

Profile of Engineering Students Based on the Characteristics of Successful Learners

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Abstract - *The researchers pursued this study on characteristics of a successful engineering student: an assessment because this study could contribute to the continuous enhancement of engineering students in their study habits. The researchers primarily aimed to identify the characteristics of a successful engineering student in terms of difference of responses on the assessment on these when grouped according to profile. Descriptive type of research was utilized in the study. The research will be directed as a controlled quantitative research study in which information are gathered before and after the research. In this study, we utilized organized survey to gather information from the respondents. The polls comprise of the profile of the respondents and a series of inquiries related on characteristics of a successful engineering student. Results showed that the majority of the students are male, 19-22 yrs. old, from BS Industrial Engineering program, 4th year level, regular students, and with a general weighted average of 2.51-3.00. Also majority of the students always consider enjoyment in learning as the most observed characteristic of a successful engineering student. And there is no significant difference on the assessment on the characteristics of a successful engineering student. Students must also have implemented to have more interactions in class and spend more time reading more reference books found in the library.*

Keywords: *Engineering Education, study habits, success*

INTRODUCTION

Success is a positive outcome when someone accomplished a goal or an ultimate objective. Also, it is accompanied by acquirement of one's aspirations and is the counterpart of fiasco. Concisely, becoming successful actually entails the attainment of an ideal excellence included in one's desires and/or ambitions [1]. It is a common aspiration to seek success in every situation, may it be in school, home, and workplace [2]. Few to no people at all would want the contrary for it will definitely be a waste of time, money, and effort. Failure, however, is inevitable, even if a certain amount of effort is laid upon it. The bottom line here is: "how can one assure success or at least eliminate the probability of missing the mark".

It is difficult to get high academic grades, especially in engineering [3], [4] which is why most of the students consider it a success to have one. According to Goodin [5], people, in general, mistakenly associate the term success to students who have good scholastic standing, disregarding the fact that those students can become displeased of

themselves for they only gain knowledge on their instructor's preference, and thus, constraining their imaginative and communal skills. Furthermore, their social lives and leisure time are focused primarily on studying, leaving the other areas of human development unattended. In truth, without the reputation of a student that is attained by communicating with a network of people, grades become ineffectual [6]. Similarly, multitasking can also be problem for the attention is divided among different tasks that are simultaneously done, and it might also cause stress [7] diverting one's concentration from one task to another.

Some students were only told to take up courses that they are not passionate about by the persons that influence their lives. Many students undeniably pick majors that are not of their interest but particularly their parents' preference or seek advice from best-paying jobs in the survey [8]. They see engineering as a lucrative profession and there is a high demand in terms of employment opportunity [9] - [16].

Students in their first year in college are much more likely to struggle than when they are in high school. Careers of the students are started to establish and see themselves as college learners in a strange place for the first time [17], [18]. Adjustments to their new surroundings, new teaching methods, and subject matters are a laborious task. As a result, they usually do not have that much confidence to participate in every classes and activities which limits their capabilities. Success must come in the initial year of an individual because it shapes the students' confidence in the subject matter, dedication in the chosen field of expertise, and steadfastness in pursuing higher education [19]. In this regard, students miss the chance of attaining success itself.

Every person getting a degree in engineering has an equal chance to succeed though many people affirm that this course is in itself difficult. Nevertheless, the different responses of individuals to the methodology of instruction affect this probability [20]. Still, this matter does not limit one's desire to become a successful engineer. The importance of acquiring a distinct set of learning style [21], [22], [23] comes into play, even if the student is experiencing the toughest situation. To reiterate, the chance of success must be maximized to prevent wasting all forms of efforts that are invested from the beginning of taking engineering curricula.

Considering also the industry requirements aside from their academics in honing their engineering skills appropriately to get necessary employment could be an additional task to focus which is the bottomline of everything after college [24], [25]. One of the measures of success of the students if they can finish the degree and be given a great opportunity to work several months after graduation on the company of their dreams. With the implementation of outcomes-based education in engineering, teachers could be able to facilitate the teaching and learning process efficiently, thus supporting the success of students on their future endeavors [26]-[38]. The quality assurance mechanisms of the university also provide meaningful and vibrant student life that are considered significant in giving right directions towards potential accomplishments [39], [40].

The researchers include profile of the respondents in the survey because they do believe that these attributes have a very significant role to play in expressing and giving the responses about the problem, remembering this, in this study a set of personal information namely age, gender, program,

year level, type of student, and general weighted average.

In relation to this, the researchers chose the study to identify the characteristics of a successful engineering student. This study aims to assess attributes which an engineering student must possess. This study is conducted in consideration of the Lyceum of the Philippines University – Batangas has been reaping the fruits of the successful implementation and continuous flourishing of the quality of education. Moreover, the researchers believe that this study will help the College of Engineering to encourage engineering students to become more successful in their future professions. Using these data, the researchers shall be pinpointing the problems which most of engineering students encounter. Additionally, the study shall be a potent tool in providing the College of Engineering in identifying specific problem that they can focus on first. Likewise, the proposal of methods in order to improve the performance output of a successful engineering student is hereby declared.

OBJECTIVES OF THE STUDY

This study aims to determine the characteristics of successful engineering students of Lyceum of the Philippines University – Batangas. Specifically, it seeks to answer the following objectives: to determine the profile of the respondents in terms of gender, age, year level, degree program, type of student, and general weighted average from the previous semester; to assess the characteristics of a successful engineering student; to test the differences in the characteristics when grouped according to profile; and to propose an action plan to enhance the capabilities of an engineering student to become successful.

REVIEW OF LITERATURE

Based on the study conducted by the Organization for Economic Cooperation and Development as cited in Johnson [41], United States of America, an industrialized country that provides high quality and accessible education, was learned to have only 46% of completion rate of degree programs, despite of the initiatives done in different states around the country like in Connecticut. This is a seemingly low percentage as compared to the 17 other nations that are also tracked by the said organization. The generated statistics in this analysis merely indicate that the state of development of a nation does not always affect the literacy of its countrymen directly. This gives the Philippines, a developing country,

better chances to produce successful professionals, or if rather stated in the context of this paper, successful engineers. The resources and allocations for education and technology domain will always be a factor but one's mindset and attribute are still the most important element to take into consideration which will be discussed herein correspondingly.

Until today, questions about the viability of showing strategies on student learning have reliably brought impressive enthusiasm up in the topical field of instructive research. Besides, investigate on instructing and adapting continually attempt to analyze the degree to which distinctive showing strategies upgrade development in student learning [42].

Though poor academic performance does not merely indicate the incapability of being successful, it is still an advantage to practice it in the students' early years in college [43]-[48]. This is because their acquired characteristics in that stage will be beneficial in the workplace and in doing fieldworks. Since everything is presented to the people in an open book, a little to no effort is needed to search for home works and projects. This is possible because even if different useful learning materials can be accessed in the internet, students still has to face many distractions in their real life. Nonetheless, time and responsibility management is often characterized by students to become their balancing act that comes naturally by experience [41]. In this regard, they either succeed or give up momentarily.

One reason why failure happens is the lack of purpose of an individual. Once a person acquires this, he/she will only go with the flow of the current. This student will no longer be interested in the class. This is very disturbing because it often leads to high drop-out rate [47]. To make the effects more intense, it may also lead to a high unemployment or misemployment rate and high illiteracy rate if more and more students become engaged in this trait, in the long run [41].

Moreover, as part of becoming an engineer, some factors that contributes on the student's failure in college based on two-year faculty's analysis are their life situations and some socioeconomic conflicts such as financial problem, the continuous rising of education, especially in the engineering program domain, becoming a working student, and being a responsible family member [49]. It is confusing to decipher the last two things to become included in the list. Actually, even the most responsible student who knows time-management himself struggles everyday due to his/her multiple role in the society. They are

also being asked to actively participate in the community extension activities of the university to develop the value of volunteerism [50]- [53].

Faculty members believed that students are poor in time management, and thus tends to turn in home works or paper works in the last minute. Students are fond of multi-tasking in the present. Though it is beneficial to attend all of life's demands at the same time, giving utmost attention to everything become impossible. It is hard for them to situate their focus on a single thing because they worry every now and then with the other responsibilities they are engaged in the society other than becoming a student [49].

Most of the students' critical thinking skills and science and mathematical ability and familiarity were not developed according to their year levels. Every people has different set of learning styles which is somewhat associated with his/her personality. However, there is always an intersection of these traits among good students. Among these traits are being organized, curious and self-motivated. Kokemuller [54] states that few students foster good habits in early stage in life which affects their scholastic standing once they go to school while others develop certain qualities along the way through experiences with the people in their environment.

By concentrating on the discerning limits of student' minds, by outlining guideline so students expressly get a handle on the sense, the rationale, of what they learn, we can make all learning less demanding for them. Substantive learning duplicates understanding and knowledge; bring down request repetition retention increases misconception and disarray. In spite of the fact that next to no present direction intentionally goes for lower arrange adapting, most results in it. "Great" students have created strategies for fleeting repetition retention; "poor" students have none. Be that as it may, few realize what it is to think systematically through the substance of a subject; few utilize basic thinking as a device for securing learning [56].

In any case, an atmosphere that is not exactly completely neighborly to women remains and its surface regularly still so underestimated that it has a tendency to be undetectable. In a view of a late study by Murphy, et.al. [57], convey another component of sexual orientation predisposition to light. As a result, women become less inclined to partake in science and engineering settings in which they are outnumbered by men [58]. However, most clear oppression women in the science has been lessened or disposed of in late

decades through lawful, scholastic, corporate and government measures.

This is one of the reasons why many students chose engineering programs yet several of them quickly drop-out of college before getting their degree. Of course, there is always a solution. In doing so, one must acquire certain characteristics to become an engineer in spite of interferences on the students' study habits. It defines how the students devote more time and give priority to their studies while balancing other cu-curricular activities and social life [59],[60].

Most freshmen, including the ones taking up engineering courses, have a minimal knowledge on the aspects that must be taken into account in choosing a specialization. According to Sam [6], it is a must to discover one's field of interest immediately, which can be done through social interaction with the amateurs or professionals of the same expertise grounds or by exposing oneself to programs and activities that are related to the course being taken currently in order to bring about consciousness and growth at the same time.

While luck will always play a role, there are a number of personality factors that can also be a big part in helping individuals get ahead, whether it is in school, work, or their personal lives. Though there is no one recipe for a successful life, there are some characteristics that are found in many people who have made it big in one way or another. Becoming a successful professional in the future is the foreseeable goal of almost every college student. Nonetheless, there are factors that need consideration to surely achieve it, especially for engineering students.

As Ken Bain details, from the book "What the Best College Students Do", there are three types of learners: surface, who do as little as possible to get by; strategic, who aim for top grades rather than true understanding; and deep learners, who leave college with a real, rich education. Bain then introduces us to a host of real-life deep learners: young and old, scientific and artistic, famous or still getting there [61].

Virtuous learners come in all shapes and sizes. Be that as it may, a modest bunch of regular attributes commonly show up in good students paying little heed to their identity or different qualities. Some students grow great propensities and qualities right on time in life that prompt accomplishment in school. Others must work on enhancing themselves as they get more remote along in their instructive encounters [55].

Consequently, acceptance into college is enlivening. Nearly all students tend to become

enthusiastic in learning new materials. Notwithstanding, the feeling of being intimidated is not eliminated in this stage and is expected to endure and intensify as the semester progresses. While your performance in college is based upon the work you complete, learning is a collaborative process. You are interacting with other students and your instructors through discussions and other learning activities. There will be times when the relationships you develop become critical to your success, especially when you need assistance, feedback, or support [41].

Students are often driven and motivated to achieve their goals upon enrolling in a college. At first, the desire to earn a degree by putting necessary labor is at its maximum. The truth is, college is not as easy as it seems to be, for if it was facile, almost everyone will certainly hold a degree in college. Working hard and depending on oneself in achieving a distinct objective eventually provide one to experience the finest things in life. Students must have the capacity to continue going notwithstanding misfortune. You should continue making progress toward accomplishment in your courses. Try not to give an impediment a chance to wind up a wall [62].

Mental preparation is fundamental for understudy achievements since what you accept about yourself, your aptitude, and your capacities will decide how you act. Your self-conviction is intuitively held; implies you do not invest energy breaking down why you accept what you do. As you communicate with others, and partake in the learning procedure, you will look for affirmation of these beliefs. For instance, on the off chance that you subliminally trust that your professor does not think about your advance, you will search for evidence to bolster it. This thus decides your mentality about the class, alongside with the measure of time, vitality, and exertion you will dedicate to the way toward learning. On the off chance that you build up an attitude that you have a limit for development and advancement, then you will be interested in criticism and proposals for development [41]. Students' attitude can be observed through their behavior inside the classroom on how they listen attentively and participate actively in the discussion 63-67.

Individuals have diverse learning styles that are reflected in various scholastic qualities, shortcomings, abilities, and premium. Given the practically boundless assortment of sets of expectations inside engineering, it is protected to say that understudies with each conceivable learning style can possibly prevail as engineers. They may not be similarly prone

to prevail with regards to engineering school; be that as it may, since they react distinctively to diverse instructional methodologies and the pre-dominant method of guideline support some learning styles over others. Understanding learning style differences is consequently an imperative stride in planning adjusted guideline that is powerful for all students [20].

Developing a positive mindset is actually the key to improve oneself [41]. Students' actions are affected by how they look on the project. If one believes that he/she cannot do something beforehand, it is also unlikely that the result will be good. There are hidden talents among every individual that probably do not show up because of pessimism and staying in one's comfort zone. At this instant, one must realize the power to think beyond the box and extend one's capabilities.

Students are accustomed to getting your substance in short, entertaining blasts: one- to three-minute YouTube videos, hyper abbreviated text messages, and 140-character tweets. But your teacher is thinking as far as a 50-minute lecture, isolated maybe a few sections. Retrain your ability to focus to prepare long. Seek after your enthusiasm. In the midst of all the distribution courses, general instruction necessities, prerequisites, it is simple to overlook what your scholarly advantages, gifts, and enthusiasm were in any case. Every semester, make certain to take no less than one course in something you are great at and are truly keen on. The delight of accomplishing something you appreciate will go far to compensating for all the repulsive things you need to do at school [68].

Fruitful understudies invest the effort they requirement for concentrate yet they likewise adopt proven strategies, for example, individual tests, that engages them in the learning procedure and helps them retain what they're taking in. Astute understudies perceive that time is an important product, and they know how to arrange and contribute their opportunity further bolstering its fullest advantage [69].

There will be few courses that roll out you need to change your major, if not stop college altogether. Fruitful undergrads understand this and can remember their long haul objectives. This is especially hard in the event that you cruised through secondary school with straight A's and are in effect scholastically tested without precedent for your life. It is anything but difficult to think you are inept and surrender. In all actuality not very many individuals can transverse school without concentrated contemplating for a

considerable lot of their classes. You may even need to retake a class. Try not to give it a chance to get you down. You are not a disappointment and it happens to a bigger number of individuals than you might expect.

At the point when understudies were requested that what is required to finish their classes, numerous will share encounters that showed them how to deal with their time, adjust obligations and concentrate successfully. It regularly turns into an exercise in careful control for understudies and they either figure out how to build up the aptitudes to succeed or give up in light of the fact that they are disappointed or debilitate [41].

Profound learners do not center their vitality on their scholastic accomplishment but rather on their passion for the subject they are learning. In the future, nobody will ask you about what rating you received in a particular class. They rather, will take an interest about your enthusiasm and diverse knowledge of your preference of study [70].

As discussed by Wolff [71], Engineering is not only a difficult course but also a profession that involves a number of principles as well as qualification rules. As a matter of fact, these set of rules must be followed accordingly to assure that the engineers are knowledgeable and experienced enough before they go to work. Also, it will also help them to discover what their real objective is – to make the environment of the masses a better place to live in through innovation. Besides, the production's yield must also be maximized to meet the public's demand.

METHODS

Research Design

The research would be directed as a controlled quantitative research study in which information are gathered before and after the research. In this study, we utilized organized survey to gather information from the respondents. The polls would comprise of the profile of the respondents and a series of inquiries related on characteristics of a successful engineering student.

Participants

The populations of interest for this study are the students who are enrolled in Lyceum of the Philippines University – Batangas, A.Y. 2016 – 2017. The population that is accessible to this study consists of all students who are taking engineering courses which are mechanical engineering, electronics engineering, computer engineering and industrial

engineering. Population of 240 students served as the respondents of the study.

Instruments

The researchers utilized the questionnaire adopted from Niagara University. The first part is consisting of the profile of the respondents, while the second part is the survey questions to assess the characteristics of a successful engineering student.

Procedure

The data for this research were collected using a survey questionnaire. The survey was created using adopted questionnaire from Niagara University and questions formed by the researcher. The survey was comprised of 40 questions, which were related to the participant's perception regarding characteristics of a successful engineering student. After the professor validated the questionnaire, these were distributed to engineering students (Mechanical Engineering, Electronics and Communication Engineering, Industrial Engineering, Computer Engineering, and General Engineering) of Lyceum of the Philippines University – Batangas. The researchers assured confidentiality of their survey sheets since the identities are not important. The researchers also understood that people's consciousness may also affect their honesty and effectiveness in answering the survey, and so, the researchers gave people the option of being anonymous. Participants were given time to respond and then the researchers collected the surveys an hour later. There were no incentives offered for participating in the research.

Data Analysis

All data were encoded, tallied and interpreted using different statistical tools. These includes frequency distribution, weighted mean and Analysis of Variance (ANOVA). The data were also treated using a statistical software, PASW version 18 to further analyze the result of the study.

RESULTS AND DISCUSSION

Table 1 shows the distribution of the respondent's profile as seen on the table, majority are male with a frequency of 166 and a percentage of 69.20 while the female has a frequency of 74 and a percentage of 30.80. It only seems that engineering courses is still dominated by male because it is preferred to be a program for men. Most clear oppression women in the science has been lessened or disposed of in late

decades through lawful, scholastic, corporate and government measures.

Table 1. Distribution of the Respondents' Profile

Profile Variables	f	%
Sex		
Male	166	69.20
Female	74	30.80
Age		
15 – 18 years old	77	32.10
19 – 22 years old	159	66.30
23 – 26 years old	4	1.70
Program		
BSME	37	15.40
BSECE	12	5.00
BSIE	95	39.60
BSCpE	42	17.50
Gen.Eng'g	54	22.50
Year Level		
1 st year	12	5.00
2 nd year	53	22.10
3 rd year	60	25.00
4 th year	67	27.90
5 th year	48	20.00
Type of Student		
Regular	157	65.40
Irregular	83	34.60
GWA		
1.00 – 1.50	2	0.80
1.51 – 2.00	23	9.60
2.01 – 2.50	95	39.60
2.51 – 3.00	117	48.80
3.01 and below	3	1.30

In any case, an atmosphere that is not exactly completely neighborly to women remains, and its surface regularly still so underestimated that it has a tendency to be undetectable. Based on a recent study by Mary Murphy [57], to bring another element of gender bias to light. Women are less inclined to partake in science and engineering settings in which they are outnumbered by men [58].

Most student who are enrolled are in engineering courses age from 19-22 years old with a frequency of 159 and a percentage of 66.30 while age from 23-26 only has a frequency of 4 and a percentage of 1.70. It indicates that the most number of students enrolled are in the range of the normal age that a student should be in the tertiary level. Yet there are still students who still want to pursue their dreams after taking a one or two-year break. Most community college students take a break from a college on the way to earning a four-year degree, but few make it there if they "stop out" more than once. College students face long odds

eventually earning a bachelor's degree. And those odds get worse if they leave college more than once along the way [72].

Majority of the students are currently enrolled in Bachelor of Science in Industrial Engineering with a frequency of 95 and a percentage of 39.60 while Bachelor of Science in Electronics and Communication Engineering got the lowest number of enrollees with a frequency of 12 and a percentage of 5.0. This indicates that most of the engineering students enrolled want to inline their engineering professions with management. More students take non-board engineering program mostly because it is easier than to programs with board examinations and another reason is that they want to get a job in line with their respective professions right after graduation.

Majority of the students are currently enrolled as 4th year with a frequency of 67 and a percentage of 27.90 while the least number of students are enrolled as 1st year with a frequency of 12 and a percentage of 5.0. During school year 2013-2014 the rate of enrollees was too high that is why majority of the respondents came from the 4th year students. Just couple of students selected in school as green bean in school year 2016-2017. As indicated by the Commission on Higher Education (CHED), on SY 2016-2017 no understudy will be permitted to enlist in school without completing the 2-year Senior High School. As a result, there will be no first year student [73].

Majority of the students enrolled are regular with a frequency of 157 and a percentage of 65.40 while the irregular student has a frequency of 83 and a percentage of 34.60. Even regular students dominated the irregular students; we can still conclude that the curriculum is actually difficult that is why one-third of the total engineering students failed on at least one subject. The first thought that comes in mind when students see an irregular student is perhaps they were supposed to be in. Their reasons may vary. And one could probably be failure to meet the requirements of his past subjects but is not always the case. There are also other reasons that cause these students to be in certain situation [74].

Majority of the students received a general weighted average ranging from 2.51-3.00 with a frequency of 117 and a percentage 48.80 while students who received a general weighted average of 1.00-1.50 only has a frequency of 2 and a percentage of 0.80. It can be seen or concluded that engineering program is one or belong to the programs considered to be a tough one. Many individuals feel that to get decent evaluations you must be a virtuoso or concentrate constantly. Yet, that is not valid. A review is only a measure of execution in class. So to get decent evaluations requires the far less amazing ability: having the capacity to perform well in a class [75].

Table 2. Assessment on the Characteristics of Successful Engineering Student

Do you . . .	WM	VI	Rank
1. Identify your long-term goals	3.58	Always	3.5
2. Attend all classes, except when ill or in case of emergency.	3.57	Always	5
3. Complete all assigned reading before class.	3.20	Often	21
4. Bring books, paper, pencils, and other necessary materials to class.	3.42	Often	6
5. Get phone numbers of a few classmates who take good notes, in case of an unavoidable absence.	3.33	Often	10.5
6. Arrive on time to classes.	3.33	Often	10.5
7. Sit near the front, where it's easier to pay attention.	3.23	Often	17
8. Think actively during class.	3.30	Often	12.5
9. Participate in class by responding and asking appropriate question.	3.20	Often	21
10. Remain attentive throughout class. Avoid staring out windows, doodling, having side conversations, texting or looking at your cellphone.	3.11	Often	30
11. Take accurate and thorough notes and review them soon after class to identify question areas.	3.20	Often	21
12. Compare your class notes with the textbook soon after class, and details to your notes.	3.03	Often	34
13. Take advantage of any extra credit opportunities.	3.35	Often	9
14. Ask questions about course content to clarify understanding.	3.16	Often	25.5
15. Turn in all assignments on time.	3.30	Often	12.5
16. Word-process written assignments whenever possible.	3.15	Often	27
17. Use a planner to keep track of assignments.	2.89	Often	37.5
18. Devise and follow a schedule to keep with reading and other assignments.	3.05	Often	33

Table 2 (cont.) Assessment on the Characteristics of Successful Engineering Student

Do you . . .	WM	VI	Rank
19. Set specific goals for each study session.	3.24	Often	16
20. Study where there are no distractions.	3.29	Often	14
21. Vary study tasks, to avoid doing one type of activity to too long.	3.16	Often	25.5
22. Think about, analyze, and ask questions about what you are reading.	3.22	Often	18
23. Make appointments to see professors with questions about assignments or grades.	2.83	Often	39
24. Begin assignments soon after they are assigned.	2.98	Often	35
25. Begin writing assignments early enough to allow time for careful revisions and a visit to the writing center.	2.94	Often	36
26. Work to increase concentration and decrease procrastination.	3.09	Often	32
27. Use available campus resources such as the office of academic support and the library.	3.13	Often	29
28. Devise a study plan for test and exam.	3.25	Often	15
29. Study with the study partner or small study group, going over key points.	3.10	Often	31
30. Avoid cramming.	3.13	Often	28
31. Use a variety of study techniques. Don't just memorize.	3.21	Often	19
32. Always attend class when there is a quiz or test.	3.58	Always	2
33. Read and follow all directions on tests and exams.	3.58	Always	3.5
34. Balance academic work and safe and constructive leisure activities.	3.19	Often	23
35. Get involved in at least one activity on campus, such as a club, organization or volunteer work.	2.89	Often	37.5
36. Get adequate sleep.	2.75	Often	40
37. Eat nutritious food.	3.39	Often	8
38. Avoid smoking, drinking alcohol, and using drugs.	3.16	Often	24
39. Seek help when needed.	3.41	Often	7
40. Enjoy learning.	3.68	Always	1
Composite Mean	3.21	Often	

Legend: 3.50 – 4.00 = Always; 2.50 – 3.49 = Often; 1.50 – 2.49 = Sometimes; 1.00 – 1.49 = Never

The Table 2 shows that the respondents' often practiced the above mentioned items as indicated by the composite mean of 3.21. Among the items enumerated, enjoy learning ranked first with a weighted mean score of 3.68 and rated always. It simply shows that even though engineering curriculum is really difficult, student still consider enjoying college life no matter what. A student may not appreciate a lesson or arrangement of lessons for some reasons outside an instructor's control. Some are close to home, for example, having interpersonal issues with different cohorts. Some are authoritative – science may be an obligatory subject for students, so there might be students who are not especially keen on the subject and who don't consider it to be important to their future. Obviously, the vital point is that happiness may not really mean learning [76].

It was followed by always attend class when there is a quiz or test ranked second with a weighted mean score of 3.58, and attend class, except when ill or in case of emergency ranked fifth with a weighted mean score of 3.57, both rated as always. It shows that engineering students are very much dedicated on learning that is why they seldom skip class just for some unimportant things. Students who get decent evaluations and obtain information amid school

frequently share core qualities. They are self-propelled, composed, great communicators and inquisitive. These qualities give them the inspiration to go to class, take good notes and complete high-quality work. The attributes that made an understudy fruitful regularly convert into better employments [54].

While the items read and follow all directions on a test and quiz and identify long-term goal share the ranks third and fourth, both having a weighted mean of 3.58 and rated also as always. The next item which is bringing books, paper, pencils, and other necessary materials to class ranked sixth with a weighted mean score of 3.42 and rated as often. Engineering students are so much passionate in their respective programs in a way that they were so focus on their goals. Fruitful understudies invest the effort they requirement for concentrate yet they likewise adopt proven strategies, for example, individual tests, that engages them in the learning procedure and helps them retain what they're taking in. Astute understudies perceive that time is an important product, and they know how to arrange and contribute their opportunity further bolstering its fullest advantage [69]. Virtuous learners come in all shapes and sizes. Be that as it may, a modest bunch of regular attributes commonly show up in good students

paying little heed to their identity or different qualities. Some students grow great propensities and qualities right on time in life that prompt accomplishment in school. Others must work on enhancing themselves as they get more remote along in their instructive encounters [55].

Some item that were rated as often like seek help when needed ranked seventh with a weighted mean score of 3.41, arrive time to classes and get phone numbers of a few classmates who take good notes, in case of unavoidable absences shared the rank of tenth and eleventh with a weighted mean score of 3.33 and rated as often. Engineering is one of the hardest programs that is why it is expected that its curriculum is also hard, and it would never be a surprised if underclassmen seek help to their upperclassmen if they found a lesson complicated. Most people can be pleased in any school that they attend, given that they find meaningful individuals as college companions. These individuals are going to develop with you and they will be exceptionally powerful in your life for the following years [6].

Eat nutritious food ranked eight with the weighted mean score of 3.39 and rated as often. Nutritious food affects the brain since vitamins are being extracted that supplied on the brain to function well. Based on a study conducted by a medical doctor, Selhub [77] in the Harvard Medical School, it was found out that the brain requires constant supply of fuel which comes from an extracted food.

Take advantage of any extra credit opportunities ranked ninth with a weighted mean score of 3.35 and rated as often. Students involve their selves to every activity that will be given to them provided that the said activities are related to their program and will play a major part in their improvement. In high school, having a high GPA characterized your success (more or less) yet that progressions colossally in college since other parts of the life will become possibly the most important factor and likely more essential than getting high marks. It will no more drawn out pretty much your grades, it will be about your notoriety for being a diligent student, your ability to communicate, and your longing to enhance yourself [6].

Meanwhile, get adequate sleep had been ranked 40th, which is the lowest, with a weighted mean score of 2.75 and rated as often. Engineering students most of the time spend their nights studying, doing home works or drawings, or maybe preparation for reports or daily quiz that is why they seldom get an adequate sleep. Understudies who major in engineering and the

physical sciences can hope to spend a bigger number of hours in the library than the individuals who take a concentration of courses in business and sciences [78]. The disparity in study propensity might not mirror an all the more requesting workload yet rather a distinction in the kind of contemplating required. Engineering requires precision, while humanities advances more basic intuition and conduct that students may not report as examining exercises, for example, arranging paper, taking a shot at a gathering venture or perusing a book [79].

Some items that were rated as often are make appointments to see professors with questions about assignments or grades ranked as 39th and have a weighted mean average of 2.83, use a planner to keep track of assignments and get involved in at least one activity on campus, such as club, organization or volunteer work, both get a weighted mean average of 2.89 ranked as 38th and 37th, begin writing assignments early enough to allow time for careful revisions and visit to the writing center and begin writing assignments get a weighted mean average of 2.94 and 2.98, respectively ranked as 36th and 35th. Engineering undergrads love to pack their way to the exams, particularly amid finals. It is not the smartest of the study propensities but rather every engineering student does it anyway. Engineering students need to realize what to do precisely with the rest of the time before the exam. At the point when there is no more drawn out the advantage of time to concentrate on all that you have to learn, you need to manage it by not turning to a great deal of incapable techniques for examining. You are not learning anything, it just seems as you do [80].

Also, items are rated as often like compare class notes with textbooks soon after class, and details to your notes get a weighted mean average of 3.03 ranked as 34th, Devise and follow a schedule to keep with reading and other assignments get a weighted mean average of 3.05 ranked as 33rd, Work to increase concentration and decrease procrastination get a weighted mean average of 3.09 ranked as 32nd, Study with the study partner or small study group, going over key points get a weighted mean average of 3.10 ranked as 31st. The first and foremost purpose is that they have not really concentrated hard. Many who grumble about not getting the outcomes their work justified are plain lying about the move they have put in. Making enough time for a first time study in addition to one update for the whole exam parcel in each subject, and afterward utilizing that time as proposed, is the thing that to be called "working

hard". An endeavor to pack the whole semester/year divide in one night is overcome, however does not consider having done diligent work. When you have perused a lesson more than once, you ought to proceed onward to the following one, regardless of how much or how little you recollect. On the off chance that you retreat in an interest to "perfectly" take in the lesson, you are going to get no place in the master plan. Covering ground and exploring is a sacrosanct during the first-run through study. Spare the hairsplitting for the update stage [81].

Table 3. Difference of Responses on the Assessment on the Characteristics of Successful Engineering Student When Grouped According to Profile

Profile Variables	t-value/ F - value	p - value
Sex	0.528	0.598
Age	0.115	0.891
Program	0.233	0.920
Year Level	4.818	0.001*
GWA	1.084	0.365
Type of Student	1.956	0.052

*Significant at p -value < 0.05

As seen from the result, only year level shows significant difference since the obtained p-values of 0.001 is less than 0.05 alpha levels, thus the null hypothesis under these variables is rejected. This means that the responses on the characteristics of successful engineering students vary across each year level. Peer audit is essential to scholarly attempt, however open doors for students to profit by associate survey in advanced education stay restricted, and moderately little is thought about how understudy recognitions impact their valuation for companion audit. College student discernments were inspected previously, then after the fact encountering understudy peer audit in four college subjects contrasting in train, year level and class estimate. Preceding taking part in companion survey, understudies had amazingly elevated standards of both the procedure and the ability of their associates as commentators. Understudies reported high fulfillment levels with the associate survey and its positive effect on their learning. Be that as it may, an unassuming general descending movement in positive discernment was watched taking after companion survey, proposing that understudy assessments of associate audit turn out to be to some degree more captivated as an outcome of their encounters. Drawing on study reaction information and understudy remarks, a few suggestions are made that may enhance understudy

impression of associate audit and guarantee that the various learning advantages of the companion survey process are accomplished [82].

In this study, we assess the characteristics of a being successful from the engineering students of Lyceum of the Philippines University – Batangas. Specifically, we investigated difference of responses on the assessment of characteristics of a successful engineering student when grouped according to age, gender, program, year level, type of student, and general weighted. It was hypothesized that student's responses only vary across each year level. Our results affirm the hypothesis, as year level scored significantly lower than age, sex, program, type of student, and general weighted average.

Students have distinctive levels of inspiration, diverse states of mind about educating and learning, and diverse reactions to particular classroom situations and instructional practices. The more thoroughly instructors comprehend the differences, the better chance they have of meeting the various adapting needs of all of their students. Three classes of differences that have been appeared to have essential ramifications for instructing and learning are contrasts in understudies' learning styles (trademark methods for taking in and handling data), ways to deal with learning (surface, deep, and strategic), and scholarly advancement levels (states of mind about the way of information and how it ought to be procured and assessed) [83].

Proposed Action Plan

The proposed Action Plan to Enhanced the Capabilities of an Engineering Student to Become Successful aims to address the gaps identified in the study that include concerns of engineering students for having not enough time to sleep, not making an appointment to professors to discuss about grades and subjects that were misapprehend, students failed to submit their assignments, students have poor interaction with his/her professors and classmate, students got low marks, students cram most of the time and students fail exams.

CONCLUSIONS

The majority of the students are male, 19-22yrs.old, from BS Industrial Engineering program, 4th year level, regular students, and with a general weighted average of 2.51-3.00. The majority of the students always consider enjoyment in learning as the most observed characteristic of a successful engineering student. There is no significant difference

on the assessment on the characteristics of a successful engineering student when grouped according to profile of the respondents. A plan of action was proposed to enhance the capabilities of student to become more successful in the near future.

RECOMMENDATION

The engineering department may promote the schedules of all professors' consultation hours. Post it to the department, college bulletin and also can be in every classroom used by engineering students. The engineering professors may devise various way of teaching to make more interaction with students and provide an examination to assess the students. The engineering student council may organize a meeting with club officers and devise a plan to enhance student involvement to extracurricular activities and classroom officers. The engineering student may study with the study partner or small study group, going over key points. Students must also have implemented to have more interactions in class and spend more time reading more reference books found in the library. Future researchers may include variables like type of school they were enrolled in high school, residence and financial status.

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