TRACER STUDY OF ENGINEERING GRADUATES OF ONE HIGHER EDUCATION INSTITUTION IN THE PHILIPPINES FOR ACADEMIC YEAR 2009-2012

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ABSTRACT

Employability of graduates is one of the measures of Higher Education Institutions to ensure that the quality of education they provide is suitable to the needs of the industry. This study determined the employment status of engineering graduates in one Private University in the Philippines from the period of 2009 to 2012. Descriptive type of research method was utilized in the study involving the total population of the graduates as respondents. The findings revealed that the engineering graduates are highly employable with 95.54 percent employment rating, with regular status and presently working as associate professionals in the Philippine manufacturing companies related to their college degrees who found their first job as walk-in applicants and stayed on their jobs for more than three (3) years. Communication skill is considered the foremost competency learned in college that found very useful to their job placement.

Keywords: Employment rating, employability, mechanical engineering, industrial engineering, electronics engineering, computer engineering, curriculum.

INTRODUCTION

The rapid growth in commercial and manufacturing industries has brought to the academic community a huge transformation from traditional way of delivering instruction to the most fascinated and modern methods of teaching and learning activities. College graduates must possess the character and values that would lead the companies to the higher degree of accomplishments. The realization of corporate mission depends on the technical skills next to the work attitude of the employees that needs to be nourished by the Higher Educational Institutions.

The development of the life-long learning system, which will meet the requirements of the labor market and of the knowledge economy, requires relevant information on the evolution of jobs and professions, the trends of the labor market evolution and the companies' needs of skills and qualifications (Bratucu & Boscor, 2011).

Soderbom (2000 as cited in Lister and Donaldson, 2003) noted that the role of industrial engineers in all elements in an economy is vital, but the main issues to be addressed are not optimization problems, or simply improving productivity and efficiency. The economies of the developing world are grappling with high levels of unemployment, poverty, and crime, as well as poor infrastructure and a lack of necessary labor skills.

Communication skills, teamwork, problem solving and decision making skills are the common required employability skills needed to possess by newly graduates in order to deal with real-world problems (Zaharim et al., 2012, as cited in Yusoff, et. al, 2012). Meanwhile, Six (6) key generic skills in use are identified by Morley and Harvey (2001): communication, application of numbers, information technology, working with others, improving own learning and performance and problem solving. In addition to relevant skills, employers seek employees who have the personal values, characteristics, and personality traits that spell success. Good personal values are what make the foundation for a good employee (Loretto, 2012). Graduate-respondents considered perseverance and hard work, honesty and love for truth, professional integrity, supportiveness, love for God, punctuality, efficiency and courage as work-related values with very much contribution to job placement (Laguador & Dotong, 2013).

The driving forces are many fold and cover the factors derived from business goals, characteristics of the products, and changes in the software engineering development process (Jaakkola, 2009). Hence, computer engineering graduates should be able to adapt to the global standards and possess the attributes needed by international labor market to be highly employable.

Academic institutions of higher learning are constantly generating graduates who are capable of applying technology and knowledge-based information to the nature and demands of their work environment. Debono's (2003) study confirmed that factual knowledge and critical orientation are among the most useful skills students learn at universities that are found very useful at work. Academic institutions provide updated curricula as response to the needs of professional education in computer, electronics, industrial and mechanical engineering societies and industries.

From the previous tracer studies of the Lyceum of the Philippines University-Batangas, Industrial Engineering graduates obtained 90 percent employment rate, Electronics Engineering has 51.4 percent and Mechanical Engineering has obtained 85.7 percent while Computer Engineering 85 percent and 80 percent employment rates, respectively.

The researchers are presently conducting the third period for 2009 – 2012 graduates and completed in 2013, which includes the four engineering programs of LPU: Bachelor of Science (BS) in Computer Engineering (CpE), BS Industrial Engineering (IE), BS Mechanical Engineering (ME) and BS Electronics Engineering (EcE) and intends to assess the relevance of the curricula, knowledge and skills acquired by the graduates for their employment; identify the personal and professional characteristics and job placement of the Engineering graduates. This study will look after the mission of LPU-B to provide the students equal and appropriate knowledge and skills applicable to the graduates' future employment. Similarly, the findings of the study will serve as the bases for the researchers to improve, update or enhance the Engineering curricula to make it more responsive to the needs of the industries.

The results of the study reflect the program's competence which was measured based on the occupational opportunities granted to the graduates, their present positions and the nature of the jobs they obtained immediately after graduation. Therefore, this will greatly contribute to the improvement of the college to become more responsive and relevant to the needs of the industry and the entire society.

METHOD

This tracer study used the descriptive research design wherein according to Shuttleworth (2008), it is a scientific method which involves observing and describing the behavior of a subject without influencing it in any way.

The respondents of the study were 46 BSCpE, 53 BSIE, 26 BSME and 32 BS EcE Graduates from 2009 to 2012. This study used the total population of the graduates. Questionnaire is the main instrument used in the study. The questionnaire consists of the respondents' profile, job placement of the respondents and relevance of skills developed by LPU and work – related values. The Research Center of LPU-Batangas provided the survey questionnaire to be used for this study as standard format.

Since the survey instrument used in the study was provided by the Research and Statistics Center, it is already considered valid and reliable. Personal data such as names, addresses and telephone/cellular phone numbers of the graduates from 2009 – 2012 were obtained from their undergraduate theses' index - curriculum vitae. The respondents were informed on the purpose of the study and were invited to participate in the survey. The researchers administered some of the questionnaires personally, others were sent through electronic mail and social networking sites.

The following statistical tools were employed in interpreting the data obtained from the survey: percentage, weighted mean and rank. The respondents were offered five options to identify the factors that contributed to the placement of the engineering graduates in their present employment and to determine the skills developed by Lyceum of the Philippines University and work related values of the respondents. In identifying the relevance of school related factors to the job placement of the respondents, the respondents were offered four options. To arrive at a verbal description of each item, the arbitrary numerical guide was followed: 3.5 – 4.00: Very Relevant; 2.5 – 3.49: Relevant; 1.5 – 2.49: Slightly Relevant; 1.0 – 1.49: Not Relevant.

RESULTS

Table 1. Frequency Distribution of the Engineering Graduates In Terms of Employment Data

Present	**CpE**		**ECE**		**IE**		**ME**		**Total**	
Employment	f	%	f	%	f	%	f	%	f	%
Presently Employed	43	93.48	30	93.75	51	96.23	26	100.00	150	95.54
Not Presently Employed	2	4.35	1	3.13	1	1.89	0	0.00	4	2.55
Never Employed	1	2.17	1	3.13	1	1.89	0	0.00	3	1.91
Total	46	100	32	100	53	100	26	100	157	100

Table 1 presents the frequency distribution of Engineering graduates in terms of their employment data. Among the four programs of engineering in LPU, Mechanical Engineering graduates obtained 100 percent employment rate from 2009 – 2012, while 51 out of 53 or 96.23 percent for the Industrial engineering graduates and 93.75 percent for ECE. BSCpE graduates obtained the least percentage of graduates with 93.48 percent which is still considered high employability The College of Engineering obtained an overall employment

rating of 95.54 percent from 2009 – 2012. This implies that the engineering graduates of LPU – Batangas is highly employable.

Table 2. Frequency Distribution of the Engineering Graduates In Terms of Reason of Unemployment

Reason of Unemployment (n=7)	**f**	**%**
Advance or further study	3	43
Family concern decided not to find a job	4	57
Health-related reason(s)	-	
No job opportunity	2	29
Did not look for a job	2	29
Board Examination	1	14
Lack of work experience	-	

Table 2 shows the frequency distribution of the engineering graduates in terms of reason of unemployment. Four (4) of the unemployed graduates answered that family concern makes them to decide not to find a job followed by having an advance study, no job opportunity and they did not look for a job. Only 1 unemployed graduate answered that board examination is the reason of his unemployment while nobody answers health related and lack of work experience. This confirmed the study of Laguador and Dotong (2013) which also found that family concern is also the number one reason of unemployment of the computer engineering graduates.

Table 3. Percentage Distribution of the Engineering Graduates In Terms of Present Employment Status, Nature of Employment and Place of Work

Present Employment Status	**Percentage**				
	CpE	**ECE**	**IE**	**ME**	**Total**
Regular or Permanent	60	57	43	42	51
Contractual	23	13	33	27	25
Casual	9	10	14	12	11
Temporary	5	17	10	15	11
Self-employed	2	3	0	4	2
Total	100	100	100	100	100
Nature of Employment					
Gainfully employed	88	90	92	96	91
Self-employed	2	3	0	4	2
Underemployed	9	7	8	0	7
Total	100	100	100	100	100
Place of work					
Local	31	26	47	21	125
Abroad	14	5	5	5	29
Total	45	31	52	26	154

Table 3 presents the percentage distribution of the engineering graduates in terms of present employment status, nature of employment and place of work. There were 51 percent regular or permanent employed engineering graduates and 25 percent contractual, while 11 percent each for casual and temporary and only 2 percent of the graduates were self-employed. In terms of nature of employment, 91 percent of the engineering graduates were gainfully employed while 7 percent were underemployed and 2 percent were self-employed.

Local industries are still dominating in the employment locale of the engineering graduates though some of them are still employable internationally as proven by the 18.83 percent of the engineering graduates employed abroad like in Singapore, South Korea, Papua New Guinea, Dubai, Qatar, Japan, Saudi Arabia, USA, Malaysia, United Kingdom and Bahrain

while 81.17 percent of them were employed locally. From the previous study of Laguador and Dotong (2013) emphasized that there were 19 percent of the Computer Engineering graduates employed in different parts of the world wherein the present study comprised almost close to that result.

Table 4. Frequency Distribution of Engineering Graduates In Terms of Present occupation based from Phil. Standard Occupational Classification

Present Occupation	**CpE**	**ECE**	**IE**	**ME**	**F**	**%**
a. Officials of Government and Special-Interest Organizations, Corporate Executives, Managers, Managing Proprietors and Supervisors	9	5	5	2	21	14.00
b. Professionals	6	7	4	8	25	16.67
c. Technicians and Associate Professionals	22	11	29	4	66	44.00
d. Clerks	3		0		3	2.00
e. Service Workers and Shop and Market Sales Workers	0		1		1	0.67
f. Trades and Related Workers	1	2	5	9	17	11.33
g. Plant and machine Operators and Assemblers, Laborers and Unskilled Workers				2	2	1.33
No answer	2	5	7	1	15	10.00
Total	**43**	**30**	**51**	**26**	**150**	100.00

Table 4 shows the frequency distribution of engineering graduates in terms of present occupation based on Philippine Standard Occupational Classification. Most of the engineering graduates were technicians and associate professionals followed by professionals as well as Officials of Government and Special-Interest Organizations, Corporate Executives, Managers, Managing Proprietors and Supervisors. Few of them were trades and related workers, clerks and plant and machine operators. Year of experience is an important factor to be called a full pledged professional. One to four years of experience for the graduates would be good enough as preparation stage to become in the managerial position.

Table 5. Frequency Distribution of Engineering Graduates In Terms of Major Line of Company Business

Major line of business of the company	**CpE**	**ECE**	**IE**	**ME**	**f**	**%**
Manufacturing	18	18	18	15	69	46.00
Electricity, Gas and Water Supply	1			4	5	3.33
Wholesale and Retail Trade, repair of motor vehicles, motorcycles and personal and household goods	1		5		6	4.00
Transport Storage and Communication	4	6	3	1	14	9.33
Financial Intermediation			1		1	0.67
Education	2	1	3		6	4.00
Private Households with Employed Persons	1	1	2		4	2.67
Telecommunication	9		15		24	16.00
No Answer	7	4	4	6	21	14.00
Total	43	30	51	26	150	100

Table 5 presents the frequency distribution of engineering graduates in terms of major line of company business. Majority of the engineering graduates or 46 percent were employed in the manufacturing companies while some of them were also employed in telecommunications (16%), transport storage and communication (9.33), education (4%), Wholesale and Retail Trade, repair of motor vehicles, motorcycles and personal and household goods (4%), Private Households with Employed Persons (2.67) and Financial Intermediation (0.67%). Among the

industry sub-classes, the top ten manufacturing industries accounted for more than half of all manufacturing establishments. Semi-conductor devices and other electronic components industry employed the highest number of workers which followed by computers, computer peripheral equipment and accessories industry. Globalization is one trend that is changing very strongly the characteristics of the software industry (Jaakkola, 2009).

Table 6. Frequency Distribution of Engineering Graduates In Terms of Their Reasons for Staying on the Job and Accepting the Job

reasons for staying on the job	**CpE (%)**	**ECE (%)**	**IE (%)**	**ME (%)**	f	%	Rank
a. Salaries and benefits	45	15	22	19	42	27	4
b. Career challenge	48	30	35	43	62	39	1
c. Related to special skill	45	30	22	37	52	33	2
d. Related to course or program of study	43	15	26	31	46	29	3
e. Proximity to residence	14	10	0	6	11	7	5.5
f. Peer influence	3	0	0	0	1	1	7
g. Family influence	6	10	3	12	11	7	5.5
reasons for accepting the job							
a. Salaries & benefits	23	11	12	6	95	63	2
b. Career challenge	29	13	24	11	103	69	1
c. Related to special skills	21	8	12	8	79	53	3
d. Proximity to residence	8	2	0	3	64	43	4

Table 6 presents the frequency distribution of Engineering graduates in terms of their reasons for staying on the job and accepting the job. Career challenge is the foremost reason of most engineering graduates for staying on the job followed by connection of their special skill to the present job. There were 29 percent of the graduates also considered the connection of their course to the present job while 27 percent said that salaries and benefits made them stay. However, proximity to residence as well as family influence and peer influence were the least reasons of the graduates for staying on the job. Engineering graduates are looking for more defying and demanding type of jobs that would stir up their abilities.

There were 69 percent of the engineering graduates answered that career challenge is their foremost reason for accepting the job followed by salaries and benefits with 63 percent and related to special skills with 53 percent. Proximity to residence is the least reason of the graduates for accepting the job with 43 percent. This implies that majority of the graduates did not consider the location of the work environment to their residence. They accept job opportunities even places outside the province and the region.

Table 7 shows the frequency distribution of Engineering graduates in terms of their first job related to the course completed. There were 85.06 percent of the presently and previously employed graduates that their first job is related to engineering while 4.55 percent answered not related and 10.39 percent of the graduates did not provide a response on the question. The one hundred twenty three (123) or 75 percent surveyed graduates answered that their first job is related to computer engineering while 26 or 16 percent answered “No” and 16 or 10 percent did not indicate their answer.

Table 7. Frequency Distribution of Engineering Graduates In Terms of Their First Job related to the Course Completed

Is your first job related to the course you took up in college?	**CpE**	**ECE**	**IE**	**ME**	**f**	**%**
Yes	37	26	43	25	131	85.06
No	3	2	2		7	4.55
No Answer	5	3	7	1	16	10.39
Total	45	31	52	26	154	100.00

Table 8. Frequency Distribution of Engineering Graduates In Terms of Reasons for Changing the Job and Length of Stay in First Job

Reason(s) for changing job	**CpE**	**ECE**	**IE**	**ME**	**f**	**%**
Salaries & benefits	11	3	6	5	25	17
Career challenge	14	7	2	5	28	19
Not Related to special skills	7	4	2	4	17	11
Proximity to residence	3	2	2	-	7	5
Length of Stay in First Job						
Less than a month	2	1	2	3	8	5.19
1 to 6 months	13	2	6	7	28	18.18
7 to 11 months	5	4	14	3	26	16.88
1 year to less than 2 years	2	2	5	6	15	9.74
2 years to less than 3 years	3	4	9	2	18	11.69
3 years to less than 4 years	20	18	16	5	59	38.31

Table 8 shows the frequency distribution of Engineering graduates in terms of reasons for changing the job and length of stay in first job. If the engineering graduates are not anymore being challenged by their work, they seek for another job where they can find more opportunity for professional growth. Secondary reason for changing their job is the salaries and benefits with 17 percent and not related to special skills with 11 percent while only 5 percent of them answered proximity to residence. Salary may be considered one of the indicators for career success but caring and helping co-employees in the organization may also de-emphasize the significance of money (Frieze, 2006).

Table 9. Frequency Distribution of Engineering Graduates In Terms of How did They Find Their First Job and length of search for the present job

How did you find your first job?	**CpE**	**ECE**	**IE**	**ME**	**f**	**%**	**Rank**
1. Response to an advertisement	13	8	7	5	33	21.87	3
2. As walk-in applicant	20	13	6	11	50	33.25	1
3. Recommended by someone	12	7	7	8	33	22.21	2
4. Information from friends	9	5	3	5	22	14.57	4
5. Arranged by school's job placement officer	1	0	0	0	1	0.87	8
6. Family business	5	0	0	2	7	4.56	6
7. Job Fair or Public Employment Service	5	0	4	6	16	10.45	5
8. On-The-Job Training	0	2	1	0	3	1.75	7
Length of search for current/present job	**CpE**	**ECE**	**IE**	**ME**	**f**	**%**	**Rank**
Less than a month	20	7	18	3	48	32.00	2
1 to 6 months	17	10	25	18	70	46.67	1
7 to 11 months	4	12	5	4	25	16.67	3
1 year to less than 2 years	2	1	2	1	6	4.00	4
2 years to less than 3 years			1		1	0.67	5
3 years to less than 4 years					0	0.00	

Table 9 presents the frequency distribution of Engineering graduates in terms of how they find their first job and length of search for the present job. Almost one-third of the employed engineering graduates found their first job as walk-in applicant followed by through

recommendation by someone and response to an advertisement. Other ways on how they found their first job is through information from friends, job fair or public employment service and family business while on-the-job training and arranged by school's job placement officer obtained the least percentage. Some of the engineering graduates before they ended the training in the company where they served as OJTs, they were advised to continue their service as employee. This implies that graduates really tried their best effort to land get their jobs on their own where independence is being emphasized and practiced.

Majority of the employed graduates with 46.67 percent found their present job almost 1 to 6 months after graduation followed by less than a month with 32 percent and 7 – 11 months with 16.67 percent. There were 4 percent of them who reached 1 year to less than 2 years and 0.67 percent for 2 years to less than 3 years before they landed their present job. It is good to know that nobody reached 3 to 4 years unemployed.

Table 10. Frequency Distribution of Engineering Graduates In Terms of their Initial Gross Monthly

Initial Gross Monthly Earning in the First Job (in Philippine Peso)	**CpE**	**ECE**	**IE**	**ME**	**f**	**%**
Below P5,000.00	3				3	2.00
P5,000.00 to less than P10,000.00	8	2	5		15	10.00
P10,000.00 to less than P15,000.00	9	12	19	9.0	49	32.67
P15,000.00 to less than P20,000.00	9	9	7	6.0	31	20.67
P 20,000.00 to less than P25,000.00	4	2	5	6.0	17	11.33
P 25,000.00 and above	5	2	7	5.0	19	12.67
No Answer	5	3	8	0.0	16	10.67

Table 10 presents the frequency distribution of Engineering graduates in terms of their job level position and initial gross monthly earning in the first job. Almost 32.67 percent of the employed graduates are earning P10,000.00 to less than P15,000.00 a month while 20.67 percent of them are receiving P15,000.00 to less than P20,000.00 and 12.67 percent with P 25,000.00 and above. However, the least group of graduates are earning P5,000.00 to less than P10,000.00 and Below P5,000.00 with 10 percent and 2 percent of the surveyed graduates, respectively. Majority of the Engineering graduates are earning initial gross for entry level position and through their experience and expertise as engineers in their respective fields, gradually, their income will be considered as competitive salary for engineers. Well-performed skills are the selling values/attributes that employers looking for in the engineering entry level jobs (Yusoff et al., 2012).

Table 11. Frequency Distribution of Engineering Graduates In Terms of Competencies Learned in College They Find Very Useful in Their First Job (N=154)

Competencies Learned in College	**CpE**	**ECE**	**IE**	**ME**	**f**	**%**
Communication skills	29	13	25	11	78	50.65
Human Relations skills	23	10	8	8	49	31.82
Entrepreneurial skills	10	3	3	0	16	10.39
Information Technology skills	25	13	6	10	54	35.06
Problem-solving skills	26	16	8	10	60	38.96
Critical Thinking skills	25	18	13	15	71	46.10

Table 11 presents the frequency distribution of Engineering graduates in terms of competencies learned in college they find very useful in their first job. Engineering graduates found that communication skills they learned from college is the most useful competency in looking for jobs followed by critical thinking skills, problem solving skills and information

technology skills. Entrepreneurial skill is the least useful in finding their first job. Engineering graduates find the Communication skill as very essential, most especially during the interview process where they need to impress the interviewee regarding their knowledge and skills acquired in college.

Table 12. Relevance of School Related Factors to the Job Placement of Respondents when it comes to Curriculum in Terms of General Education Subjects

General Education Subjects	**CpE**	**ECE**	**IE**	**ME**	**WM**	**VI**	**Rank**
Mathematics	3.20	3.17	3.40	3.40	3.29	Relevant	1
Languages	3.22	3.00	3.60	3.30	3.28	Relevant	2
Natural Sciences	2.74	2.83	3.07	3.30	2.99	Relevant	3
Composite Mean	3.05	3.00	3.36	3.33	3.19	Relevant	

Table 12 presents the relevance of school related factors to the job placement of respondents when it comes to curriculum in terms of General Education Subjects. Mathematics is the foremost relevant to the job placement of engineering graduates when it comes to curriculum under the general education subjects followed by languages; while natural sciences are considered relevant with the least weighted mean score. Math is the language of engineers, so it is not surprising anymore to emerge it on top of all the items. Languages helped them survived to properly and effectively communicate the day-to-day activities in the organization. They considered languages as relevant due to its usefulness in conveying accurate information which is always necessary in all work place. Language proficiency is viewed as a necessary component of training, it is often considered of secondary importance and not as crucial to intercultural effectiveness as cross-cultural competence, which is comprised of a broader, more generalizable skill set than the time-extensive, perishable skill set of language proficiency (Watson, 2007).

Table 13. Relevance of School Related Factors to the Job Placement of Respondents when it comes to Curriculum in Terms of Computer Engineering Professional Subjects

CpE Professional Subjects	**WM**	**VI**	**Rank**
1. Computer Programming	2.99	Relevant	4
2. MS Office Applications	3.73	Very Relevant	1
3. Computer System Architecture	2.95	Relevant	5.5
4. Computer Troubleshooting/ Maintenance	3.24	Relevant	2
5. Microprocessor System	2.67	Relevant	9
6. Logic Circuit & Switching Theory	2.46	Slightly Relevant	12
7. Software Engineering/Development	2.93	Relevant	7
8. Data Communications/CISCO Networking	2.95	Relevant	5.5
9. Control Systems	2.75	Relevant	8
10. Electronics/Electricity	2.55	Relevant	11
11. Engineering Economy	2.63	Relevant	10
12. Engineering Management	3.21	Relevant	3
Composite Mean	**2.95**	Relevant	

Table 13 presents the relevance of school related factors to the job placement of respondents when it comes to curriculum in terms of Computer Engineering Professional Subjects. MS Office application is considered very relevant in the job placement of the computer engineering graduates due to the high demands of the companies for computer literate applicants. Computer Troubleshooting/ Maintenance is another relevant part of the

curriculum to their job placement because of their computer hardware skill which is also necessary as part of their technical skill in maintaining the efficiency and performance of the computer system. Engineering management is another closely relevant to the top two courses mentioned which is also necessary in sustaining proper managing of resources such as materials and people inside the organization. Computer programming, system architecture and CISCO networking listed before software engineering, control system, microprocessor system, engineering economy and electronics while logic circuit and switching theory considered slightly relevant with least weighted mean score.

The composite mean score of 2.95 implies that the computer engineering curriculum in terms of professional courses is generally relevant to the job placement of the computer engineering employed graduates. Engineers need to be competent in their technical work (Yusoff et al, 2012).

Professional education is the principle means of the developing the human resource. Students who do not perform well in professional courses are not in any way better than those who do not have professional knowledge, because their chances of employment and efficient working are bleak (Khan, 2009).

Table 14. Relevance of Professional Subjects of Electronics Engineering to their Job Placement

ECE Professional Subjects	**WM**	**VI**	**Rank**
1. Electronics	3.33	Relevant	1
2. Logic Circuit & Switching Theory	3.08	Relevant	4
3. Microprocessor System	2.83	Relevant	7.5
4. Digital Communications	3.17	Relevant	2
5. Control Systems	3.08	Relevant	4
6. Engineering Circuits/Energy Conversion	3.08	Relevant	4
7. Spectra and Signal Processing	2.58	Relevant	10
8. Transmission Media and Antenna System	2.75	Relevant	9
9. Principles of Communications	2.83	Relevant	7.5
10. Data Communications	2.92	Relevant	6
Composite Mean	**2.97**	Relevant	

Table 14 presents the relevance of school related factors to the job placement of respondents when it comes to curriculum in terms of Electronics Engineering Professional Subjects. Electronics is considered the foremost relevant to the ECE employed graduates followed by Digital Communications, Logic Circuit and Switching Theory, Control Systems and Engineering Circuits/Energy Conversion. However, Microprocessor System, Principles of Communications, Transmission Media and Spectra and Signal Processing were considered the least relevant professional subjects to their job placement. The composite mean score of 2.97 implies that the ECE curriculum is considered relevant to the present employment of the ECE graduates. Employers in the engineering firm seem to be more interested in graduates who have high level of competency and sufficient knowledge of science and engineering principles (Yusoff et al., 2012).

Table 15. Relevance of Professional Subjects of Industrial Engineering to their Job Placement

IE Professional Subjects	WM	VI	Rank
1. Industrial Materials & Processes	3.47	Relevant	5
2. Time and Motion Study	3.33	Relevant	7.5
3. Facilities Planning and Design	3.60	Very Relevant	3
4. Industrial Quality Control	3.80	Very Relevant	1
5. Ergonomics	3.53	Very Relevant	4
6. Operations Research	3.40	Relevant	6
7. Production Systems	3.33	Relevant	7.5
8. Accounting	2.67	Relevant	10
9. Systems Engineering	3.27	Relevant	9
10. Personnel Management	3.73	Very Relevant	2
Composite Mean	**3.40**	Relevant	

Table 15 presents the relevance of school related factors to the job placement of respondents when it comes to curriculum in terms of Industrial Engineering Professional Subjects. Industrial Quality Control, Personnel Management, Facilities Planning and Design as well as Ergonomics were considered very relevant to their job placement. On the other hand, Time and Motion Study, Production Systems, Systems Engineering and Accounting were considered the least relevant to their present employment. The composite mean score of 3.40 implies that the IE Curriculum is considered relevant to the job placement of IE graduates. Professional competencies are a key factor in gauging how employable a graduate is (Teijeiro et al., 2013) therefore, wide understanding and application of the professional courses would mean better job opportunities for the graduates wherein knowledge in Industrial Quality Control is one of the important areas of inspection that needs critical re-examination of products to ensure quality products that is necessary be addressed by the academic institutions offering engineering programs. Chandra (2001) noted that the industrial engineers can facilitate technological advancement through initiatives and innovations by educating and training and by encouraging learning by doing in the organization.

Table 16. Relevance of Professional Subjects of Mechanical Engineering to their Job Placement

ME Professional Subjects	WM	VI	Rank
1. Machine Design	3.10	Relevant	6
2. Refrigeration System	2.80	Relevant	9.5
3. Air-conditioning and Ventilation	3.00	Relevant	7
4. Fluid Machinery	3.40	Relevant	3
5. Vibration Engineering	2.90	Relevant	8
6. Industrial Plant Engineering	3.50	Very Relevant	1.5
7. Power Plant Engineering	3.50	Very Relevant	1.5
8. Machine Elements	3.20	Relevant	5
9. Electronics and Electricity	2.80	Relevant	9.5
10. Thermodynamics	3.30	Relevant	4
Composite Mean	**3.19**	**Relevant**	

Table 16 presents the relevance of school related factors to the job placement of respondents when it comes to curriculum in terms of Mechanical Engineering Professional Subjects. Industrial Plant Engineering and Power Plant Engineering were considered very relevant to the job placement of ME graduates followed by Fluid Machinery, Thermodynamics and Machine Elements. However, Vibration Engineering, Electronics and Electricity as well as

Refrigeration System were considered the least relevant to the present employment of the ME graduates.

The composite mean score of 3.19 implies that the ME Curriculum is considered relevant to the job placement of the ME graduates. Industrial visits represent an important activity in any engineering undergraduate program that contributes to the achievement of various essential learning outcomes and program objectives (Al-Atabi et al, 2013).

Proposed Program

The proposed program is focused on developing the students' capability to obtain jobs related to Engineering. The College of Engineering is strengthening its programs of curricular offerings and activities to meet the standard of growing industries of engineering and technology. With the support of faculty members and administration, the proposed program would be realized to further enhance the employability and productivity of the LPU Engineering graduates.

The proposed program aimed to enhance the knowledge, attitude and skills of the students through getting them involved in seminars, workshops, educational tours and extensive trainings on Language proficiency, leadership capability, and values formation related to work environment as well as their technical aspects related to their respective disciplines.

CONCLUSIONS

There were 95.54 percent gainfully employed engineering graduates from 2009 to 2012 with regular status working as associate professionals in the Philippine manufacturing companies related to their college degrees who found their first job as walk-in applicants and stayed on their jobs for more than three (3) years. Career challenge is foremost reason of the engineering graduates for accepting and staying for the job and majority of them were receiving almost P10,000 to less than P15,000 per month.

Communication skill is considered the foremost competency learned in college that found very useful to their job placement along with hard work, professional integrity, perseverance, love for God, efficiency and supportiveness to their present job. Mathematics is deemed to be the foremost relevant general education course to the job placement of engineering followed by languages. In terms of professional courses, MS Office Application is considered very relevant for CpE followed by Computer Troubleshooting/ Maintenance; electronics and digital communications for ECE; Industrial Quality Control and personnel management for IE; and Industrial and Power Plant Engineering for ME.

The employment rate of Engineering from 2009 – 2012 of LPU is considered employable and this study aimed to propose a program that would enhance the future employment ratings of its graduates.

RECOMMENDATIONS

Department Chairs must informally monitor the employment status of the graduates several months after graduation to have an updated annual employment rating and they should not wait for three to four years before conducting another tracer study. The university must

strengthen its job placement program through sending letter of recommendations to industry linkages to assist the graduates for their potential employers.

Communication skill must be further intensified especially to engineering students whose field of specialization is not directly associated to writing and public speaking. This can be achieved through giving them enough classroom exercises and activities designed to enhance the confidence of the students in both writing and oral communications.

Engineering students must also be encouraged to pursue advanced studies through attending graduate school and participating actively in various professional organizations as one of the measures of Program Educational Objectives.

Faculty Members teaching mathematics must prove to the students its significance, relevance and usefulness to future employment so that they would have better understanding and enhanced interest towards developing their problem solving and analytical thinking skills. Meanwhile, Faculty members who are teaching professional courses must update their technical skills related to the subjects being taught through attending seminars and conferences as well as enhancing their teaching methodologies aligned with Outcomes-Based Education requirements.

Incorporate methods of research in software engineering subject, design project and feasibility study.

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