UNIVERSITY OF SAINT LOUIS
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EMPLOYABILITY OF ENGINEERING GRADUATES

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ABSTRACT

This study assessed the employment status of Civil Engineering, Electrical Engineering, Electronics Engineering and Computer Engineering graduates for the past five years from SY 2011-2012 to SY 2015-2016 and the skills and competencies acquired in the University with the competencies desired in the industry. The results of a survey from 94 civil engineering, 39 electrical engineering, 105 electronics engineering, and 63 computer engineering graduates of the University of Saint Louis indicate that the majority are employed and able to get employed. They are working in industries where their course or expertise is directly aligned. The survey revealed that flexibility and work ethics skills are the soft skills/competencies that are useful in the present job of CE, EE and ECE graduates while computer skills and communication skills are the most useful soft skills for computer engineering graduates. Meanwhile, among the respondents, project management is the most useful hard skill in their present job.

Keywords: *employability, skills/ competencies, engineering graduates*

INTRODUCTION

Upon completing a college degree, each graduate's goal is to look for possible jobs. This is their next ultimate objective in life, to sustain or support families ' needs within the Filipino culture (Chavez, Camello, & Pamplona, 2016). However, graduates face the challenge of getting jobs right after graduation. To reach the workplace they dream of, it is important that they have acquired the strongest knowledge and skill in their area of specialization in their respective schools. A school plays a major role in offering higher education for students who ultimately become professionals with full experience in their subject areas (Ballon, 2007). It has also become a common belief in the industry that academic institutions especially Higher Educational Institutions (HEI) are then required to produce not only knowledgeable graduates but also skilled graduates (De Chavez, Lumanglas, Rondilla, Salcedo, & Caiga, 2016; Laguador, 2013) to ensure high employability.

With the challenge of getting jobs right after graduation, higher education is mandated to offer courses to provide students with the necessary tools which will enable them to develop their employability skills, heighten their awareness of these skills and improve their ability to articulate them. Employability skills are the transferable skills needed to make a person employable. Besides good technical expertise and experience, managers also demand a set of skills from an individual they desire (Asonitou, 2015). These acquired skills must be honed throughout one's working life, practicing it not only in job search but also in the growth of personalities and in taking advantage of opportunities for work experience (Debono, Debono & Caruana, 2005). Moreover, career and employability skills in schools should also be taught, since many students leave school without the necessary qualifications to succeed in the world of adult work. (Zinser, 2003).

Furthermore, it is worth pointing out that graduates should leave higher education better in many ways than when they enter it (Washer, 2007).

Employability skills may not be highly advanced or learned for a long time, but are normally required by employers or necessary in a type of job. It is safer for organizations to employ people who have had previous work or have been out of work for a short time. Employers are generally looking for graduates who possess communication and interpersonal skills, skills in problem-solving, and the ability to adapt to all kinds of situations in the workplace. No matter what kind of job the employee has to perform, these employability skills can be considered as the underpinning skills applied across the board (Chan et al., 2018). Aside from soft skills, employers expect graduates to have technical and discipline competences from their degrees (Lowden, et al., 2011). This new trend remains unfamiliar to most of students, and sometimes does not demonstrate the relation of what they are doing with the actual world of work that they will eventually join.

It is in this light that this study is undertaken to determine the status of employability of Civil Engineering, Electrical Engineering, Electronics Engineering and Computer Engineering graduates of the University of Saint Louis (USL). This study also aimed to identify the skills or competencies useful in their present job.

Research Objectives

The aim of this study was to determine the employability of graduates of Bachelor of Science in Civil Engineering from SY 2013-2014 to SY 2017-2018 and Bachelor of Science in Electrical Engineering, Bachelor of Science in Electronics Engineering, Bachelor of Science in Computer Engineering from SY 2011-2012 to SY 2013-2014. Specifically, it addresses the following objectives:

1. To determine the employment status of engineering graduates.
2. To identify the soft and hard skills useful in their present employment.
3. To assess the Engineering programs of USL in relation to the hard and soft skills acquired in the University with the competencies needed by the industry.
4. To identify the areas for further improvement of the program and the University.

Significance of the Study

In order to meet the criteria of globalization, the research aims to develop awareness about the need for the use of tracer studies to improve the quality of HEIs courses. The results will lead to enriching the curricula as well as developing college students through the leaders, educators, and policy-makers of the School of Engineering, Architecture and Information Technology Education and the University of Saint Louis. It also provides students with information on which specific skills and competencies to improve and strengthen so that their chances of getting job increases.

Research Paradigm

The paradigm in Figure 1 shows that the Electrical Engineering, Electronics Engineering and Computer Engineering graduates are provided with responsive curriculum and quality instruction to acquire the required skills and competencies needed by the industry.

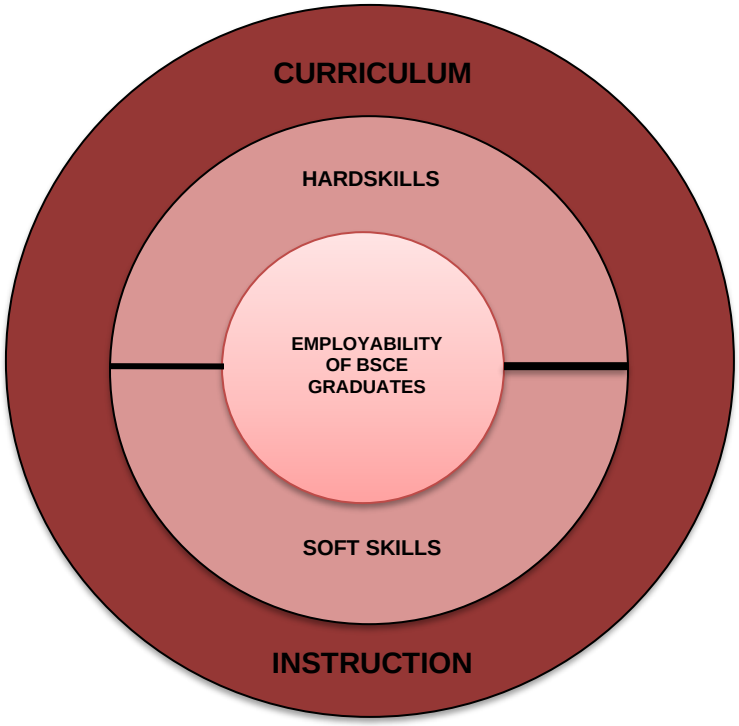

Figure 1. Research Paradigm

METHODS

The descriptive survey method was used in the study. The respondents were the graduates of the Civil Engineering program from SY 2013-2014 to SY 2017-2018 and graduates of and Bachelor of Science in Electrical Engineering, Bachelor of Science in Electronics Engineering, Bachelor of Science in Computer Engineering from SY 2011-2012 to SY 2013-2014. A total of 94 civil engineering, 39 electrical engineering, 105 electronics engineering, and 63 computer engineering graduates were traced using the Google Form Tracer Survey questionnaire. The link of the survey questionnaire was sent to graduates through e-mail, social network and through the students of the university who are friends and relatives of the graduates. Google Form was used so that graduates especially those working outside Tuguegarao can conveniently answer.

The questionnaire includes the employment status of graduates and the skills and competencies acquired in school in terms of soft and hard skills. It also includes recommendations and suggestions to further improve the Civil Engineering program of the university. The questionnaire was validated by the University Research and Development

Council (URDC) before it was distributed to the graduates. Descriptive statistics such as frequency, percentage, and ranks were used to analyze data.

RESULTS AND DISCUSSION

Table 1. Status of Employment of Graduates in terms of Present Occupation

Employment Status		CE		EE		ECE		CpE	
		f	%	*f*	%	*f*	%	*f*	%
Employed	Managerial	9	9.57	0	0	29	27.62	3	4.76
	Non-Managerial	76	80.85	39	100	64	60.95	55	87.30
Self-Employed		4	4.26	0	0	1	0.95	4	6.35
Not Employed		3	3.19	0	0	9	8.57	1	1.59
Never Employed		2	2.13	0	0	2	1.90	0	0
Present Employment Status	Regular or Permanent	30	35.29	24	61.54	63	80.77	33	56.89
	Temporary/ Probationary	16	18.82	4	10.26	1	1.28	5	8.62
	Casual/ Contractual	39	45.88	11	28.21	14	17.95	20	34.48
Place of Work	Local	89	100	39	100	76	95	62	100
	Abroad	0	0	0	0	4	5	0	0

It can be gleaned in Table 1 that the majority of the graduates traced are employed and are working locally. Most of the civil engineering graduates are with casual or contractual status (45.88%) because they are still in the early years of their career and there are no suitable openings yet. The close number of regular employees (35.29) among the civil engineering graduates, however; shows that these casual or contractual graduates are gradually being absorbed when a suitable opening arose which is in line with previous studies (Wandera, 2011; Bekal & Warrier, 2017). For the other engineering courses, most graduates are now regular or permanent employees.

A small number of respondents are self-employed who manage their own business and serve as a supplier of materials and equipment sold in their respective fields. The result ties well with previous studies (Chavez et al., 2016; Dotong et al., 2016) wherein engineering graduates rarely start putting up their own business. Table 1 further shows that there are few who are not employed because they are pursuing post-graduate studies while others are not presently employed due to family concern. This affirms the result of previous studies (Laguador, & Dotong, 2013; Dotong et al., 2016) that graduates were not employed because of family concerns.

Table 2. Waiting Time of CE Graduates to Get Employed

Length of time to get employed	CE		EE		ECE		CpE	
	f	%	*f*	%	*f*	%	*f*	%
1 - 3 months	2	2.22	0	0	4	4.88	28	45.16
4 – 6 months	17	18.89	2	5.13	17	20.73	22	35.48

7– 9 months	48	53.33	33	84.62	19	23.17	10	16.13
More than 9 months	23	25.56	4	10.26	42	51.22	2	3.23
Average waiting time	**8.7 months**		**7.5 months**		**9.75 months**		**4 months**	

Table 2 shows that the civil engineering, electrical engineering, and electronics engineering graduates were able to find a job after 6 months because they still have to undergo board exam review for six months and take the licensure examinations before they start looking for a job. A similar pattern of results was obtained in the studies of Chavez et al. (2016) and Niguidula (2007). The average waiting for computer engineering graduates to find a job is lesser than the other programs because currently, there is no licensure examination for computer engineering. Most of the CpE graduates immediately find a job right after graduation while others takes exam for certifications such as CCNA and Microsoft related certificates (Hopkins, Pickard, & Patrick, 2014).

Table 3a. Nature of Job of CE Graduates

Nature of Job	Frequency	Percentage
Technical	**84**	**94.38**
Cost Engineer	1	1.12
Office Engineer	2	2.25
Project Engineer	18	20.22
Project Manager	7	7.87
QA/QC Engineer	4	4.49
Quantity Surveyor	2	2.25
RMC Operator	1	1.12
Safety Officer	1	1.12
Steel Detailer	1	1.12
Structural Design Inspector	2	2.25
Structural Designer	3	3.37
Government Engineer	42	47.19
Business	**2**	**2.25**
Academe	**2**	**2.25**
Government Services	**1**	**1.12**

As shown in Table 3a, the majority of the graduates (94.38%) held technical positions. Almost half (47.19) of them are doing technical works in government institutions like DPWH, DepEd and Municipal LGUs. These civil engineers are usually assigned to oversee on-going projects of their respective institutions while others do some office works. The other graduates who do technical works are currently under private companies to which their expertise is directly aligned (e.g. project engineer, quality assurance/quality control engineer, structural designer, etc.). Overall these findings are in accordance with findings reported by Aquino et al., (2015) wherein most graduates held positions related to the course they finished. Even though, there are some who do not do technical works they are still practicing their civil engineering profession as a businessman, teachers, and fire officer.

As shown in Table 3b, the majority (82.05%) of the graduates are doing technical works and assigned as Electrical Design Engineer, Project Manager, QA/QC Engineer, and Safety Officer. About 5% of the graduates are in government service as police officers and fire officers. A small number of graduates (7.69%) are doing business while there were some electrical engineering graduates who choose the teaching career. This is not new for engineers as reported by Muller, Shaharabani, and Shacham, (2014) because they wanted to help students, share some of what they had gained from their dedicated teachers, and make schools better.

Table 3b. Nature of Job of EE Graduates

Nature of Job	Frequency	Percentage
Technical	**32**	**82.05**
Electrical Design Engineer	13	33.33
System Engineer	1	2.56
Cost Engineer	2	5.13
Office Engineer	2	5.13
Project Engineer	2	5.13
Project Manager	7	17.95
QA/QC Engineer	3	7.69
Safety Officer	2	5.13
Government Services	**2**	**5.13**
Business	**3**	**7.69**
Academe	**2**	**5.13**

Table 3c. Nature of Job of ECE Graduates

Nature of Job	Frequency	Percentage
Technical	**63**	**88.73**
Service Engineer	10	14.08
Software Engineer	8	11.27
Network Engineer	5	7.04
Design Engineer	5	7.04
Quality Assurance/ Control Engineer	5	7.04
Site/Field Engineer	4	5.63
Systems Engineer	4	5.63
Project Engineer	4	5.63
Biomedical Engineer	3	4.23
Support Engineer	3	4.23
Voice Engineer	3	4.23
Telecom Engineer	3	4.23
Cadet Engineer	2	2.82
Production Engineer	1	1.41
Account Engineer	1	1.41
Research and Development Engineer	1	1.41
Plantation Engineer	1	1.41

Government Services	**3**	**2.82**
Trade and Industry	**4**	**7.05**
Academe	**1**	**1.41**

Table 3c provides data on the present occupation of employed ECE respondents. The majority of the respondents held technical positions. Technical positions refer to work in relation to Software Engineering, Service Engineering, Quality Control /Quality Assurance Engineering and Design, and Network Engineering. The rest are employed in the trade and industry, government service and the academe. Trade and industry refer to job-related to electronics. The different kinds of technical works presented in the table show that electronics engineering graduates have a wide range of jobs that they can apply to after graduation (Dahiya & Nehra, 2015).

Table 3d. Nature of Job of CpE Graduates

Nature of Job	Frequency	Percentage
Technical	**38**	**61.29**
Data Analyst	4	6.45
I.T. Engineer/Specialist	6	9.68
Network Engineer/Admin	8	12.90
Production Engineer	2	3.23
Quality Assurance Engineer	3	4.84
Research and Development Engineer	1	1.61
Systems/Software Engineer	10	16.13
Technical Support Engineer	3	4.84
Test Engineer	1	1.61
Government Services	**16**	**25.81**
Administrative Aide	9	14.52
Police	3	4.84
Office Clerk	2	3.23
Fire Officer	2	3.23
Education Related	**3**	**4.84**
Instructor	1	1.61
Laboratory In charge	2	3.23
Business Related	**5**	**8.06**

As seen from Table 3d, the natures of the job of the CpE graduates are categorized into four which are technical, government, business, and education which includes those graduates who are employed as Instructors and Laboratory-in-charge. Furthermore, 61.29% of the graduates are employed in technical related jobs while 25.81% are employed in the government. The technical related jobs listed prove that CpE professional subjects are relevant to their job placement. These findings of the present study are supported by previous studies (Zainab, 2004; Selvadurai et al., 2012) wherein relevance of the courses undertaken in the program influenced and ascertained the employability of graduates.

Other graduates are employed in education (4.84%), and business (8.06%). The technical category includes those working in tech companies such as Fujitsu, IBM, Accenture, Smart,

PLDT, Globe, Samsung, SM, and others. Government category includes graduates working in government agencies such as City government, Provincial government, Cagayan Valley Medical Center (CVMC), Department of Agriculture (DA), Department of Budget and Management (DBM), Philippine Navy, Philippine National Police (PNP), and Fire Bureau. In the education-related jobs, CpE graduates are employed in academic institutions such as the University of Saint Louis. In the business category, CpE graduates are managing their own computer shop and some are engaged in business networking such as AIM global and Front Row.

Table 4a. Soft Skills Learned in College and Useful in Present Job by CE Graduates

Soft Skills/Competencies	Learned in College		Useful in Present Job	
	frequency	rank	frequency	Rank
Communication Skills	72	4	78	5
Analytical Skills	**76**	**2**	77	7
Human Relation Skills	66	6	73	11
Commitment to Work	56	14	**79**	**3**
Problem-Solving Skills	**79**	**1**	72	14
Decision Making Skills	60	11	77	7
Critical thinking skills	66	6	**79**	**3**
Creative thinking skills	60	11	73	11
Supervisory skills	48	15	71	15
Self-directed learning	57	13	76	9
Teamwork	68	5	78	5
Work Ethics	63	8	**80**	**2**
Flexibility	63	8	**81**	**1**
Resource Management Skills	61	10	73	11
Computer skills	**73**	**3**	76	9

Table 4a presents the soft skills learned in college and are useful in the present job of graduates. The problem-solving skills, analytical skills, and computer skills were the primary skills that the graduates learned in college. The graduates were trained in the university to have a very high problem-solving skill because the development and use of problem-solving skills also improve learning (Moorthi, 2018). However, it appeared that other skills were useful in their present job. The top soft skills that are useful in the present job of the graduates are flexibility, work ethics, commitment to work and critical thinking skills. Flexibility is the most useful soft skills among graduates as it is one of the most powerful drivers of retention and engagement today (Lingle, 2005). Moreover, it is empirically linked to higher levels of productivity, resilience and shareholder value (Jeffrey Hill et al., 2008). These results go beyond previous reports, showing that communication skill is the most common useful ability of the engineering graduates in their job placement (Chavez, et al., 2016; Dotong et al., 2016; Laguador, & Dotong, 2013; Niguidula, 2007).

Table 4b reflects the soft skills learned in college and are useful in the present job of EE graduates. It shows that the top 3 soft skills learned in college are problem-solving skills, analytical skills, and computer skills. Different skills are found to be useful in the present job of the graduates. Flexibility, decision-making skills, and work ethics are the soft skills that are found

to be useful by the EE graduates. These were also the soft skills that were found to be useful by the CE graduates except for decision-making skills. Decision-making skill is one of the most important soft skills that a graduate should have after graduation but it had been previously considered to be unreachable. It was thought that this skill was acquired over the course of time, and dependent on age (Colakkadioglu, & Celik, 2016).

Table 4b. Soft Skills Learned in College and Useful in Present Job by EE Graduates

Soft Skills/Competencies	Learned in College		Useful in Present Job	
	frequency	rank	frequency	Rank
Communication Skills	24	5	20	4
Analytical Skills	**31**	**2**	14	6
Human Relation Skills	18	7	12	7
Commitment to Work	9	10	10	8
Problem-Solving Skills	**34**	**1**	19	5
Decision Making Skills	8	11	**23**	**2**
Critical thinking skills	21	6	20	4
Creative thinking skills	6	11	7	9
Supervisory skills	1	13	1	11
Self-directed learning	5	12	5	10
Teamwork	24	5	20	4
Work Ethics	15	8	**22**	**3**
Flexibility	27	4	**27**	**1**
Resource Management Skills	12	9	5	10
Computer skills	**30**	**3**	19	5

Table 4c. Soft Skills Learned in College and Useful in Present Job by ECE Graduates

Soft Skills/Competencies	Learned in College		Useful in Present Job	
	frequency	rank	frequency	Rank
Communication Skills	73	5	79	4
Analytical Skills	**83**	**2**	79	4
Human Relation Skills	65	7	73	6
Commitment to work	60	10	76	5
Problem-solving Skills	84	**1**	79	4
Decision-making Skills	67	6	**82**	**2**
Critical Thinking Skills	73	5	79	4
Creative Thinking Skills	73	5	81	3
Supervisory Skills	41	12	65	8
Self-directed learning	62	9	73	6
Teamwork	76	4	79	4
Work Ethics	67	6	**83**	**1**
Flexibility	63	8	**83**	**1**
Resource Management Skills	52	11	71	7

Computer Skills	**78**	**3**	**81**	**3**

Table 4c shows that problem-solving skills, analytical skills, and analytical skills were acquired during their college days, however, the most useful in their present job are work ethics, flexibility, decision-making skills, and computer skills. Computer skills are the only top soft skill that they learned in college and at the same time useful in their present job. This implies that the university makes sure that students are equipped with the computer skills needed for job placement. Computer literacy is considered a very important skill to possess. Employers want their workers to have basic computer skills because their company becomes ever more dependent on computers (Ciampa, 2013).

Table 4d presents the soft skills of computer engineering graduates learned in college and is useful in the present job of graduates. The computer skills, analytical skills, computer skills, and problem-solving skills were the primary skills that the graduates learned in college. It also appears that these skills were useful in their present job. This shows that the computer engineering program is successful in equipping their graduates with the right set of soft skills after graduation because the skills or competencies learned are already manifested among the students as they play their respective functions or tasks in their workplace which is likely the same skills required in their jobs. Furthermore, this confirms the results of the study of Singh (2008) that the competencies learned in college that are found very useful were communications skills, computer skills, and problem-solving skills.

Table 4d. Soft Skills Learned in College and Useful in Present Job by CpE Graduates

Soft Skills/Competencies	Learned in College		Useful in Present Job	
	frequency	rank	frequency	Rank
Communication Skills	**39**	**3**	**38**	**2**
Analytical Skills	**42**	**2**	**35**	**3**
Human Relation Skills	33	6	23	7
Commitment to Work	10	10	23	7
Problem-Solving Skills	**45**	**1**	15	9
Decision Making Skills	20	9	20	8
Critical thinking skills	38	4	**35**	**3**
Creative thinking skills	31	7	25	6
Supervisory skills	5	12	5	11
Self-directed learning	7	11	29	5
Teamwork	35	5	15	9
Work Ethics	31	7	15	9
Flexibility	35	5	30	4
Resource Management Skills	25	8	11	10
Computer skills	**45**	**1**	**47**	**1**

Table 5a. Hard Skills in Civil Engineering that are Useful in Present Job

Hard Skills	Learned in College		Useful in Job	
	frequency	Rank	frequency	Rank
Structural Design	**77**	**1**	58	5
Transportation System Design	55	9	30	12
Water Resources Design	59	7	32	11
Geo-technical and Geo-Environmental Design	**66**	**3**	45	9
Project Management	60	6	**66**	**3**
Contract, Packaging and Procurement Planning	41	11	52	7
Project Cost Estimation	65	4	66	3
AutoCad Operation	**75**	**2**	**69**	**1**
Technical Support	51	10	58	5
Marketing of Products	28	13	28	13
Safety Management	65	4	**68**	**2**
Research and Development in CE	58	8	39	10
Project Bidding	31	12	51	8

Table 5b. Hard Skills in Electrical Engineering that are Useful in Present Job

Hard Skills	Learned in College		Useful in Job	
	frequency	Rank	frequency	Rank
Electrical System Design	**33**	**1**	**34**	**1**
Power System Design	25	4	23	4
Project Management	**31**	**2**	**30**	**3**
Electrical Machine Design	19	6	20	6
Electrical Wiring and Installation	**28**	**3**	**33**	**2**
Electrical Erection and Supervision	22	5	**30**	**3**
Testing Inspection and analysis of electrical system equipment and device	22	5	22	5
Electrical Equipment manufacturing and repair	19	6	19	7
Electrical system automation	7	8	11	8
Sales/Marketing skills	8	7	10	9

As seen from Table 5a, the top three hard skills learned in school by CE graduates are structural design, AutoCad operation, and geo-technical and geo-environmental design whereas the top three hard skills found to be useful to the present job of graduates are AutoCad operation, safety management, and project management. Among the hard skills, only AutoCad operation is the primary skill that was taught to the students and use in the present job. The ability to operate AutoCad is important for civil engineering graduates because AutoCAD is the most

widely used drawing tool among similar design drawing products (Zhang, & Gu, 2017). Safety management was also one of the most important skills among the graduates in their present job. This can be attributed to the fact that safety management is an important element that will approve the effective management of an organization (Ahmad Razali, 2018).

Table 5b shows that the top three hard skills learned in school by EE graduates are Electrical system design, project management, and electrical wiring and installation and these are also the hard skills that are important in their present job. This means that the electrical engineering program has prepared its graduates with the technical skills needed for job placement. The electrical system design was the primary hard skill learned in college and at the same time useful in the present job of EE graduates. This is a very important skill since every electrical installation be it residential, commercial or industrial buildings it is preceded by a careful plan or design (Adelakun, Olanipekun, & Asogba, 2020).

Table 5c. Hard Skills in Electronics Engineering that are Useful in Present Job

Hard Skills	Learned in College		Useful in Job	
	frequency	Rank	frequency	Rank
Electronic Components, Equipment, Systems, and Process Design and Development	**74**	**1**	**31**	**3**
Electronics Inspection and Evaluation	51	5	30	4
Electronic Instruments and Systems Installation	50	6	25	8
Radios and Other Communication and Electronic System Troubleshooting	47	7	**31**	**3**
Software and System Design and Development	36	12	21	11
Electronic Design and Modeling Simulation	46	8	17	12
Communication Network Planning and Design	47	7	23	9
Computer Networking	44	10	27	6
Printed Circuit Board (PCB) Repair	58	4	16	13
Reading of Schematic Diagram	**60**	**2**	29	5
Project Management	46	8	**44**	**1**
Technical Support	37	11	**40**	**2**
Semiconductor Device Fabrication/Manufacturing	35	13	10	14
CAD-Tool Design	**59**	**3**	26	7
Computer Programming	45	9	22	10

Table 5c shows that project management is the most useful hard skill in the present job of ECE graduates. However, project management has not been prioritized during their stay in the college. Project management refers to the discipline of initiating, planning, executing, monitoring and controlling, and closing the work of a team to achieve specific goals and meet specific success criteria (Khamaksorn, 2016).

As seen from Table 5d, the top three hard skills learned in school by CPE graduates are computer programming, computer network designing, knowledge in computer hardware architecture, and implementing and testing computer-based hardware whereas the top three

hard skills found to be useful to the present job of graduates includes computer programming, designing, coding, and testing software and software test procedures. Among the hard skills, computer programming is the skill both common in skills taught in university and useful in the graduates' present job. This implies that the computer engineering program has ensured that graduates will have the necessary skill in computer programming. Skill in computer programming is very important because of today's rapidly changing and competitive environment that requires basic computer programming skills to stay abreast of the job market (Smith & Ali, 2014).

Table 5d. Hard Skills in Computer Engineering that are Useful in Present Job

Hard Skills	Learned in College		Useful in Job	
	frequency	Rank	frequency	Rank
Computer programming	**31**	**1**	**26**	**1**
Computer trouble shooting	22	4	18	5
Design computer network	**25**	**2**	**23**	**3**
Designing, coding and testing software	22	4	**24**	**2**
Software test procedures or scripts	18	5	**23**	**3**
Designing and developing computer-based hardware	15	6	18	5
Implementing and testing computer-based hardware	**23**	**3**	21	4
Knowledge in computer hardware architecture	**25**	**2**	21	4
Sales/Marketing skills	9	7	10	6

Table 6 reveals that the top three areas recommended for further improvement in the University are its curriculum, instruction, and school services. For its curriculum, the graduates recommend that there should be an inclusion of software applications in their major subjects, provision of more seminars for the students to be exposed to different workshops that will enhance their skills, and more time for the OJT program. It is Most of the graduates recommend the inclusion of software applications in their major subjects. A popular explanation is that the use of educational software as a tool in teaching and computerized learning increases the learner's skills that are needed during their study (Stanisavljević-Petrović, 2015). The addition of more hours in the OJT program was also common to the recommendation of the graduates and this confirms the study of Bogdana, et al. (2012), which states that OJT plays an important role for students before they graduate which serves as a venue to practice the concepts and principles they have learned in developing good attitude and work ethics (De Chavez et al., 2016).

Table 6. Recommendations for University Improvement

Recommendations	Frequency	Rank
Curriculum	**107**	**1**
Instruction	**52**	**2**
Physical plant Facilities	18	6
School Services	**20**	**3**
Faculty	17	4
Administration	13	5

For the instruction, it is recommended that the faculty should give hands-on activities in their subjects and not focus only on theoretical aspects to enhance the skills of the students in their respective fields. This should be highly considered by faculty because working in a hands-on way provides a more realistic and exciting experience of the content (Holstermann, Grube, & Bögeholz, 2010). Moreover, many empirical studies provide evidence for the assumption that conducting hands-on activities leads to positive motivational outcomes (Ateş, & Eryilmaz, 2011).

In the school services, the graduates recommend that the university should provide more textbooks and additional laboratory equipment for students to work. Textbooks and laboratory equipment are equally important in college education. Textbooks are used to guide students when analyzing and solving problems in different areas of study and are integral learning tools that help in explaining various concepts and terms (Abuloum, et al., 2019). On the other hand, laboratory equipment is used to enhance student learning (Clough, 2002).

CONCLUSION

The study concludes that the majority of the engineering graduates are employed and are highly employable since they got employed after their licensure examination for BSCE, BSEE and BSEE and after graduation for BSCpE program. This could be attributed to the right set of soft skills and hard skills acquired by graduates while in the university so as to meet the needs of the industry. It can also be inferred that over the years, USL has progressed in creating graduates who are highly competent and ready to work effectively in their respective industries since they are trained holistically in the University.

RECOMMENDATIONS

With all the findings of the study, it is recommended that the University should review the recommendations shared by the engineering graduates. The skills and competencies acquired in the BSCE, BSEE, BSECE, and BSCpE curriculum must be strengthened in relation to the competencies needed in the industry. More software applications should be integrated in teaching the different subjects. The current OJT program of all the engineering programs must also be reviewed and reevaluated. The employability of engineering graduates should be conducted every five years.

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