Intellective Correlates of the Proficiency Examinations of the Engineering Students

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Abstract
This study determined possible intellective indicators that could influence the engineering proficiency exams. The intellective attributes of the respondents considered were type of high school graduated, SHS strand, General Weighted Average (GWA), OLSAT Scores, scholastic achievement, and course while engineering proficiency examinations was measured in terms of general education and specialized subjects.

Quantitative research design was utilized in this study. Total enumeration of the 156 freshmen engineering students were the respondents of the study. The OLSAT and the departmental made questionnaires were the main tool. Frequency counts and percentages, weighted mean, t- Test, and ANOVA were utilized.

Findings revealed that the respondents were graduates of public high schools. Their course is parallel to their SHS academic strands. They performed satisfactorily in high school and also in their freshmen scholastic achievement. Mostly wanted to become civil engineers however, they achieved low performance in their OLSAT. Respondents met the standards

required by the institution as prescribed by Commission on Higher Education. The BSME students outperformed the other two engineering courses; Students who have low high school GWA and scholastic aptitude displayed higher performance in the engineering proficiency examinations; Proficiency of the students who graduated from public and private in are the same; Students from the engineering courses, and who underwent different senior high school strands displayed the same proficiency.
The intellective correlates to the proficiency exams were their GWA and Scholastic Achievement. Skills enhancement of the engineering performance to track the student's abilities to level up achievement and the guidance office should consider bridging programs.

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I. RATIONALE / BACKGROUND OF THE STUDY / INTRODUCTION

Engineering jobs are inevitably one of the highest-paid careers not only in the country but globally. It is one of the highest-paid because engineering itself requires a high level of logical thinking, analytical thinking, perfection and accuracy, planning, excellent communication skills, superb numeracy, and technology literacy. Even in the changing times, it is known to be the tangible real-life application of mathematics and geometry. Theories learned in school are widely applied to real life and cascaded as a work of art from the infrastructures and buildings we see around us, the advancement of technology in all phases of human activity, and ways of living.

Whenever a person hears that a person is an engineer, many would-be delighted by just hearing that a person is engaged in engineering endeavors. By just considering the exerted time, effort in their studies, and importantly to be qualified to be called as an "Engr.", admiration and respect are automatically implied.

Engineering jobs are claimed to be one of the highest paying jobs in the global context. Where 9 jobs listed from the top 20 highest paying jobs in the world posted in careeraddict.com published last December 23, 2020, have a direct inclination to engineering. In the recent survey on the 2018 Occupational Wages Survey (OWS) officially published on March 25, 2020, by the Philippine Statistics Authority as seen in the table below. Almost all highest paid careers included in the list from the Top 10 Highly Paid Occupations in the Philippines have a direct inclination to engineering jobs.

Being one of the highest-paid career representations in a national and global context, it is preceded that students gone through a lot of rigid tests and preparations from their high school track alignment to chosen career path, aptitude tests, preboard exams, qualifying exams, and finally up to licensure examinations. This is not only to ensure that students who choose the career path could finish their courses but also prepare them to be professionals whose works are of quality and could contribute a lot to innovations and development of society.

The Abra State Institute of Sciences and Technology, the lone state college in the province offers the young courses; Bachelor of Science in Civil Engineering, Mechanical Engineering, and Electrical Engineering. Recently, last October 2020, the courses passed through with their level 2 accreditation. Thus, ensuring the quality of the programs offered to aspiring engineers of the province. As part of pushing further quality, one of the best practices of the ASIST Bangued is the Engineering Proficiency Test as part of the Admission and Retention policy. This test serves as a qualifying exam to move on further to a higher level of the course which is applied to all engineering courses. This is done to ensure that graduate of the engineering courses would have a higher probability rate in passing the licensure examination which also affects the institutional profiling

and leveling. While it is true that engineering career jobs are one of the highest-paid careers in the land, there is a need to ensure quality.

This study is conducted by the researchers to determine what are some of the factors that could affect engineering student's performance in their proficiency tests which plays a vital role in succeeding in their chosen career path. As a result, school administrators, psychologists, and curriculum planners will find this study useful since it will show them how the general weighted average, mental capacity, the school graduated from, senior high school academic track, entrance exam results, academic grades of freshmen engineering students correlate. The findings of this research will assist them in making the necessary retrofitting adjustments and assess also K-12 curriculum congruity to tertiary programs like engineering.

This would give a clearer view and guidance on what to do of all stakeholders of the college in addressing the high passing rate of the proficiency test, to the licensure examinations, and in the strengthening the institutions' profile and SUC leveling.

In the conduct of the study, the researchers were guided by the following research model.

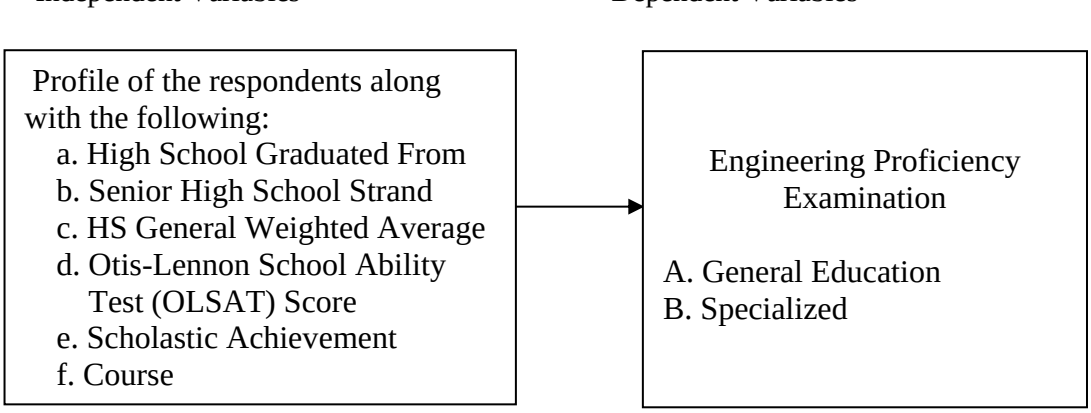

Figure 1

The Research Paradigm

The paradigm shows the independent variables which include high school graduated from, SHS Strand, General Weighted Average, OLSAT Scores, Scholastic Achievement, and Course. This further shows that the latter would significantly affect the engineering student's proficiency test which is the dependent variable.

II. OBJECTIVES

a. To determine the intellective attributes of the Engineering Students along high school graduated from, SHS Strand, General Weighted Average, OLSAT Scores, Scholastic Achievement, and Course.
b. To identify the level of performance in terms of the engineering proficiency examination of the engineering students.
c. Establish the relation between the general weighted average (GWA) in high school, Otis-Lennon School Ability Test (OLSAT) Score, scholastic achievement, and performance in engineering proficiency examination of the students.
d. Find the relationship between the general education and specialized subject and the level of proficiency test of the engineering students.
e. To look if there exist differences in the performance in the engineering proficiency examination of the students when grouped based on the type of high school where they graduated.
f. To determine differences in the performance in engineering proficiency examinations of the students when grouped according to course and strand.

III. METHODOLOGY / PROCEDURES

Research Method

In the conduct of the study, the researchers made use of multiple methods of quantitative research design namely; descriptive, correlational, and comparative research designs. Descriptive because it will describe the intellective attributes of the engineering students along high school graduated from, SHS Strand, level of general weighted average, level of OLSAT Scores, level scholastic achievement, course and level of engineering performance.

Correlational because it will establish the relationship between intellective factors and their proficiency and the relationship between the general education and specialized subject and the level of proficiency test of the engineering students.

Comparative for it will also look on differences in the performance in the engineering proficiency examination of the students when grouped based on the type of high school from which they graduated; and differences in the performance in engineering proficiency examinations of the students when grouped according to course and strand.

Population of the Study

The population of this study was determined using purposive sampling and the total enumeration of all the freshmen engineering students of ASIST Bangued who were enrolled during the S.Y. 2018-2019. Purposive sampling was also looked into consideration because this batch of freshmen students are currently third-year students which happen to be the last batch of engineering students who took the engineering proficiency test. Succeeding batches were not able to take because of the plight of the coronavirus pandemic. The respondents were the 84 students from the BS Civil Engineering, 39 students from the BS Electrical Engineering, and 33 BS Mechanical Engineering Students which comprises a total of 156 freshmen engineering students of ASIST Bangued Campus.

Data gathering instruments.

There are two data gathering tools used in this study. (1) **(Otis-Lennon School Ability Test) OLSAT Questionnaire.** A multiple-choice K-12 test that evaluates reasoning abilities through verbal, nonverbal, figural, and quantitative reasoning tasks. Its purpose is to assess a child's thinking ability across a variety of skill areas. The OLSAT consists of 72 items wherein the scoring mechanism in every correct item corresponds to 1 point; (2) **Part II. (EPT) Engineering Proficiency Test Questionnaire.** The exams consist of 50 item tests under general education subjects and 50 item tests from the specialized subjects of engineering courses to complete the 100-item test questionnaire. The scoring mechanism in every correct item is given 1 point.

And the data on other profiles, the main tool used to gather data on intellectual attributes is the profile data bank of the office of the guidance services. Specifically, the gathered data are on the profile of students on the high school they graduated from, SHS Strand, and the general weighted average (GWA). On the other hand, the data on scholastic achievement of the students were retrieved through the data bank of the Engineering Department through the office of the chairperson.

Data Gathering Procedure

In the conduct of the study, coordination was sought from the respective chairperson of the engineering department. Similarly, it follows also the coordination from the guidance counselor of the college. Upon approval, the researchers personally retrieved the data to be used in this study from the profile data bank of the office of the guidance services. On the other hand, the data on scholastic achievement of the students were also personally retrieved through the data bank of the Engineering Department through the office of the chairperson. The data gathered were personally tallied, treated, and interpreted by the researchers.

Statistical Treatment

In the analysis, he following statistical tools were used to interpret the data:

a. Frequency Count and Percentages to describe the profile of the respondents' high school graduated from, SHS Strand, and Course.
b. Weighted Mean was used to determine the level General Weighted Average, OLSAT Scores, Scholastic Achievement, and the level of Engineering Proficiency Examinations of the respondents.
c. Bivariate Analysis (r) was employed to determine the relationship between the high school general weighted average (GWA), Ottis-Lenon Student Ability Test (OLSAT) Score, scholastic achievement and performance in engineering proficiency examination of the students; and the relationship between the general education and specialized subject and the level of proficiency test of the engineering students.
d. T-test was used to determine the significant difference in the performance in the engineering proficiency examination of the students when grouped depending on what type of high school from which they graduated.
e. Analysis of Variance (ANOVA) was also used in establishing a significant difference in the performance in engineering proficiency examinations of the students when grouped according to course and strand.

IV. RESULTS AND DISCUSSION

The following are the results of the data treated in this study.

Problem 1. What are the the intellective attributes of the Engineering Students along high school graduated from, SHS Strand, General Weighted Average, OLSAT Scores, Scholastic Achievement, and Course?

The table on the next page presents the intellective correlates of the engineering students which may cause an impact to their Engineering Proficiency Examinations.

Type of High School Graduated From. With the total respondent count of 156, 116 of these respondents graduated in public schools while the remaining 40among them, graduated in private schools. The difference between the two variables may have been affected due to financial aspects which reveal the fact that studying in private schools requires higher fees such as tuition books, and others.

Table 2. Intellective Profile of the Engineering Students

Academic Profile	Frequency (f)	Percentage (%)
Type of High School Graduated From		
Public School	116	74.36
Private School	40	25.64
Total	**156**	**100.00**
Academic Strand		
STEM	46	29.49
HUMMS	31	19.87
GASS	26	16.67
TVL	37	23.72
NO STRAND	16	10.26
Total	**156**	**100.00**
High School Grade Weighted Average		
95.00 and above	2	1.28
90.00 – 94.99	61	39.10

85.00 – 89.99	61	39.10
80.00 – 84.99	31	19.87
79.99 and below	2	1.28
Average	**87.98**	**Satisfactory**
OLSAT Score		
60.75 and above	-	-
49.50 – 60.94	-	-
38.25 – 49.49	3	1.92
27.00 – 38.24	79	50.64
Below 27	74	47.44
Average	**27.44**	**Fair**
Scholastic Achievement		
General Education Subjects	1.95	VS
Specialized Subjects	2.90	F
Total	**2.46**	**Satisfactory**
Course		
Bachelor of Science in Civil Engineering (**BSCE**)	84	53.85
Bachelor of Science in Electrical Engineering (**BSEE**)	39	25.00
Bachelor of Science in Mechanical Engineering (**BSME**)	33	21.15
Total	**156**	**100.00**

Norm:

HSGWA	OLSAT Score	Scholastic Achievement	Descriptive Rating
95.00 – 100.00	60.75 – 70.00	1.50 – 1.00	Excellent (E)
90.00 – 94.99	49.50 – 60.74	2.00 – 1.51	Very Satisfactory (VS)
85.00 – 89.99	38.25 – 49.49	2.50 – 2.01	Satisfactory (S)
80.00 – 84.99	27.00 – 38.24	3.00 – 2.51	Fair (F)
79.99 and below	Below 27.00	Below 3.00	Poor/Needs Improvement (P/NI)

Though some of these private schools offer scholarship programs, it is insufficient to cater the large number of students. Since public schools are funded by the government, there are more opportunities for the students to have proper education. This includes the construction of public schools in remote areas to lessen the burden of its clientele especially in transportation. There are also some programs which donate educational materials for the public schools and for the students to ensure that there will be no hindrances for every child to embrace education and make their way to their dreams.

The National Center for Education Statistics (n. d.) had proven this result because it was pointed out that on the average, public schools were at least double the size of private schools in the 1993–94 academic year. At both the primary and secondary levels, this association held across schools in various sorts of communities. It could be also for the fact that in many ways, racial and cultural variety can enrich learners' and teachers' school experiences. A diverse school population, on the other hand, presents additional challenges for teachers and administrators, who must be sensitive to various cultural backgrounds and relationships between individuals (learners and teachers) from various backgrounds. In addition to this, Allianz Care (2021) claimed also that the majority of Filipino children attend public schools because these schools are government-funded hence, it is free to attend.

Senior High School Strand. The main role of having academic strand in senior high school is to prepare the students to the courses they desire in college. It is probably the main reason why most of the respondents, 46 to be exact, graduated senior high school along STEM (Sciences, Technology, Engineering, and Mathematics) to make themselves ready with the engineering courses. However, students may have not been concrete enough with their desires to the courses they draw in their mind. In this case, they chose a strand during senior high school but all in a sudden, they will choose college course which is not matching to the

strand they took. Within the table, we see that almost two thirds of the total frequency count graduated with the mismatching strand to engineering courses. We have 31 HUMMS (Humanities and Social Sciences) graduates, 26 from GASS (General Academics Strand), and 37 graduates of TVL (Technical, Vocational, and Livelihood). There are 16 students with no strands. They were those who graduated high school before the schools' curriculum changed to K-12 curriculum which added the two-year grade levels known as the senior high school. After graduating, they paused from studies because of their own personal reasons and are now backed on the track of obtaining baccalaureate degree in engineering.

Uy, E. and Martinez, A. Jr. (2019) asserted that the Philippine government's execution of the K to 12 Basic Education Program strives to guarantee that students are properly prepared for university education, skill development, employment, and entrepreneurship. As a result, it is necessary to guarantee that senior high school students have access to a variety of senior high school tracks so that they can make the best decisions possible.

Brillantes, K.D.B., Orbeta, A. Jr. C., Abrigo, K.A.F., Capones, E.M., and Jovellanos, J.B.B. (2019) they found in their study that in terms of the number of strands available, the bulk of these schools only offer one, while a small percentage offer seven out of eight. GAS and TVL are the most popular among these eight strands, followed by ABM, HUMSS, and STEM, with ARTS, SPORTS, and MARITIME receiving less than one percent of the total. However, per school group, slightly distinct patterns are noticed. Public schools mostly offer the TVL and GAS strands, which account for about 60 percent of overall offerings; private schools primarily offer ABM and GAS, with a minor discrepancy in distribution with other strands. The TVL, STEM, HUMSS, and ABM strands are more heavily represented in SUC/LUC programs. In terms of enrollment distribution by track and strand, the Academic and TVL tracks have the highest concentrations. GAS is the most popular of the five strands within the Academic track, followed by STEM, ABM, and HUMSS. In terms of enrollment distribution by track and strand, the Academic and TVL tracks have the highest concentrations. GAS is the most popular of the five strands within the Academic track, followed by STEM, ABM, and HUMSS.

High School Grade Weighted Average. This variable may create expectations from the freshmen as it reveals scholastic capability of these engineering students in their alma maters. As shown in the table, great numbers at both frequency counts of 61stood out under the 90.00-94.99 which is described as very satisfactory and satisfactory level at 85.00-89.99 weighted averages in high school. This may be said that these students shall be expected to maintain good performance in their studies. There are two students who performed with excellence upon achieving a weighted average of 95.00 and/or above which shows their full dedication with their studies. On-the-other-hand, having a lower grade is not a hindrance to fulfill the eagerness to become a future engineer. This is proved by the two students whose weighted average is in 79.99 or lower.

The General Weighted Average, or simply GWA, is a numerical representation of a student's total academic standing that is used to evaluate them. GWA is calculated using grades in all subjects taken at a certain level.

De Leon, S., Estrella, E. A., and Duay, B.S.C. (2020) found that the general weighted average of the respondents in their study, more than half of the respondents (61%) performed satisfactorily. Similar descriptive rating was found by De Leon, J.M.D., Mejilla, J.L., Sagun, C.G., Garcia, M.C., and Alviar, P.R. (2016) because the Nursing graduates' professional subjects have a General Weighted Average (GWA) that ranges from 2.25 to 2.5, indicating "Satisfactory performance."

Otis-Lennon School Ability Test (OLSAT) Score. As one of the preliminary qualifications of being a part of the engineering department, this examination must be taken to give the evaluator a peek of potential students. The data in the table exhibits a minimal difference between the 79 students who got a fair score at 27.00 – 38.24, and 74 students with a score of lower than 27 which needs improvement. Since OLSAT is just a part of the evaluation, it does not mean that the door of becoming an engineer closes. It only gives the sign

for the students to make a move to improve themselves in order to grab their goal of becoming a future engineer.

Testprep Online (2021) stressed out that the Otis-Lennon School Ability Test (OLSAT) evaluates a student's cognitive abilities (e.g., verbal, nonverbal, and quantitative) that are related to academic success, providing educators with vital information to supplement traditional achievement assessments. This was published by the Pearson NNC as a multiple-choice test used in the United States to identify gifted children. The OLSAT is frequently used by schools to determine eligibility for admission to gifted and talented schools and programs, as well as to assess scholastic achievement across all ages.

Medallon, M. C., and Cataquis, R. E. (2011) forwarded that although no items were recognized as having a high level of discrimination, there were a couple that were quite tough. The majority of the questions are moderately difficult to easy. There are only a few items that may be labeled as extremely easy or extremely tough. Half of the items had a low discrimination index, while a large number had a moderately high level of discrimination.

Scholastic Achievement. The results of the statistical treatment of the study along Scholastic Achievement exposes that the performance of these aspiring engineering students are very satisfactory in terms of General Education Subjects at a rate of 1.95. This group of subjects includes social sciences, languages like Filipino and English, which might be taught to them since they started schooling and being nurtured day by day inside and out of the classroom. Their performance in Specialized Subjects however, also meets the Rating of 2.90 which is described as fair. It may be considered to say that the respondents are trying still to maintain being with the flow. They keep themselves jiving with the increasing difficulty and must conquer these subjects and be the professional they are wanting to. Perhaps they will not be able to advance to the next level if they fail passing these subjects.

MolokoMphale, L., and Mhlauli, M. B. (2014). Since 2010, the academic performance of students has been deteriorating at an alarming rate. This is despite the government's substantial investment in education, the output in terms of student quality has not been commensurate with the cost. The data displays annual student academic achievement for 2010, 2011, and 2012, all of which show a significant fall. Both the government and the general population are concerned about this.

Amasuomo, J.O.M. (2014) found that in each of the courses considered in his study, both groups had a passing mean score of 40%, with the exception of TED 113 (Electrical/Electronics), where the City and Guilds group received a score of 39.03 percent, which was below the passing level of 40%. Both groups had low passing marks in TED 111, but moderate, still passing marks in TED 112 and TED 114, according to the mean scores. In TED 113 and TED 115, the secondary school certificate group received modest but passing grades. The City and Guilds group, on the other hand, barely passed TED 115 and failed TED 113. In each of the courses, the School Certificate students outperformed their City and Guilds peers, according to the results. The School Certificate group had a reasonable level of academic performance, whereas the City and Guilds group had a poor level.

According to the statistics made by Davidson, C. B., and Dustova, G. (n. d.), the average score on the 200-level standardized test is 73% (2.0 GPA). In particular course, the practical test average is 76 percent (2.0 GPA). The practical test has an unusually high standard deviation of 20, compared to the ordinary exam's standard deviation of 6. The regular exam has an average score of 67 percent (1.3 GPA) in the 300-level course data set. At 84 percent, the practical exam has a substantially higher average score (3.0 GPA). The stand deviations for the practical test are 24 for the 300-level course data and 8 for the standard. The learners entire score (final grade and GPA) was next examined. The TCMP 211 course has a range of GPAs from.13 to 3.975. The TCMP 311 course has a range of GPAs from.28 to 3.88. A considerable number of poor and high grades in the practical examination are to blame for most of this. This indicates that students participating in the practical are either exceptionally knowledgeable about the course topic or are not.

Course. The majority of the engineering students are taking up Bachelor of Science in Civil Engineering (BSCE) with the frequency of 84 or more than the half at a rate 53.85%. 25.00% or 39 out of 156 total frequency are taking up Bachelor of Science in Electrical Engineering (BSEE), and the remaining 33 which is 21.15% are taking Bachelor of Science in Mechanical Engineering.

The reason why many students would like to become civil engineers is summarized at Florida Institute of Technology (2017). The article claimed that civil engineers play an important part in community infrastructure development, as well as the development of new real estate and the maintenance of existing residential, commercial, and government structures. They make sure that every road, bridge, airport, office building, water supply and sewage facility, and public transportation system is well-planned and performed. They could practically change the world with a civil engineering degree. Moreover, Civil engineers have honed their skills in the design of ecologically friendly structures and systems. The energy and emission reductions, when multiplied across several towns, can make a significant difference in the environment. Other life-improving functions can likewise improve the quality of life in communities.

Problem 2. What is the level of performance in engineering proficiency examination of the engineering students?

Nowadays, engineering courses are more vital than ever in today's environment, with technology at the forefront like never before. Future breakthroughs, such as commercial space travel and superior artificial intelligence, constructing a bridge appear simple, and inventions of machines are at stake. However, it is not just easy to become an engineer in any of its fields.

Despite the expanding importance of engineering in society and the inflow of students interested in the discipline, the requirements for becoming an engineer have remained mostly unaltered in recent years. That is the reason why the engineering department of the College of Engineering and Vocational and Industrial Technology devised an examination to screen students in their lower years if they are capable of going to the higher steps of their course.

Table 3. Performance in Engineering Proficiency Examination of the Engineering Students

Course	General Education		Specialized Subject		Total	
	Mean	DR	Mean	DR	Mean	DR
BSCE	26.70	S	21.95	S	48.65	S
BSEE	27.64	S	20.33	S	47.97	S
BSME	28.79	S	21.64	S	50.42	S
Total	**27.71**	**S**	**21.31**	**S**	**49.01**	**S**

Norm:

Range of Means		Descriptive Rating (DR)
50 Items	100 Items	
40.00 - 50.00	80.00 - 100.00	Excellent (E)
30.00 - 39.00	60.00 -79.99	Very Satisfactory (VS)
20.00 - 29.99	40.00 - 59.99	Satisfactory (S)
10.00 - 19.99	20.00 - 39.99	Fair (F)
0.00 - 9.99	0.00 - 19.99	Poor/Needs Improvement (P/NI)

Generally, the combined scores of the engineering students in their proficiency examinations yielded a “Satisfactory” level of performance. This was evidenced by their combined mean score of 49.01 coming from the two components of their examinations namely General Education subjects ($\bar{x} = 27.71$) and in their specialized subjects($\bar{x} = 21.31$). Both mean score ratings fell on the peripherals of a “Satisfactory” level of proficiency.

Above result of the study may due to the application of the knowledge and skills these engineering students have acquired during the first two semesters of their stay in the college. The contents of the proficiency test were the topics covered in the different subjects they have taken. It could not also be denied that there might be some items which aim is to test the stocked knowledge of these students regarding the basic skills in their communication arts both in English and in Filipino, social sciences, and physical education. Specialized subjects consists of their knowledge in mathematics, physical sciences which includes chemistry and physics, and as well as their orientation in their engineering courses.

This result could not also be possible without the help of their instructors who have imparted them these knowledge and skills. Though, students did not achieve the highest level of performance in their engineering proficiency examinations, still these students have shown that they met the minimum standards required by the institution and as well as prescribed by the Commission on Higher Education within their level as freshmen. Hence, they have then the privilege to go into their higher step of their engineering courses.

It is significant to note that within the three engineering courses of ASIST, the Bachelor of Science in Mechanical Engineering (BSME) students displayed a relatively higher mean score ($\bar{x} = 50.42$). Though this mean rating still falls on the boundaries of a "Satisfactory" level of performance, this came out to be the highest mean from the three courses. In fact, this mean rating is above the population mean that came from their general education ($\bar{x} = 28.79$) and specialized subjects ($\bar{x} = 21.64$). Both means were found higher than their respective population means with a description of a "Satisfactory" level of proficiency.

Above result goes through with what was forwarded by Dotong, C. I., Hicaro, A., and Laguador, J.M. (2019) because they found that from 2014 to 2018, the examinees received a satisfactory rating on the licensure test for mechanical engineers, with an overall average of 81.33 percent.

It is also imperative to mention that students were found to have a relatively higher mean score in their general education subjects ($\bar{x} = 27.71$). This mean rating is under the "Satisfactory" level of proficiency. This means that the engineering students were found to be relatively better in their general education subjects as compared to their specialized subjects.

Wallis, A. (2020) pointed the importance of general education subjects. She stated that general education classes are crucial because they change the perspective of the students in learning, educate their soft skills, and expose them to a wide range of subjects. She continued that the general education curriculum emphasizes interdisciplinary learning and includes history, natural and social sciences, technology, and humanities subjects. Thus, general education is viewed as a well-rounded learning experience that aids in the development of a well-rounded student.

With this, the engineering students might have been inculcated in their minds and as what their instructors in their general education subjects told them that the general education curriculum is a required part of every bachelor's degree program in the country, and it is designed to promote greater accessibility, a clear and relevant academic pathway for students to earn their degrees, and to equip them with the necessary core skills to be successful in their lives and to their chosen career paths.

Problem 3. Is there a significant relationship between the high school general weighted average (GWA), Ottis-Lenon Student Ability Test (OLSAT) Score, scholastic achievement and performance in engineering proficiency examination of the students?

Table 4. Correlation Matrix Showing the Relationship Between the High School General Weighted Average (GWA), OLSAT Score, Scholastic Achievement and Performance in Engineering Proficiency Examination of the Students.

Academic Profile	General Education	Specialized Subject	Total
High School General Weighted Average	0.214**	-0.252**	-0.276**

(HSGWA)			
OLSAT Score	0.085	-0.104	0.030
Scholastic Achievement			
General Education	-0.163*	-0.386**	-0.343**
Specialized Subject	-0.318**	-0.238**	-0.316**
Total	**-0.312****	**-0.344****	**-0.386****

*Legend: * - 0.05 level of significance*
*** - 0.01 level of significance*

High School General Weighted Average. Generally, there existed a significant relationship between the high school general weighted average of the engineering students and their overall performance in the engineering proficiency examinations (r = -0.276). This result was backed up by the existence of significant relationship between the high school general weighted average and the proficiency of the engineering students in their specialized subjects (r = -0.252). These correlation values were found both significant at 0.01 level hence, highly significant relationship existed. The negative sign of the correlation values denote an inverse relationship. This means that those students who have a relatively low high school general weighted average were those students who tend to have displayed higher scores in their engineering proficiency examination particularly in their specialized subjects.

These results could be attributed to some student influences. These students might have been given their best when they were already in their first year as engineering students. They might have been inculcated in their minds that having a relatively high score in their proficiency examination is their passport to step up in their second year. They might have also planted in themselves that since their course is engineering then they must have to focus on the subjects which are related to their course. Hence, they gave their best in this undertaking and as a result, they gained a relatively high score in their proficiency examination particularly in their mathematics, physical sciences, and engineering orientation subjects.

On the other hand, those students who obtained a relatively higher high school general weighted average might felt confident enough in their proficiency examination. And as a result, the items given in the examination might be the basic ones which these students might forget because they might have been focused their attention into higher mathematics formulas, equations, and concepts. Hence, these students who have higher GWA might not able to get these basic items correctly that made their scores to be relatively low.

It is also significant to note that there also existed a significant relationship between the high school GWA and the proficiency of the students in their general education subjects (r = 0.214). This correlation value was found significant at 0.01 level hence, highly significant relationship existed. The positive sign of the correlation value denotes a direct relationship which means that those engineering students who have achieved a relatively higher high school GWA were the students who have also obtained a high score in their proficiency examination particularly in their general education subjects.

High school subjects were relatively related to the general education subjects in college. These are the subjects that provide a wide range of topics and abilities that can be utilized in everyday situations. These are also the subjects where it lays the foundation for successful behaviors that lead to lifelong learning. With this, the relationship might have been existed because students must have not only the rigor of an academic education but also an applied, relevant, and practical subjects that focuses on the development of these key abilities in order to be effectively prepared for their chosen job.

This result affirms the findings of Manrique, CJP., Delos Reyes, C. III M., Gomez, LAL., Caiga, BT., and Gonzales, AA. (2018) because they found that the majority of their respondents believed that General Education courses have an impact on cadetship selection for maritime students when they aimed to determine the effects of general education courses to the maritime students' cadetship.

Similarly, Erie, D. J. (2013) found that the faculty interpretations of the role of general education and their own belief systems today define the role of general education in the ethical reasoning growth of college students. She further claimed that it was clear that professors believed their courses could and should affect students in a variety of ways, including ethical reasoning.

Furthermore, this result also conforms to the findings of De Leon, S., Estrella, E. A., and Duay, B.S.C. (2020) since the respondents' general weighted averages in their study and their battery test scores are negatively associated. The respondents' general weighted averages and their mental ability test results have a negative correlation.

OLSAT Score. In this study, the statistical treatment of data show that there is no reason to believe that the OLSAT score of the engineering students do not directly or indirectly affects their proficiency examinations both in their general education subjects and as well as in their specialized subjects. This means that the engineering proficiency of the students was found independent to that of their score in the entrance examination.

This result of the study was contrary to the findings of Karrh, K. D. (2009) because in her study, she found that all the four research topics demonstrated a positive and significant correlational and predictive association between TAKS Reading and Math and the Stanford 10 Achievement Test and the Otis-Lennon School Ability Test. She further claimed that as students prepare for state criterion-referenced tests, the predictive relationship between these assessments provides the research study school district and other school systems with an additional diagnostic tool to direct classroom instructional practices and identify areas of strength and weakness.

Similarly, Cimafranca, Jan Linster and Capuyan, Beverly and Cabilla,Fabien and Cansancio, Angelique and Villaflor-Balacy, Garnette Mae (2015) revealed in their study that only verbal ability has a substantial impact on accounting competencies among the school ability measures. In addition, two measures, verbal comprehension and reasoning, were significant predictors. Non-verbal ability, on the other hand, is a non-significant predictor of accounting competence in terms of figural and mathematical thinking.

Scholastic Achievement. It is evident from this study that there is an overall significant relationship between the scholastic achievement and engineering proficiency examination ($r = -0.386$) of the engineering students in the three engineering courses of ASIST. This was strengthened by the existence of significant relationship between the scholastic achievement and the proficiency of the engineering students in their general education subjects ($r = -0.312$) and specialized subjects ($r = -0.344$). All these correlation values were found significant at 0.01 level, hence highly significant relationship were established. The negative signs of the correlation value denote inverse relationships which mean that those students who have relatively low grades during the two semesters stay as first year college students in the engineering department tended to render a higher score in their proficiency examinations particularly in the areas of general education and specialized subjects.

Further look into the results of the study show that there existed a significant relationship between the general education grades of the engineering students and the result of their proficiency examinations ($r = -0.343$). This was found significant at 0.01 level hence, a highly significant relationship existed. Pieces of evidence were shown in its significant correlation to the general education ($r = -0.163$) and to the specialized subjects ($r = -0.386$) which were found significant at 0.05 and 0.01 level, respectively. All the negative signs of the correlation values denote inverse relationships. This means that students who obtained relatively low grades in the different general education subjects during the first two semesters as first year college students of the college were those students who tend to have displayed higher scores in the engineering proficiency examinations particularly in the general education area and as well as in the specialized subjects.

Similarly, there also existed a significant relationship between the achievement of the engineering students in the different specialized subjects such as their combined semestral grades in mathematics, physical sciences, and engineering orientation to their proficiency examinations ($r = -0.316$). This finding was proven

by the existence of significant relationship between the combined grades in the specialized subjects and the proficiency of the students in general education (r = -0.318), and specialized subjects (r = -0.238). All correlation values were found at 0.01 level of significance, hence highly significant relationship existed. The negative sign of the correlation value illustrates inverse relationship. This suggests that those students who have shown a higher level of engineering proficiency were those students who obtained relatively low achievement grades in their specialized subjects.

Results of this investigation further affirm the findings of Laguador, J. M., & Dotong, C. I. (2020). They forwarded that for engineering students, achieving strong academic performance is still important throughout their junior year, but their perspectives are constantly shifting as a result of tough situations faced while taking professional courses. Furthermore, they continued that the performance in general engineering courses shows students' attitudes toward academic performance in a personal sense, whereas performance in professional engineering courses describes their attitudes in a professional sense.

Problem 4. Is there a significant relationship between the general education and specialized subject and the level of proficiency test of the engineering students?

Table 5. Correlation Coefficient Showing the Relationship Between the General Education and Specialized Subject Proficiency of the Engineering Students.

r Computed Value	r Probability Value	Decision
0.450	0.000($p<0.01$)	Highly Significant

Table 4 above gives a reason to believe that in the engineering proficiency examination of the freshmen engineering students of ASIST, there existed a significant relationship between their proficiency in the general education subjects and their proficiency in the specialized subjects (r = 0.450) with an associated probability of 0.000. The relationship was found significant at 0.01 level, hence the relationship is highly significant. The positive sign of the correlation value denotes a direct relationship. This insinuates that as the proficiency of the students in the general education is high, then it tends that their proficiency in the specialized subjects are also high.

This result of the study confirms Hines, R. and Henderson, A. (2017) because they posited that there are a variety of reasons to believe that taking or finishing general education courses is linked to varying levels of student performance. In addition, completing a number of general education courses demonstrates a level of dedication on the student's behalf. To put it another way, completing these requirements takes the student closer to completing his or her degree. Lastly, they also stated that individual student judgments of capacity or inability to perform in various academic fields are influenced by general education courses. Thus, students may encounter bad outcomes early in their academic careers in courses outside of their perceived competencies due to the nature of general education.

Similar finding was seen from the work of Walters, H. D., and Bockorny, K. M. (2018) the cognitive dimension of the personal involvement inventory scale indicated that students thought that their general education coursework was significant, while the emotive dimension of the personal involvement inventory scale did not. Moreover, they concluded that important, useful, valuable, and advantageous were placed highest by students in terms of general education relevance to their business degree, while attractive, exciting, appealing, and fascinating were ranked lowest. Furthermore, they discovered that, at least in their sample, learners have recognized the functional aim of general education on a cognitive level. However, while students value and appreciate general education, they do not find it engaging or fascinating.

Clearly, a specific example to use in this particular finding is the relationship between the languages and mathematics performance of learners. Many say that these two subjects should go parallel with each other at the same time. It is for this reason that one could understand the language of mathematics if he understands the English language. Further, problems and instructions of the mathematics subjects are stated in the English language. This could be attributed to Alt, M., Arizmendi, G.D., and Beal, C. R. (2014) as they claimed that mathematical difficulties in English Language Learners (ELL) children appear to be linked to the language demands of math tasks. Children with Specific Language Impairment (SLI), on the other hand, appear to struggle with arithmetic activities due to language and nonlinguistic processing restrictions.

Similarly, Altunkaynak, C. (2013) posited that the language of mathematics is essentially the same as natural language. The ability to express ideational and emotive thoughts is the primary objective of language. Accordingly, words are used to express concepts in normal language, whereas symbols are employed in mathematics. It would be a huge mistake to think of mathematics as a language because its language is totally based on symbols, because symbols require an issue that is unique to itself, as well as a peculiarity or a generalization that includes these symbols. Moreover, it is a matter of language to express mathematical concepts and symbols by making such a generalization or observing such a relationship. Individual abilities and experiences, such as perceptual competence, intelligence, intuition, and curiosity, are required to describe concepts in mathematical language, just as they are in natural language.

Problem 6. Is there significant differences in the performance in the engineering proficiency examination of the students when grouped according to type of high school graduated from?

It was also an objective of this study to see if there existed significant difference between the engineering proficiency of the freshmen engineering students in the three engineering courses of ASIST when grouped according to the type of high school they graduated from. Generally, it was found in this study that the type of high school graduated from of the students was a not a significant factor to consider.

Table 6. t-Test on the Difference in the Performance in the Engineering Proficiency Examination of the students when Grouped according to Type of High School Graduated From.

Engineering Proficiency Examination	Mean		Mean Difference	t-computed value	t-critical value	t-probability value	Decision
	Public	Private					
General Education	21.72	20.78	0.95	1.131	2.000	0.262(p>0.05)	Not Significant
Specialized Subjects	27.47	27.10	0.37	0.348	1.993	0.728(p>0.05)	Not Significant
Total	**49.20**	**47.88**	**1.32**	**0.834**	**1.994**	**0.402(p>0.05)**	**Not significant**

This means that the null hypothesis of this study is not to be rejected. This means that there exists no significant difference in the performance in the engineering proficiency examinations of the students in the three engineering courses of ASIST. This was evidenced by the t – computed value of 0.834 which was found lower than the t – critical value with an associated probability of 0.402 (p>0.05). Further, a mean difference of 1.32 in the proficiency of the students is not enough to conclude that there was a type of school where the students graduated from where it could be said that graduates of that type of school have achieved a relatively higher or lower score in their proficiency examination.

According to the findings of a recent study, private school education may be no better than public school education. Barrington, K. (2019) stated that although the world of education is continually changing, the debate over private versus public schools will never go away. Although it is commonly assumed that private school education is of higher quality than public school education, current research suggests that this may not be the case. Moreover, she claimed that researchers from the University of Virginia examined data from over 1,000 students and found no evidence that students from low-income households or children enrolled in urban schools profited more from private school education than from public school education. These findings are especially important as legislators strive to shift the public education system closer to privatization. They also demonstrate that the belief that public schools are inferior to private schools is incorrect.

It was also in the conclusions of Chen, G. (2019) that one can discover that there is no universally accepted right or incorrect answer as to whether private or public school education is preferable for today's youngsters. When making this decision, the best thing to do is think about all of the aspects and weigh which ones are most essential. Many individuals are so divided over whether or not to be religious that it may be the only thing that matters to them. Others find that the fees of attending a private school are prohibitive.

Contrary to the above findings was the result of the study of Horowitz, J., and Spector, L. C. (2004) where they claimed that private schools had a slightly significant effect on achievement, according to this research, but the effects were tiny enough that they may be unimportant for policy purposes. However, in the study of Hendajany, N. (2016) discovered evidence that public school graduates scored higher on the national exit test than private school graduates, despite a wide range of student characteristics and family backgrounds. The same finding was also observed by Rong'uno, S. K. (2017) because findings in his study demonstrated that, despite the government's significant investments in public schools, private schools continue to outperform them. It is then undeniable that private schools outperform public schools in academics.

Problem 6. Is there significant differences in the performance in engineering proficiency examinations of the students when grouped according to course and strand?

Table 7. ANOVA Summary Table in the Differences in the Performance in Engineering Proficiency Examinations of the Students when Grouped According to Course and Strand

Engineering Proficiency Examination	F-computed Value	F-critical Value	F-Probability Value	Decision
Course				
General Education	1.967	3.055	0.143(p>0.05)	Not Significant
Specialized Subjects	1.474	3.055	0.232(p>0.05)	Not Significant
Total	**0.736**	**3.055**	**0.481(p>0.05)**	**Not Significant**
Strand				
General Education	1.201	2.432	0.313(p>0.05)	Not Significant
Specialized Subjects	1.807	2.432	0.130(p>0.05)	Not Significant
Total	**1.773**	**2.432**	**0.137(p>0.05)**	**Not Significant**

Course. When grouped according to course, the students under the three engineering courses of ASIST were found not to be different from each other in their engineering proficiency examinations. This was proven by the F – computed value of 0.736 which was found lower than the F – critical value of 3.055 with an

associated probability of 0.418 (p>0.05). Therefore, there are no significant differences in the scores of the engineering proficiency examinations of the students when grouped according to their courses. This finding was substantiated by the performance of the students in their general education subjects (F = 1.967), and specialized subjects (F = 1.474). Both values were found to be lesser than their corresponding F – critical values and yielded their associated probability values which were found higher than the 0.05 level of significance.

Above findings of the study suggests that the scores of the engineering students in their proficiency examinations after finishing their first two semesters in ASIST were seemingly the same. This finding was also true in the performance of the students in their general education subjects and as well as in their specialized subjects.

The findings of the study on the paired comparison made by Barry, B. E., and Whitener, J. C., (2011), showed that civil engineering students and electrical engineering students perform similarly by the statistical tools they used. Furthermore, while electrical engineering students and mechanical engineering students perform statistically similar, there is a difference in performance between civil and mechanical engineering students. Contrary to these findings, they also found that there was a significant difference in mean raw scores between civil and mechanical engineering students, but not between mechanical and electrical engineering students. Furthermore, a minor variation was discovered between civil and electrical engineering students.

The results in the study of Mohammed, Mervin P. and Mohammed, Murphy P. (2017) revealed that there was no significant difference in the civil and mechanical engineer candidates' four-year licensure examination results. The performance of the electrical and electronics engineer applicants, on the other hand, varied dramatically over the examination period. Mechanical engineers had the best results on the licensure exam out of the four courses.

Moreover, Seth, N. K., & Pratap, S. (1971) concluded that not every student who pursues engineering studies has a natural aptitude for it and on the basis of lower-level examination, differences existed and the Differential Aptitude Test, the performance of the civil, electrical, and mechanical groups differs.

Strand. Results of this study show that there existed no significant differences in the proficiency examinations of the engineering students in the three engineering courses of ASIST when students are grouped according to their senior high school strands. This was proven by the F – computed value of 1.773 which was found lower than its corresponding F – critical value of 2.432 with an associated probability of 0.137 (p>0.05). Same findings were found on the performance of the students in their general education subjects (F = 1.201), and in their specialized subjects (F = 1.807). Both values were found to be lower than their corresponding critical values with their associated probability level which were also both higher than 0.05 probability level. This means that whichever strand these engineering students have in their senior high school years, it does not affect their performance in the engineering proficiency examinations.

Above results of the study show that its not the strand of the student that will dictate his performance in the proficiency examinations. Students might make their best to study engineering courses since this is the course that they wanted to achieve. This might have been the reason why they struggled in the proficiency examinations so that they will not be slashed from the list.

Findings of this study was contrary to Almerino, P.M., Ocampo, L. A., Abellana, D.P.M., Almerino, J.G.F., Mamites, I.O., Pinili, L. C., Tenerife, J.J.L., Sitoy, R.E., Abelgas, L.J., and Peteros, E.D. (2020) since they claimed that the capabilities of senior high school students in the Philippine K-12 educational system have raised various problems, the most serious of which is their misalignment with the program's expectations. Their research uses a standardized way to evaluate the performance of K-12 pupils in order to address these concerns. They found that most of the subtests yielded above-average results for the STEM and ABM groups. In majority of the subtests, the HUMSS and GAS groups had average scores. In most of the subtests, the TVL group scored below average.

They also found in their study that when they observed two types of interactions: (i) interaction between STEM and ABM, and (ii) interaction between HUMSS, GAS, and TVL. These two classes, on the other hand, did not appear to interact in any way. In other words, the results show that class (i) did significantly better in all subtests than class (ii).

Similar findings were seen from the work of Alipio, M. M. (2020) where he found that students in the STEM senior high school (SHS) strand had the highest levels of academic adjustment and performance, according to descriptive data. When learners were grouped by SHS strand, one-way ANOVA demonstrated that there was a significant difference in academic adjustment and performance. Furthermore, the SHS strand considerably moderates the association between academic adjustment and performance.

V. FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the study, the researchers then forward the following conclusions:

(1) Freshmen engineering students of ASIST were graduates of public high schools. Their course is parallel to their Senior High School academic strands. They performed satisfactorily when they were in high school and as well as in their first-year collegiate scholastic achievement. Most of them want to become civil engineers. However, they achieved a relatively low level of performance in the OLSAT; (2) Engineering students have shown that they met the minimum standards required in their program within their level as freshmen. BSME students outperformed the other two engineering courses. (3) Students who have relatively low high school general weighted average and scholastic aptitude tend to have displayed a more favorable performance in the engineering proficiency examinations; (4) There is a strong positive effect of the general education subjects of the engineering students and their specialized subjects in the proficiency examinations; (5)The proficiency of the students who graduated from public high schools is seemingly the same as the proficiency of those students who graduated from private institutions; (6) Students in the three courses of engineering, the Bachelor of Science in Civil Engineering (BSCE), Bachelor of Science in Electrical Engineering (BSEE), and Bachelor of Science in Mechanical Engineering (BSME) show the same level of performance in the engineering proficiency examinations; (7) Students who underwent different senior high school strands displayed the same proficiency in their engineering examinations; and (8) The intellective correlates to the proficiency exams were their GWA and Scholastic Achievement.

RECOMMENDATIONS:

From the conclusions made in this study, the researchers strongly suggest the following recommendations:

(1)The engineering department should maintain the current status of performance of the engineering students or make it even higher by giving students activities that would bring out their interest and as well as enhance their engineering skills necessary as they go into the higher steps of their courses; (2) The instrument used to test the engineering students' proficiency may be standardized by the college for a higher degree of measurement, assessment, evaluation, and diagnosis; (3) A follow-up of the engineering performance is hereby recommended to the college specifically to the department to track the students' abilities. If ever, this would be a basis to reinforce their strengths and as well as to develop their weaknesses; (4) The Guidance office may consider a bridging program for those students who were not able to make it to the OLSAT; (5) Continuous training for professional development of the instructors handling general education subjects and as well as specialized subjects since a strong significant correlation between the two areas was established. (6) A follow-up study on the readiness of the engineering students who will be graduating to their licensure examinations is strongly recommended for proper actions; (7) A parallel study is to be made focusing on the non – intellective attributes of the students, instructor-related variables, and as well as school-related indicators.

VI. REFERENCES

[1]. Allianz Care (2021). ***Schools in Philippines*** retrieved from https://www.allianzcare.com/ en/support/health-and-wellness/my-expat-life/school-guides/schools-in-philippines.html on August 15, 2021.

[2]. Alipio, M. M. (2020). ***Academic Adjustment and Performance among Filipino Freshmen College Students in the Health Sciences: Does Senior High School Strand Matter?*** Retrieved from https://edarxiv.org/xq4pk/download on August 15, 2021.

[3]. Almerino, P.M., Ocampo, L. A., Abellana, D.P.M., Almerino, J.G.F., Mamites, I.O., Pinili, L. C., Tenerife, J.J.L., Sitoy, R.E., Abelgas, L.J., and Peteros, E.D. (2020). ***Evaluating the Academic Performance of K-12 Students in the Philippines: A Standardized Evaluation Approach*** retrieved from https://www.hindawi. com/journals/edri/2020/8877712/ on August 15, 2021.

[4]. Alt, M., Arizmendi, G.D., and Beal, C. R. (2014). ***The Relationship Between Mathematics and Language: Academic Implications for Children With Specific Language Impairment and English Language Learners*** retrieved from https://pubs.asha.org/doi/full/10.1044/2014_LSHSS-13-0003 on August 15, 2021.

[5]. Altunkaynak, C. (2013). ***Relationship between Language and Maths*** retrieved from https://prezi.com/07l-evb3isuu/relationship-between-language-and-maths/ on August 15, 2021.

[6]. Amasuomo, J.O.M. (2014). ***Academic Performance of Students Admitted with Different Entry Certificates to the Nigerian Certificate in Education Programme at The Federal College of Education (Technical), Omoku***. Journal of Technology and Science Education. Vol. 4, no. 1 retrieved from https://www.jotse.org/ index.php/jotse/article/view/107/122 on August 15, 2021.

[7]. Barrington, K. (2019). ***New Study Confirms That Private Schools Are No Better Than Public Schools*** retrieved from https://www.publicschoolreview.com/blog/new-study-confirms-that-private-schools-are-no-better-than-public-schools on August 15, 2021.

[8]. Barry, B. E., and Whitener, J. C., (2011). ***How do Civil, Electrical, and Mechanical Engineering Students Compare? - Ethically Speaking.*** American Society for Engineering Education, 2011 retrieved from file:///C:/Users/AIHR% 202020/Downloads/how-do-civil-electrical-and-mechanical-engineering students-compare-ethically-speaking.pdf on August 15, 2021.

[9]. Brillantes, K.D.B., Orbeta, A. Jr. C., Abrigo, K.A.F., Capones, E.M., and Jovellanos, J.B.B. (2019). ***Status of Senior High School Implementation: A Process Evaluation*** retrieved from https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps 1913.pdf on August 15, 2021.

[10]. Chen, G. (2019). ***Public School vs. Private School*** retrieved from https://www. publicschoolreview.com/blog/public-school-vs-private-school on August 15, 2021.

[11]. Cimafranca, Jan Linster and Capuyan, Beverly and Cabilla,Fabien and Cansancio, Angelique and Villaflor-Balacy, Garnette Mae (2015). ***The Influence of School Ability Measures on Accounting Competencies: A Path Analysis*** retrieved from https://mpra.ub.uni-muenchen.de/72372/1/MPRA_paper_72372.pdf on August 15, 2021.

[12]. Davidson, C. B., and Dustova, G. (n. d.). ***A quantitative assessment of student performance and examination format***. Journal of Instructional Pedagogies, volume 18 retrieved from https://files.eric.ed.gov/fulltext/EJ1151723.pdf on August 16, 2021.

[13]. De Leon, M. S., Estrella, E. A., and Duay, B.S.C. (2020). ***Correlation among the General Weighted Average, Mental Ability and Battery Test Scores of First Year Teacher Education Students***. Global Journal of HUMAN-SOCIAL SCIENCE: G Linguistics & Education Volume 16 Issue 7 Version 1.0 Year 2016 retrieved from https://www.researchgate.net/publication/340860071_Correlation_among_the_General_Weighted_Average_Mental_Ability_and_Battery_Test_Scores_of_First_Year_Teacher_Education_Students_Correlation_among_the_General_Weighted_Average_Mental_Ability_and_Battery on August 15, 2021.

[14]. De Leon, J.M.D., Mejilla, J.L., Sagun, C.G., Garcia, M.C., and Alviar, P.R. (2016). ***E-learning and general weighted average as predictors for nurses licensure examination***. International Journal of Educational Policy Research and Review Vol.3 (2), pp. 14-19 April, 2016 retrieved from https://journalissues.org/ijeprr/ wp-content/uploads/sites/7/2016/04/De-Leon-et-al.pdf on August 15, 2021.

[15]. Dotong, C. I., Hicaro, A., and Laguador, J.M. (2019). ***Licensure Examination Performance of Mechanical Engineering Graduates and Its Relationship with Academic Performance.*** Asia Pacific Journal of Academic

Research in Social Sciences, Vol. 4, November 2019 retrieved from https://research.lpubatangas. edu.ph/wp-content/uploads/2019/12/APJARSS-2019.002.pdf on August 15, 2021.

[16]. Erie, D. J. (2013). ***The Role of General Education in the Development of Ethical Reasoning in College Students: A Qualitative Study on the Faculty Perspective*** retrieved from https://digitalcommons.unl.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1157&context=cehsedaddiss on August 15, 2021.

[17]. Florida Institute of Technology (2017). ***7 Reasons to Pursue a Civil Engineering Degree*** retrieved from https://news.fit.edu/academics-research/7-reasons-civil-engineering-degree/ on August 16, 2021.

[18]. Hendajany, N. (2016). ***The Effectiveness of Public vs Private Schools In Indonesia.*** Journal of Indonesian Applied Economics, Vol.6 No.1, 2016: 66-89 retrieved fromhttps://www.researchgate.net/publication/311957284_THE_EFFECTIVENESS_OF_PUBLIC_VS_PRIVATE_SCHOOLS_IN_INDONESIA on August 15, 2021.

[19]. Hines, R. and Henderson, A. (2017). ***Relationship between General Education Course Sequence and Student Success*** retrieved from https://www.learningoutcomesassessment.org/wpcontent/uploads/2019/04/AiP_HinesHenderson.pdf on August 15, 2021.

[20]. Horowitz, J., and Spector, L. C. (2003). ***Is there a difference between private and public education on college performance?*** Retrieved from https://www.researchgate.net/publication/4837036_Is_there_a_difference_between_private_and_public_education_on_college_performance on August 15, 2021.

[21]. Karrh, K. D. (2009). ***Predictors of Student Achievement In Grade 7: The Correlations Between the Stanford Achievement Test, Otis-Lennon School Ability Test, and Performance on the Texas Assessment of Knowledge and Skills (TAKS) Math And Reading Tests*** retrieved from https://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=1227&context=doctoral on August 15, 2021.

[22]. Laguador, J. M., & Dotong, C. I. (2020). ***Engineering students' challenging learning experiences and their changing attitude towards academic performance***. European Journal of Educational Research, 9(3), 1127-1140.https://doi.org/10.12973/eu-jer.9.3.1127 retrieved from https://files.eric. ed.gov/fulltext/EJ1262419.pdf on August 15, 2021.

[23]. Manrique, CJP., Delos Reyes, C. III M., Gomez, LAL., Caiga, BT., and Gonzales, AA. (2018). ***Effects of General Education Courses to the Cadetship Selection of Maritime Students***. Asia Pacific Journal of Maritime Education, Vol. 4, No. 1, June 2018 retrieved from https://research.lpubatangas.edu.ph/wp-content/uploads/2019/07/APJME-2018-002.pdf on August 15, 2021.

[24]. Medallon, M. C., and Cataquis, R. E. (2011). ***An Analysis of the OLSAT as the Entrance Examination Material for Incoming Students at the Lyceum of the Philippines – Laguna***. Lyceum of the Philippines–Laguna Research Journal vol. 1 no. 1 (2011) retrieved from https://ejournals.ph/article.php?id=6686 on August 15, 2021.

[25]. MolokoMphale, L., and Mhlauli, M. B. (2014). ***An Investigation on Students Academic Performance for Junior Secondary Schools in Botswana***. European Journal of Educational Research, Vol. 3, No. 3, 111-127 retrieved from https://files.eric.ed. gov/fulltext/EJ1086046.pdf on August 16, 2021.

[26]. Mohammed, Mervin P. and Mohammed, Murphy P. (2017). ***Licensure Examination Performance Evaluation of the Candidate Engineers as Basis for a Proposed Action Plan***. Asia Pacific Journal of Multidisciplinary Research, Vol. 5, No. 2, May 2017 retrieved from http://www.apjmr.com/wp-content/uploads/2017/04/APJMR-2017.5.2.06.pdf on August 15, 2021.

[27]. National Center for Education Statistics (n. d.). ***Public and Private Schools: How Do They Differ?*** Retrieved from https://nces.ed.gov/pubs97/97983.pdf on August 15, 2021.

[28]. GMA News Online (2013).***PNoy signs law institutionalizing K to 12 program*** retrieved from GMA News Online:http://www.gmanetwork.com/news/news/nation/308461/pnoy-signs-law-institutionalizing-k-to-12-program/story/ on August 16, 2021

[29]. Philippine Statistics Authority (2020), ***2018 Occupational Wages Survey (OWS)*** retrieved from https://psa.gov.ph/content/2018-occupational-wages-survey-ows on August 16, 2021.

[30]. Rong'uno, S. K. (2017). ***A Comparison of Academic Performance Between Public and Private Secondary Schools in Wareng District, Kenya.*** British Journal of Education; Vol.5, No.11, pp. 58-67, retrieved from

https://www. eajournals.org/wp-content/uploads/A-Comparison-of-Academic-Performance-between-Public-and-Private-Secondary-Schools-in-Wareng-District-Kenya.pdf on August 15, 2021.

[31]. Seth, N. K., & Pratap, S. (1971). ***A study of the academic performance, intelligence and aptitude of engineering students***. Education & Psychology Review, 11(4), 3–10. Retrieved from https://psycnet.apa.org/record/1973-23905-001 on August 15, 2021.

[32]. Testingmom.com (2021). OLSAT (Otis-Lennon School Ability Test®) retrieved from https://www. testingmom.com/tests/olsat-test/ on August 16, 2021.

[33]. Testprep Online (2021). ***What Is the OLSAT Test?*** Retrieved from https://www.testprep-online.com/what-is-olsat on August 15, 2021.

[34]. Theodorou, M.(2020) ***The 20 Highest-Paying Jobs in the World*** retrieved from careeraddict.com/the-highest-paid-jobs-in-the-world on August 16, 2021

[35]. Uy, E. and Martinez, A. Jr. (2019). ***Factors Affecting Senior High School Track Offerings in the Philippines*** retrieved from https://development.asia/insight/factors-affecting-senior-high-school-track-offerings-philippines on August 15, 2021.

[36]. Wallis, A. (2020). ***Why Are General Education Courses Important?*** Retrieved from https://www.snhu.edu/about-us/newsroom/2018/08/why-are-general-education-courses-important on August 15, 2021.

[37]. Walters, H. D., and Bockorny, K. M. (2018). ***Relevance of General Education: An Assessment of Undergraduate Business Students***. e-Journal of Business Education & Scholarship of Teaching Vol. 12, No. 3, December 2018, pp: 34-43. Retrieved from https://files.eric.ed.gov/fulltext/EJ1203828.pdf on August 15, 2021.