVTSU_COLLEGE_OF_EDUCATION_GRADUATES
- Flordeliza, P. (2016). Ferrer, Performance in the Engineer Licensure Examinations: Philippines, 2011-2015. *International Journal of Advance Research in Science and Engineering*, 5.
- Garcia, G. C. (2013). Academic performance as determinant to pass the licensure examination for teachers. *JPAIR Institutional Research*, 2(1), 69-75. https://ejournals.ph/
- Halpern, D. F. (2019). Sex Differences in Cognitive Abilities, *3rd Edition, Lawrence Eribaum Associates*, 2000, https://en.wikipedia.org/wiki/Sex_Differences_in_Cognitive_Abilities.
- Jenith Banluta, Relationship of the Academic Rating and Board Examination Performance of the Electronics Engineering Graduates, Ateneo de Davao University, Davao City, Philippines https://www.researchgate.net/publication/324416083 Proceedings of the IETEC'13 Conference, Ho Chi Minh City, Vietnam
- Jenith, B. (2013). Relationship of the Academic Rating and Board Examination Performance of the Electronics Engineering Graduates. https://www.researchgate.net/publication/324416083_Relationship_of_the_Academic_Rating_and_Board_Examination_Performance_of_the_Electronics_Engineering_Graduates
- John, T., & Ajai, B. I. (2015Winter). Imoko Taraba State University, Nigeria, 2 Benue State University, Nigeria Gender Differences in Mathematics Achievement and Retention Scores: A Case of Problem-Based Learning Method John T. Ajai, *International Journal of Research in Education and Science*, 1(1). ISSN: 2148-9955, accessed in https://scholar.google.com.ph/scholar on August 29, 2021
- Mallari, E. G. C., & Bueno, D. C. (2018). Factors affecting the performance in the civil engineering licensure examination: A theoretical perspective. *Institutional Multidisciplinary Research and Development Journal*, 1(1), 1-4. ISSN 2619-7820. https://education.stateuniversity.com/pages/2509/Thorndike-Edward-L-1874-1949.html.
- Maricel G. Dayaday, Factors affecting the performance in the board examination of electronics engineering – university of southern Mindanao graduates. *International Journal of Current Research*. https://www.journalcra.com/article/factors-affecting-performance-board-examination-electronics-engineering-%E2%80%93-university, September 2018
- Muhammad, A. M. (2019). Gender and Academic Performance in Architectural Education: A Case Study, *Ahmadu Bello, University, Zaria*, https://www.researchgate.net/publication (February 2018).
- Salehi, S., Cotner, S., Azarin, S. M., Carlson, E. E., Driessen, M., Ferry, V. E., ... & Ballen, C. J. (2019, September). Gender performance gaps across different assessment methods and the underlying mechanisms: The case of incoming preparation and test anxiety. In *Frontiers in Education* (Vol. 4, p. 107). Frontiers Media SA. www.frontiersin.org
- Simmons, L. A. (2019). Academic Performance Differences among Male and Female African American Students: An Urban High School Study, University of Alabama, 2010 accessed at https://www.google.com/
- Umar, G., Yagana, W. S. B., Hajja, K. A., & Mohammed, W. B. (2019). Gender Difference in Students' Academic Performance in Colleges of Education in Borno State, Nigeria: Implications for Counselling Department of Education, University of Maiduguri, Borno State, Nigeria, published in the *Journal of Education and Practice*, 6(32), 107-114. accessed at www.iiste.org ISSN 2222-1735 (Paper) ISSN 2222-288X (Online).