Employment, Skills and Work-Related Values of Engineering Graduates from a Philippine Institution of Higher Learning

Grashiela A. Magtaas[1], Evelyn L. De Castro[2], Nemy H. Chavez-Principe[3], Marie Angelie I. Pamplona[4], Jake M. Laguador[5]
[1,2,3,4]Lyceum of the Philippines University, Batangas City, Philippines; [5]Bicol State College of Applied Sciences and Technology, Naga City, Philippines
gmaguila@lpubatangas.edu.ph

Abstract - *This study intends to determine the present employment status of the Engineering graduates from 2016 to 2018 of a private institution of higher learning in the Philippines. Quantitative-descriptive type of research method was used in the study with 125 engineering graduates who served as respondents. Results showed that there is a very high level of employment rating obtained by the institutions in terms of the graduates from the following programs: Mechanical Engineering (92%), Industrial Engineering (91.18%), Electronics Engineering (90.91%) and Computer Engineering (80.95%). Most of the Engineering graduates are currently enjoying the benefits of being regular or with permanent status and gainfully employed at the same time. Problem-solving skills and critical thinking skills are the most common and useful on their job placement. Significant relationship exists between the skills acquired and the work-related values of the engineering graduates. The results showed the attainment of institution's mission of educating the youth who could be essentially part in maintaining the economic growth of the region and the country. The educational leaders need to manage effectively the student development to acquire the necessary skills and values that are needed by the industries to continuously uphold the graduate attributes as their identity.*

Keywords: critical thinking, employability, engineering, problem solving, skills, work-related values

INTRODUCTION

Higher Education Educations (HEIs) have greater responsibility for the society and country to provide a kind of education that is relevant to the demands of the communities and requirements of the industries. The labor market has been very competitive and only those with appropriate 21st century skills could able to adapt in the changing landscape of the corporate world. Graduates are prepared to attain cognitive, behavioral and social skills which are essential components of learning outcomes in order to perform efficiently the duties and responsibilities in the work place [1].

HEIs serve as the main engine that drives social transformation for career development and acquisition of knowledge, skills and character of the future professionals. Essilfie [2] noted that HEIs play a critical role to cultivate people that can determine the economic development, through research and internship programs that incorporate partnership with industries, the improvement of curriculum and student mobility; HEIs are more likely to produce graduates who are more employable.

The leadership brand is considered graduate attributes that are meaningful outcomes for the students to possess for future employment. It serves as a foundation for the students to behave and portray the image that the university would like to project in the community as competent learners, committed professionals, credible citizens and caring individuals as a means of fulfilling the vision and mission of the institution [3].

The graduates are facing the challenge of acquiring employment right away after graduation not only because they lack experience, but they need to acquire precise information and abilities to suit the requirements of the industry where they want to work. One of the measures considered to determine the efficiency of the institutions of higher learning is through the employment ratings of the graduates. [4]. It is believed that the quality of the graduates is the product of effective delivery of instruction, vibrant student learning experiences with state-of-the art facilities that nurture the competencies of the students in preparation for their future employment [5].

1

The strength and the development of the society has always been the Engineering education it also encompasses the nation as a whole [6]. The general perception of an engineer's role is developing, providing and sustaining infrastructure, goods and services for community and industry. Minaie and Sanati-Mehrizy [7] pointed out computer engineering is an integration of principles and concepts from electrical engineering and computer science in relation to design, application, and process of digital computers. Industrial engineering is a program that brings a better way of developing the methods on the execution of a certain task and designs an effective system in managing it for better organizational performance and efficiency. Mechanical engineering field needs knowledge of fundamental areas including material science, thermodynamic, structural analysis, mechanics, dynamics, modelling and electricity [8].

Engineering graduates are expected to develop skills and values that are adaptable to different cultures. They are also expected to join in international workforce to demonstrate the acquired skills and contribute in the progress of multinational companies in achieving common goals [9]. The technical skills they need to possess upon graduation are the strong weapon they can use for employment like the skills on communication, Information technology, critical thinking, problem solving, entrepreneurial, interpersonal skills and among others as part of the outcome-based education approach [10]-[17]. Along with these skills are the work values which are also being considered by most employers in the hiring process.

Work related values or the personal characteristics of the graduates that they learned or acquired through experiences from the university and other social environment might help them define who they are as a person and as a graduate of a certain institution that serves as their identity. Work values are considered important element of human resources [18]. That is why, higher education institutions are trying to develop career programs that will emphasize the graduate attributes that they really wanted to possess by the graduates that can be translated as their work values [19].

Graduate attributes had been considered important measure of effectiveness teaching programs which are integrated in the new approach in teaching and learning process in order for the learners to acquire appropriate employability skills who could able to join the workforce in multidisciplinary projects [20].

Employers, universities, professional organizations and other stakeholders concur that HEIs are always being challenged to produce globally competitive professionals who are highly skilled and could able to demonstrate 21st century skills. Every engineering field was essentially formed to get the knowledge and know-how to carry out tasks that were necessary for the community to make progress.

This study was conducted to describe the employment characteristics of the engineering graduates based on their experiences as employee on how certain skills and values learned and acquired from the institution contribute to their job placement. Relationship between acquired skills and work-related values is also part of this study that would like to establish and determine its possible connection. There are studies mentioned about work values and skills but did not establish any correlation between these two variables [21]-[25]. The findings also served as useful bases for the enhancement of the curriculum and other student development programs of the engineering department and even the co-curricular and extra-curricular activities of the university.

METHOD
Research Design

In order to collect the needed information, the researcher used the descriptive design method of research. As defined by Martinez et al. [26], descriptive method involves collecting data to answer questions concerning the current status of the object of a study. This has provided essential knowledge about the nature of the subject. The researcher had to gather all the information and conduct interviews to gather necessary data to be used to achieve the objectives of the study.

Participants

There were total populations of 21 BS Computer Engineering graduates from three Academic year 2015-2016 (12 graduates), 2016-2017 (5 graduates) and 2017-2018 (4 graduates). The total number of graduates of BS Electronics Engineer is 11, AY 2015-2016 (5 graduates), 2016-2017 (2 graduates) and 2017-2018 (4 graduates). For the BS Industrial Engineering, the total number of graduates is 68, AY 2015-2016 (21 graduates), 2016-2017 (21 graduates) and 2017-2018 (26 graduates). The total population of BS Mechanical Engineering graduates for three Academic year 2015-2016 (12 graduates), 2016-2017 (4 graduates) and 2017-2018 (9 graduates).

Instrument

This study utilized a survey questionnaire as the main instrument which is adapted from the concept of previous studies of De Castro et al. [27], Chavez et al. [28], and Aguila et al. [29]. This is consist of checklist of the employment related data which are considered measure of graduates' profile on how they continue to progress on their respective workplaces.

Procedure

The questionnaires were distributed to the graduates through online forms using social media and email communications to reach them one-by-one. Only those respondents who are willing to participate in the study answered the questionnaire even though they were also given the equal opportunity to answer the survey. They were informed regarding the purpose of the study and strictly confidentiality of their responses were ensured and observed in adherence to the data privacy act.

Data Analysis

Percentage and Rank were used to analyze the profile of the respondents with respect to the selected variables. Weighted Mean was used to determine the degree of perception of the student- respondents in the school factors related to their self-assessments. Pearson-r was used to test the relationship between the skills learned from college and the work-related values. The respondents were given five options to identify the factors that contributed to the job placement and to determine the skills developed by the University and work-related values of the respondents. To arrive at a verbal description of each item, the arbitrary numerical guide was followed: 4.5 – 5.00: Very Much; 3.5 – 4.49: Much; 2.5 – 3.49: Little; 1.5 – 2.49: Very Little; 1.0 – 1.49: Not at all.

RESULTS AND DISCUSSION

Figure 1 shows the employability rating of Computer Engineering from 2016 to 2018 which is 80.95 percent, while there are still four (4) graduates who are unemployed. Electronics Engineering graduates obtained 90.91 percent employment rate; one (1) of the graduate is still unemployed due to health issue.

Meanwhile, Industrial Engineering graduates for the past three years have 91.18 percent employment rate, while six (6) of the graduates remained unemployed.
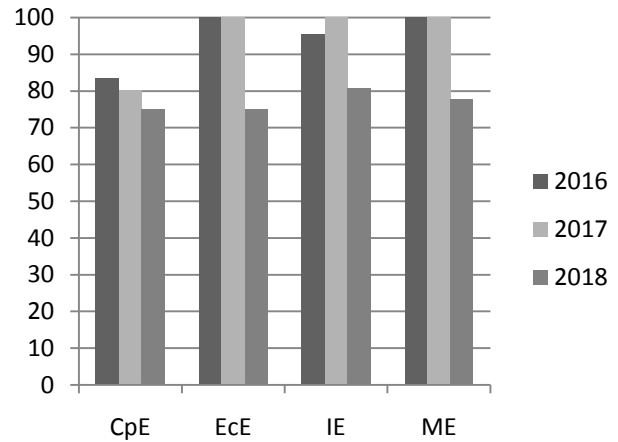

Figure 1. Employment Rating of Engineering Graduates from 2016 to 2018

For the past three years, 92 percent of the Mechanical Engineering graduates are currently employed, while the two (2) graduates remained to be unemployed, with an overall employment rating of 86.85 percent. The result is lower than the previous employment study conducted by Chavez et al. [28] from 2013-2015 with an overall employment rating of 96.72 percent for BSIE, BSECE and BSME graduates, while the BSCpE graduates got an overall rating of 84.2 percent [29]. This suggests that the engineering graduates of the university under study are still highly employable.
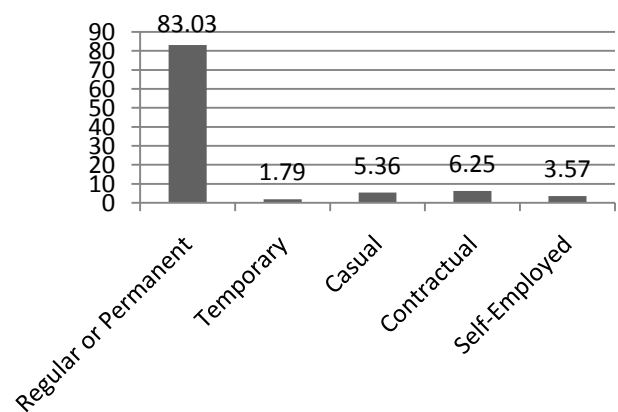

Figure 2. Employment Status of the Engineering Graduates

Most of the engineering graduates are presently enjoying the benefits of a regular or permanent status in their respective companies with 93 or 83.03 percent. For contractual, there is seven (7) or 6.25 percent and there are six (6) or 5.36 percent for the casual employees. There are four (4) graduates or 3.57

percent who are self-employed and two (2) of them or 1.79 percent are temporarily employed.
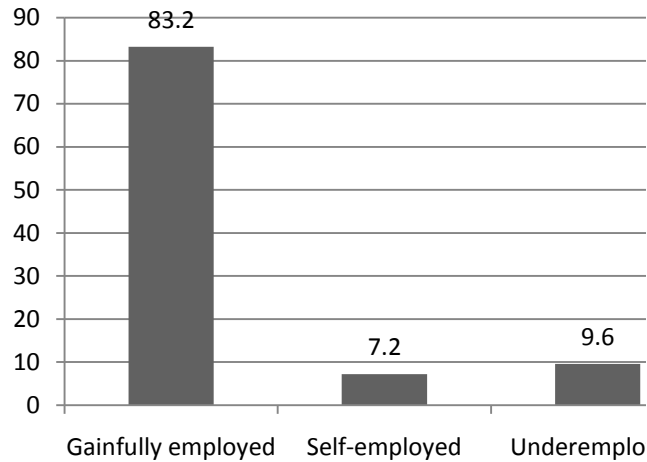

Figure 3. Nature of Employment of the Engineering Graduates

Figure 3 shows the nature of employment of the engineering graduates. One hundred four (104) or 83.2 percent of the Engineering graduates identified themselves as gainfully employed, while 12 or 9.6 percent identified themselves as underemployed and a total of 9 or 7.2 percent of the graduates are self-employed. Most of the Computer Engineering graduates are employed as Design Engineer, Process Specialist Development, Engineer, Production Planner, Software Developer and Application Development Associate. The Electronics Engineering graduates are employed as Site Engineer, Integration Consultant, Network Engineer and Design Engineer. Furthermore, Industrial Engineering graduates are assigned in various positions such as QC Engineer, Production Planner, Process Engineer, HR Admin Specialist, Product Development Engineer, Production Supervisor, Procurement Engineer and Quantity Surveyor. Meanwhile Mechanical Engineering graduates are handling positions such as Planning Engineer, Field Engineer, CAD Engineer, Site Engineer, Facility Engineer, Technical Inspector, Plant Operator and Welding Engineer. All of them are currently employed in companies with job assignments related to mechanical engineering.

Figure 4 shows the reasons for unemployment of the 13 engineering graduates. The unemployment rate of the graduates is one of the current issues being conferred to some higher education institutions (HEIs). College or university students often face unemployment after taking a break from four to five years they spent on university or getting married right after they have graduated.
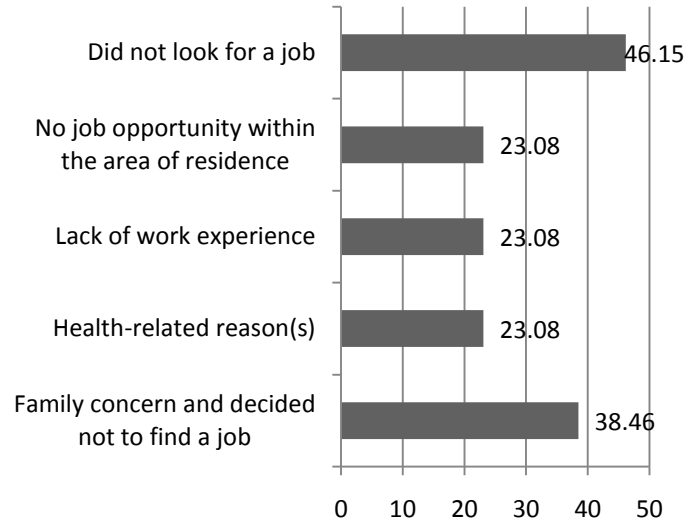

Figure 4. Reasons for Unemployment (N = 13)

One of the reasons why some of the engineering graduates are unemployed is they did not look for a job (46.15%) due to family concerns (38.46%) and health-related reasons (23.08%). Some of the graduates have had their own families after graduation and took care of their son/daughter; some of them took some time to look for a job because their family members did not pressure them to get employed right away. No job opportunities within the area of residence (23.08%) is the other problem of the graduates; this implies that the graduates wanted to find a job within the vicinity of their residence for suitability and practicality of not spending too much budget on board and accommodation, transportation, as well as meal allowance. The problem of the three (3) or 23.08 percent of the graduates is the lack of work experience; the company or the position that they are applying for are looking for senior staff who have gained a lot of work experience for years.

Figure 5 presents the reasons for accepting and staying on the job, the most common reason on why the graduates stay on the job is because of the salary and benefits (86 or 76.77%). Corejova, Genzorova, and Stalmasekova [30] pointed out that employee benefits are important considerations among job applicants and even the current employees for staying in the job. New graduates tend to be attracted to the salaries and benefits due to their willingness to save-up and give back to their parents.
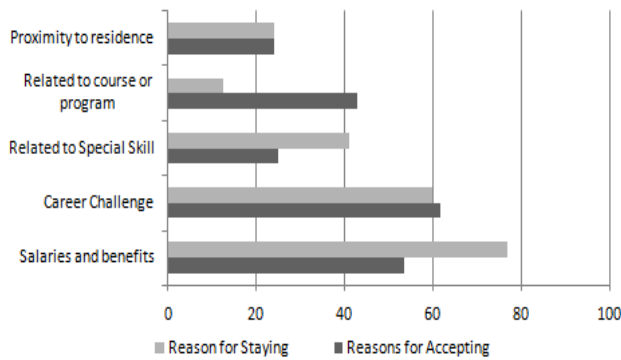
Figure 5. Reasons for accepting and staying on the job of Engineering Graduates

Furthermore, More than half of the engineering graduates stayed because of the career challenge (67 or 59.82%) and that their present job is related to their special skill (46 or 41.07%). Engineers always wanted to perform job assignments where they can get new information and experiences most especially among the fresh graduates. They are very eager to learn about engineering processes and they keep on educating themselves by taking extra efforts in helping other workers to finish their tasks.

On the other hand, the least reason of the graduates is proximity to residence (27 or 24.11%) and the relation of their present job to their course or program (14 or 12.5%). The result of the present study is mostly similar with the findings of Chavez et al. [28] and Aguila et al. [29] that salary and benefits as well as career challenge were the main reasons why the graduates are staying on the job.
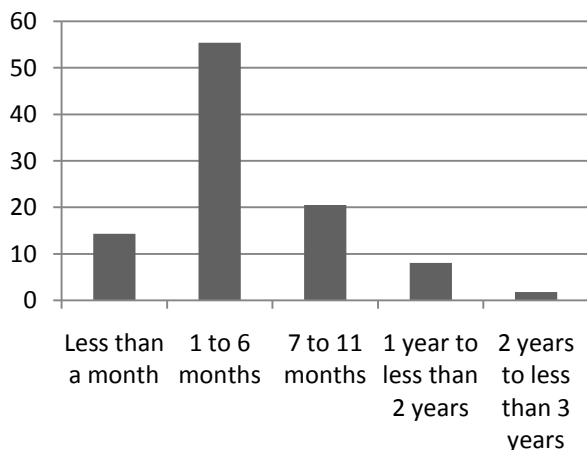

Figure 6. Length of Job Search of Engineering Graduates

More than half of the engineering graduates were able to find a job in 1 to 6 months (62 or 55.36%) period, wherein most of them are Industrial

Engineering graduates with no board examination while 23 or 20.52 percent of them obtained their job 7 to 11 months after their graduation. There are 16 or 14.29 percent of graduates who got their first job less than a month after graduation. The result of the similar study of Camello et al. [3] and Aguila et al.[29] have the same findings wherein most of the engineering graduates from previous batches also obtained their jobs in less than seven (7) months after graduation. Meanwhile 9 or 8.04 percent of them got their first job 1 year to less than 2 years after graduation, and the remaining 2 or 1.79 percent of them gained their job 2 years to less than 3 years.

Figure 7 shows the skills acquired in the College as Useful in the First Job. Problem-solving skills (80.36%) and critical thinking skills (77.67%) are the most common and useful in the job placement of the graduates from batch 2016 to 2018.
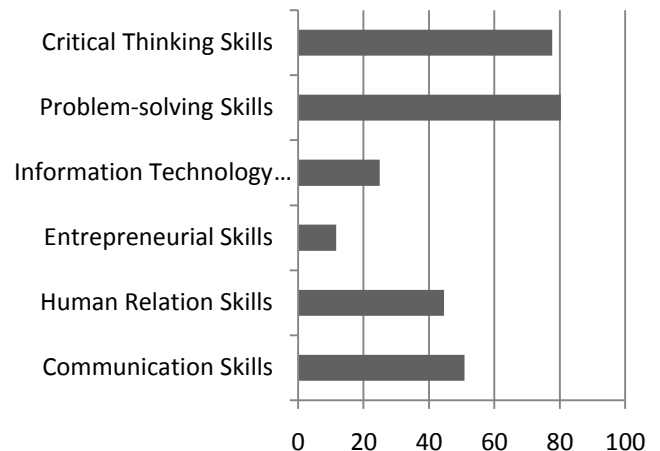

Figure 7. Skills Acquired in College as Useful in the First Job

This result affirmed by the study of Rear [31] in the Japanese workplace that critical thinking and problem solving are essential skills needed by most business groups in expressing personal independence and autonomy. From the same study, Japanese managers also emphasized the value of communitarian attributes which include cooperativeness and flexibility which encourage socialization into the firm's culture. Engineering students are being taught how to be sensitive and keen observant about the needs and problems of the community. They were trained how to become problem solver and at the same time critical thinkers so that they can contribute to the development of

processes, services and products that could offer solutions to the organization and society.

Communication skill (50.89%) is considered one of the most important skill that all graduates need to possess in order to express their themselves during interviews. This is where they can elaborate their knowledge and experiences about the engineering program they completed and how they can contribute to the development of the company. They need to persuade their employers with confidence in speaking for them to get hired. On the study of Aguila [29], she emphasized that having a good communication skill can help the graduates in their academic success and their career prospects.

According to Patul [32], effective communication is very essential for professional success of modern engineer. It is an important tool in the education of engineering graduates to cope up with the new era of global competition. He suggested that the present engineering curriculum needs to focus more on communication skills rather than only on technical skills.

Human Relation or interpersonal skill (44.64 %) is another skill which is essential in maintaining conducive environment and peaceful work place. Engineers learned how to work in multidisciplinary environment as part of their student outcomes as defined by the ABET Criteria [33]. This is where they acquired the skills on how to collaborate and cooperate [34] with the members of the team and on how to become a team leader in order for them to build the trust and confidence of the people.

Some graduates also considered Information Technology skill (25%) is significant part of their job placement. Information literacy is an important aspect of future job [35]. Every applicant must possess this technical skill because all companies are requiring the employees to be knowledgeable and proficient on how to operate electronic machines and computer applications and software which are necessary for the smooth operation of the organization. Most especially during the times of pandemic, the IT skill is very important to communicate with people through different platforms through remote working. Das, Mohapatra, Patnaik and Satpathy [36] noted that Information technology plays a vital role in accomplishing the duties and responsibilities of every employee from accessing vast array of data, collecting, interpreting and generating reports.

Moreover, Batch 2016-2018 shows that the very least skills that they need is the Entrepreneurial skill

(11.61%). It is not really directly related to job placement but since they are working in a business enterprise, their knowledge about entrepreneurship can really contribute in the business operation of the manufacturing companies in making decision for marketing strategies, changes in the economy [37] and how the company can survive in times of recession or crisis like COVID-19.
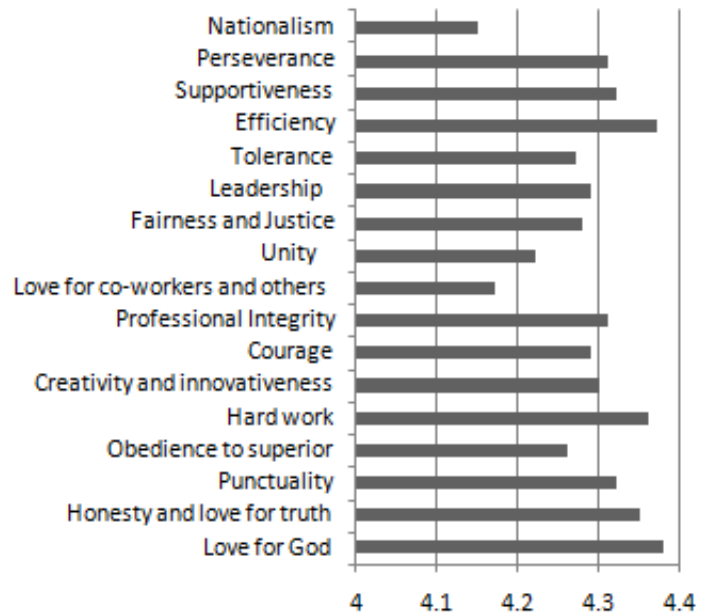

Figure 8. Work-Related Values of the Respondents

The graduates considered Love for God (4.38) as the value that contributed much to their job placement. This is the followed by efficiency (4.37) whereas hard work (4.36) is also much considered in their present employment, while honesty and love for truth (4.35), punctuality (4.32) and supportiveness (4.32) are also believed to have contributed much in their present employment. New breed of employees who currently joined the workforce like the Millennial have different work values compared to other generations. There are several studies conducted on generational differences on work values although various perspectives arise on this area of research [38], [39], [40], but still understanding and considering these differences also helped the companies to describe and define the needs of the employees for better job performance. Martínez-León et al. [41] noted that enhancing satisfaction of engineering professional is necessary in order to retain talented employees through work, personal and cultural conditions as measures in addressing aspirations and increasing performance.

They also considered much perseverance (4.31) and professional integrity. Perseverance is one of the

qualities that goal-oriented individual has, despite of the obstacles or difficulties that they may experience they still pursue to reach their specific goals, whilst professional integrity is one of the key virtues for professionals. Integrity is seen as a personal quality which usually comprise of several aspects such as honesty, trustworthiness and responsibility.

The engineering students also considered creativity and innovativeness (4.30) to have much contribution to their job placement. Being creative and innovative some of the natural capacities of engineers. Companies are expecting them to demonstrate these characteristics several months or after a year they joined the company because these still require hands-on experiences on how they can cope up with the challenges of the organization and how they can innovate the process and services based on their experiences and observations. They are expected to develop more techniques on how to make the processes easier and convenient for the organization.

Courage (4.29) and Leadership (4.29) are also much considered in their job placement. The leadership capacity of the engineering graduates is being expected by the employers on how they can lead the project even without or less supervision. Baccay et al. [42] emphasized the role of leadership in measuring the overall performance of the organization based on the capacity of the leaders to decide based on the past events to predict the future direction for business sustainability.

Meanwhile, fairness and justice (4.28), tolerance (4.27) and obedience to superior (4.26) are also considered important work values in their present job. However, unity (4.22), love for co-workers and others (4.17) and nationalism (4.15) are considered the least work values that contribute to their present employment.

Table 1. Relationship Between Skills Learned from College and Work Related Values

Variables	r-value	p-value	Interpretation
Skills & Values	0.528	0.021	Significant

Significant at p-value<0.05

Table 1 reveals that significant positive relationship exists between skills learned from college and the work-related values as denoted by the computed p-value of 0.021. This signifies that those engineering graduates with high level of acquired skills are also those graduates with high level of work-

related values. Engineering students possessed the necessary technical skills needed for their respective degree programs and they believed at the same on the significance of work values on how to present themselves and demonstrate their skills through having appropriate positive attitude in the workplace. Work values are related to skills as how they viewed work as important element of their life where they can secure income for a living. However, one study showed no significant relationship between work values and technology skills among the students enrolled in a Career and Technical Education Course [43]. But the respondents of this study of Springer are still students which might evolve their work values overtime when they already joined the workforce.

4 CONCLUSION

The group of Mechanical Engineering graduates from 2016 to 2018 is 92 percent employed; 91.18 percent of the Industrial Engineering graduates are employed, while the Electronics Engineering graduates are 90.91 percent and only 80.95 percent are presently employed from the Computer Engineering students. There are 94 out of 125 Engineering graduates enjoying the benefits of being regular or permanent employee, both casual and contractual have only six (6) graduates respectively, while four (4) of them are self-employed, the two (2) of them were employed temporarily and the other 13 graduates are unemployed. Most of the Engineering graduates are gainfully employed (104), whilst nine (9) of them are self-employed and the remaining 13 graduates are underemployed. Problem-solving skills and critical thinking skills are the most common and useful in the job placement of the graduates. Likewise, communication skills and human relation skills while love for God, efficiency and hard work are the work-related values they identified in considering the demands of their present employment. The relevant skills and competencies [44],[45] from the graduates are essential characteristics needed by the industries that will contribute to the achievement of common goals towards organizational efficiency.

It is recommended that the Dean and/or the Department Chairs may seek the advice of the alumni and the Board of Advisers regarding the latest trend/s or application/s being utilized by the industries to be incorporated in the curriculum. The General Education faculty members may further strengthen their class exercises or other co-curricular activities to improve the oral communication skill of the engineer through research presentation that would provide a

7

P-ISSN 2362-8022 | E-ISSN 2362-8030 | www.apjeas.apjmr.com
Asia Pacific Journal of Education, Arts and Sciences, Volume 7, No. 4, October 2020

better opportunity for the students to gain confidence expressing their ideas and perspectives. It is now considered a challenge for most English teachers on how they can develop modules and assessment tools to measure the oral communication skill of the students using online resources. The use of zoom, Google meet and other platforms is being encouraged among teachers to hold their online classes to feel their presence by the students.

The Dean and/or the Department Chairs may encourage the students to join research conferences through webinars locally and/or internationally, to further enhance their communication skills and public speaking. The University may also strengthen its linkages with some industries like engineering and manufacturing firms through the help of the Internship Office (INTO); this will also serve as the training ground for the students in their internship and as a potential future work environment. The Department Chairs may also encourage the students to attend Career Congress and Job Fair at the University to see some job opportunities and secure their employment. College of Engineering may conduct seminars or workshops focused on Technopreneurship, total quality management or any quality assurance mechanism as it is the most common area of concern for all the institution and industries. Encourage students to participate in trainings and/or actively participate in their respective professional organizations to be updated on the contemporary issues in their disciplines.

This study is limited only to engineering graduates of one private university in the Philippines, therefore, the findings of the study cannot be generalized to the entire engineering students of the country. Further studies may be conducted considering larger population to get a bigger picture of the employment status of the engineering graduates in the Philippines.

REFERENCES

[1] M.C. Abas and O.A. Imam, "Graduates' Competence on Employability Skills and Job Performance," *International Journal of Evaluation and Research in Education*, vol.5, no.2, pp. 119-125, 2016.

[2] N. V. Essilfie, "*Enhancing employability of graduates from Higher Education Institutions in Botswana: a case study of Environmental Science.*" Doctoral dissertation, University of Pretoria, 2015.

[3] N. C. Camello, N. H. Chavez, and M. A. I. Pamplona, "Employer's Feedback and Employability of Engineering Graduates from 2013 to 2015: Basis for a Proposed Student Development Program," *Asia Pacific Journal of Education, Arts and Sciences*, vol. 3, no. 4, 2016.

[4] M.I. Celis, A. Cueto, and B. Festijo, "Graduate's Employability: A Tracer Study for Bachelor of Science in Hotel and Restaurant Management," *Asian Academic Research Journal of Multidisciplinary, vol. 1, no. 11, pp. 225-238, 2013.

[5] G. S. Navida, "Employability of the Bachelor of Secondary Education Graduates of Pangasinan State University Alaminos City Campus," *Journal of Education, Management and Social Sciences* vol. II No. I, 2019.

[6] M. Tripathy, "Teaching Employability Skills to Engineering Students: A Case Study of BPUT, Odisha," *IOSR Journal of Humanities and Social Science*, vol. 22, no. 9, 2017.

[7] A. Minaie and R. Sanati-Mehrizy, "Computer Engineering Area of Specialization in Computer Science Department," *Proceedings of the 2004, Annual Conference & Exposition, American Society for Engineering Education*, 2004.

[8] I.P. Okokpujie, O. S. Fayomi, and S. O. Oyedepoa, "The Role of Mechanical Engineers in Achieving Sustainable Development Goals," *2nd International Conference on Sustainable Materials Processing and Manufacturing*, 2019.

[9] C. I. Dotong, "School – Related Factors in the Development of Graduates' Competencies towards Employability," *Journal of Education and Literature*, vol. 1, no. 1, pp. 28-36, 2014.

[10] N. C. Camello, "Design of an Outcome-Based Education Assessment Plan for Student Outcomes: Basis for the Development of Assessment Tools," *Asia Pacific Journal of Education, Arts and Sciences*, vol. 5, no. 3, 2018.

[11] L. D. Borsoto, J. D. Lescano, N. I. Maquimot, M. J. N. Santorce, A. F. Simbulan, and A. M. Pagcaliwagan, "Status of implementation and usefulness of outcomes-based education in the

8

P-ISSN 2362-8022 | E-ISSN 2362-8030 | www.apjeas.apjmr.com
Asia Pacific Journal of Education, Arts and Sciences, Volume 7, No. 4, October 2020

engineering department of an Asian university," *International Journal of Multidisciplinary Academic Research*, vol. *2, no.* 4, 14-25, 2014.

[12] J. M. Laguador, and C. I. Dotong, "Knowledge versus practice on the outcomes-based education implementation of the engineering faculty members in LPU," *International Journal of Academic Research in Progressive Education and Development*, vol. *3, no.* 1, pp.63-74, 2014.

[13] A. O. Macatangay, L. D. Braza, M. N. Gamboa, A. D. Gonzales, R. A. P. Fuentes, J. A. Macalalad, & F. M. Mendoza, "Status of Implementation and Usefulness of Outcomes–Based Education in Customs Administration Program of one Asian University," *Asia Pacific Journal of Education, Arts and Sciences*, vol. *3, no.* 3, pp. 62-69, 2016.

[14] I. L. An, "Impact of outcome-based education instruction to accountancy students in an Asian University," *Asia Pacific Journal of Education, Arts and Sciences*, vol. *1, no.* 5, pp. 48-52, 2014.

[15] P. B. Reyes, "Implementation of a Proposed Model of a Constructivist Teaching-Learning Process–A Step Towards an Outcome Based Education in Chemistry Laboratory Instruction," *Asia Pacific Journal of Multidisciplinary Research, vol.1, no.1*, 2013.

[16] M. Z. B. Jarabe, S. J. M. Dimaapi, R. E. Ramos, R. E. Nolos, M. G. S. Garcia, and B. T. Festijo, "Feedback on Student Outcomes as Perceived by the Hotel and Restaurant Administration Students," *Journal of Tourism and Hospitality Research*, vol.*14, no.*1, 2017.

[17] J. L. A. Balanon, D. A. Aala, J. K. M. Cuevas, P. L. P. Festejo, J. M. Maravilla, and S. S. Felicen, "Feedback on Student Outcomes Among College Students of International Hospitality Management," *Asia Pacific Journal of Education, Arts and Sciences*, vol. 4, no.2, 2017.

[18] B. Veljković, "Tourism students-work values and communicative skills," *Informatologia*, vol.*48*, 2015.

[19] C.L. Aguado, J.C.L. Deligero, O.B. Garcia, and J.M. Laguador, "Teaching Performance and Extent of Work Values among Faculty Members in one Asian Maritime Academy," *International Journal of Management Sciences*, vol. 5, no. 12, pp.805-816, 2015.

[20] R. Moalosi, M.T. Oladiran, and J. Uziak, "Students' Perspective on the Attainment of Graduate Attributes Through A Design Project," *Global Journal of Engineering Education*, vol. 14, no.1, pp. 40-46, 2012.

[21] S. W. G. Arguelles, and A. B. Bay, "Career Related Profile of Freshman Students for Academic Year 2013–2014: Basis for a Career Development Plan," *International Journal of Academic Research in Psychology*, vol.*1, no.* 2, 136-146, 2014.

[22] C. R. Ungui, A. M. O. Asilo, N. R. D. Asilo, M. R. H. Magmanlac, S. B. R. Mira, A. P. Ylagan, "Employability of Tourism Graduates in an Autonomous University for School Year 2011-2012," *Scholars Journal of Economics, Business and Management*, vol.1, no. 5, pp.186-196, 2014.

[23] H. Dabelko-Schoeny, N. L. Fields, K. White, M. Sheldon, K. Ravi, S. R. Robinson, and C. Jennings, "Using community-based participatory research strategies in age-friendly communities to solve mobility challenges," *Journal of gerontological social work*, pp.1-17, 2020.

[24] M. G. Buenviaje, G. V. del Mundo, F. Añonuevo, and M. Martinez, "Employability of business and computer management graduates of one higher education institution in the Philippines," *Asia Pacific Journal of Multidisciplinary Research*, vol.*3, no.*5, pp.63-71, 2015.

[25] K. Reinsmith-Jones, S. Kibbe, T. Crayton, and E. Campbell, "Use of second life in social work education: Virtual world experiences and their effect on students," *Journal of Social Work Education*, vol.*51, no.*1, pp. 90-108, 2015.

[26] C. Martinez, J. Lontoc, A. C. Villena, and J. M. Laguador, "Correlation of On-The-Job Training Performance on Print Media of AB Mass Communication Students and Academic Performance in Selected Professional Courses for School Year 2012-2013," *Journal of Education and Literature*, vol.2, no.3, pp.80-88, 2014.

[27] E. L. De Castro, M. T. B. Prenda, and C. I. Dotong, "Employability of Computer Engineering Graduates during Academic Year 2015-2016 and their Lifelong Learning Options," *Asia Pacific Journal of Academic Research in Social Sciences*, vol.*2*, 2017.

[28] N. H. Chavez, C. I. Dotong, N. C. , Camello, and J. M. Laguador, "Employability of engineering graduates of one Asian university as basis for curriculum review," *EPH-International Journal of Science and Engineering*, vol.*1, no.* 6, pp.18-29, 2016.

[29] G.M. Aguila, E.L. De Castro, C.I. Dotong, and J.L. Laguador, "Employability of Computer Engineering Graduates from 2013-2015 in one Private Higher Education Institution in the Philippines," *Asia Pacific Journal of Education, Arts and Sciences*, vol.3,no.3, pp.48-4, 2016.

[30] T. Corejova, T. Genzorova, and N. Stalmasekova, "Employee Benefits as One of Factors of Work Motivation," *CBU International Conference on Innovations in Science and Education*, vol.5, 2017. https://doi.org/10.12955/cbup.v5.964,

[31] D. Rear, "Persisting values in the Japanese workplace: managerial attitudes towards work skills," In *Japan Forum* (pp. 1-21). Routledge, 2020.

[32] T.V. Patul, "Communication Skills and Engineers," *International Conference on Emanations in Modern Technology and Engineering*, vol.5, no.3, 2017.

[33] ABET Criteria for Accrediting Engineering Programs, 2019 – 2020, https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2019-2020/

[34] P. Childs, and P. Gibson, "Graduating Professional Engineers and Management Skills – Are they Adequate for the Workplace?," *3rd International Symposium for Engineering Education, University College Cork, Ireland*, pp. 1-9, 2010.

[35] A., Rafique, and K. Mahmood, "Information literacy skills of engineering students: a survey," *Pak. Lib. Inf. Sci. J*, vol.*46*, pp.34-41, 2015.

[36] S.C. Das, M. Mohapatra, B.C.M. Patnaik, and I. Satpathy, "Role of Information Technology in Education and Skill Based Learning for Employability," *International Journal of Innovative Technology and Exploring Engineering*, vol.9, no. 1, pp. 968-973, 2019.

[37] N. Duval-Couetil, S. Haghighi, and T. Reed-Rhoads, "Engineering Students and Entrepreneurship Education: Involvement, Attitudes and Outcomes," *International Journal of Engineering Education*, vol.28, no.2, pp. 425-435, 2012.

[38] L. K. Kuron, S. T. Lyons, L. Schweitzer, and E. S. Ng, "Millennials' work values: differences across the school to work transition," *Personnel Review*, 2015.

[39] M. A. Littau, The millennials: An investigation of their organizational commitment, work values, and person-work environment fit, Doctoral dissertation, Carleton University, 2009.

[40] J. M. Twenge, and S. M. Campbell, "Who are the Millennials? Empirical evidence for generational differences in work values, attitudes and personality," In *Managing the new workforce*. Edward Elgar Publishing, 2012.

[41] I. M. Martínez-León, I. Olmedo-Cifuentes, and M. C. Ramón-Llorens, "Work, personal and cultural factors in engineers' management of their career satisfaction," *Journal of Engineering and Technology Management*, vol.*47*, pp.22-36, 2018.

[42] E.B. Baccay, C. Daza, M. Gutierrez, C. Llave, C.J. Lipa, and M.A. Nartea, "Impact of Leadership Skills on the Student Organizational Performance of PUP – Paranaque Campus S.Y. 2015-2016," *European Academic Research*, vol.4, no. 8, 2016.

[43] C. Springer, "Work Values and Technology Skills of Students Enrolled in a Career and Technical Education Course at a Community College, Doctoral dissertation, 2016.

[44] C. Chen,and M. M. Naga, "An Analysis of Library and Information Science Job Market In Mainland China: Content Analysis of Job Vacancy Advertisements of Library Professionals," *International Journal Scientific & Technology Research*, vol. 8, no. 12, pp. 216-223, 2019.

[45] D.A.T. Kumari, And S. M. Ferdous Azam, "The Mediating Effect Of Financial Inclusion On Financial Literacy And Women's Economic Empowerment: A Study Among Rural Poor Women In Sri Lanka", *International Journal Scientific & Technology Research*, vol. 8, no. 12, pp. 719-729, 2019.