

## AN EVALUATION OF PROGRAM EDUCATIONAL OBJECTIVES OF ENGINEERING PROGRAMS OF LA SALLE UNIVERSITY-OZAMIZ CITY

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### Highlights

- Program Educational Objectives
- Engineering Programs
- Outcomes Based Engineering Education

### Abstract

The improvement of the quality of engineering education is essential to the colleges and universities which offers engineering programs. One of the measurements to gauge the quality is through the attainment of the Program Educational Objectives of each program. Program Educational Objectives (PEO) is evaluated three(3) to five(5) years after graduation. Accreditation has focused not only on the assessment of objectives and outcomes of engineering programs but also on the evaluation of them and the subsequent efforts towards continuous improvement based on such evaluations . The purpose of this study is to evaluate the achievement of Program Educational Objectives (PEO) of La Salle University- Engineering graduates for at least three years after graduation . It evaluates the attainment of the Engineering graduates vis-à-vis to its Program Educational Objectives. This includes the programs of Civil Engineering, Geodetic Engineering, Electrical Engineering, Electronics Engineering and Computer Engineering. This research employed a descriptive method in gathering the data and utilized the survey questions in collecting data and answers from the respondents through online survey from the alumni. This study has successfully gathered and reported the perceived level of attainment of the Program Educational Objectives of La Salle University's Engineering programs. The results indicated that graduates generally achieved high percentage of attainment in most of the PEO's. But the PEO about global competitiveness and technical competency got the lowest percentange of attainment. This can be addressed by putting an emphasis on specialization tracks in each of the programs. The results will be used to improve the Engineering curriculum of La Salle University-Ozamiz City.

**Key Words: Engineering; Program Educational Objectives;**

**1. Introduction**

To improve the quality of engineering education, academic accreditation of degree programs is becoming an important goal for many institutions. Program Educational Objectives are important as they represent the ultimate goal to judge the quality of a program. They are related directly to student outcomes and the curriculum of a degree program. (Abbadeni, Ghoneim, Alghamdi 2013). Program Educational Objectives (PEO) is evaluated three(3) to five(5) years after graduation (Leonard and Nault, 2004). Accreditation has focused not only on the assessment of objectives and outcomes of engineering programs but also on the evaluation of them and the subsequent efforts towards continuous improvement based on such evaluations (ABET Criteria for Accrediting Engineering Programs, 2012– 2013).

The study of (Suja et. al. 2011) evaluated the achievement of Program Educational Objectives (PEOs) by indirect assessment consists of parents, alumni and employer surveys. This is an indication that the PEOs specified for the program are achieved. This method was used in the Civil Engineering program of the University of Kebangsaan, Malaysia. The study of the Assessment and Evaluation of Objectives and Outcomes for Continuous Improvement of an Industrial Engineering Program by (Min et. al, 2013) applied in Iowa State University, it used constituents of faculty, students, alumni and industries as respondents in their survey. Abbadeni et. al 2013, in his study, it suggests that each period of 2-3 years, there should be an assessment of the attainment of the PEOs defined for the program through different instruments including the advisory board meeting, focus group survey, employers' survey and alumni survey. In Outcome based engineering education OBEE learning environment, the most important stakeholder is students and their input in the continual quality improvement (CQI) process is needed to ensure that the teaching and learning activities are relevant and suitable. The attainment level of the PEOs is examined through the survey results. questionnaire survey with a three-point scale of agree, disagree and neutral. The percentage of a particular finding, with percentage of various elements of the PEOs being rated as 'high (above 70%)', 'medium (50–69%)' and 'low (49% and below)' as a guideline to identify the most vital elements of the PEOs for continuous quality improvement (CQI) in the education system of the engineering program (Tshai K.Y. et al., 2014).

College of Engineering and Architecture of La Salle University offers five Engineering programs; Civil Engineering, Geodetic Engineering, Electrical Engineering, Electronics Engineering ,and Computer Engineering and one Architecture program. The college has not yet been into an evaluation of the Outcomes Based Education since its implementation last 2013. The pursuit of the University to become Autonomous University, the college also strives to reach its goal to become the Center of Excellence and to become accredited in a Philippine Technological Council particularly in the Washington Accord Accreditation. To evaluate its Program Educational Objectives (PEO) is a manifestation of the stride of college to continually meet its commitment to improve the quality engineering education. Accreditation will confirm that the institution or the program meets minimum quality criteria (Brouse, 2007). College of Engineering and Architecture of La Salle University aims to improve the quality of education it gives to its graduates. This study aims to evaluate the achievement of Program Educational Objectives (PEO) of its graduates for at least three years after graduation. In the evaluation, it focused on the trends of the attainment of the Program Educational Objectives ranging from three to six years after graduation. Specifically, from 2012 to 2015

graduates. The evaluation of PEO will make the college improve its areas of instructional quality, research, and extension. It seeks to find its weaknesses as bases for curriculum improvement.

## 2. Methods

This research was conducted at La Salle University through an online survey of the alumni of the College of Engineering and Architecture who are graduates in the following Engineering courses Civil Engineering, Geodetic Engineering, Electrical Engineering, Electronics Engineering, and Computer Engineering. This survey was done online. This study evaluated the PEO of the five engineering programs. For the Program Educational Objective (PEO) this will be tested according to the attainment of the PEO.

To measure the attainment of the Program Educational Objectives, the three-point scale was used in this study:

- 1- Attained – alumni/graduates perceived their attainment of the program educational objectives.
- 2- Not Attained - alumni/graduates do not perceive their attainment of the program educational objectives.
- 3- Undecided – alumni/graduates could not decide if they have attained or not attained the program educational objectives.

This study adopted the percentage rating equivalent in identifying the attainment of the Program Educational Objectives (PEO) as suggested by (Tshai K.Y. et al., 2014)

Table 1. PEO Percentage Rating Equivalent

Above 70%	High
50–69%	Moderate
49% and below	Low

## 3. Results and discussion

The attainment Program Educational Objectives(PEO) is based from the data gathered from the alumni of the five engineering programs of La Salle University who are graduates in 2012 to 2015. The survey was conducted in the later part of 2018. There were 86 graduate respondents; 39 for Civil Engineering, 27 for Electronics Engineering; 12 for Computer Engineering; 2 for Electrical Engineering and 6 for Geodetic Engineering.

Table 2. Program Educational Objectives of BS Civil Engineering

<b>PEO 1</b>	Graduates are globally competent civil engineers with high level of technical expertise in their chosen field of specialization in civil engineering
<b>PEO 2</b>	Civil Engineering graduates exhibit effective communication and management skills
<b>PEO 3</b>	Civil Engineering graduates engage in life-long learning activities and demonstrate a deep sense of social and ethical responsibility.

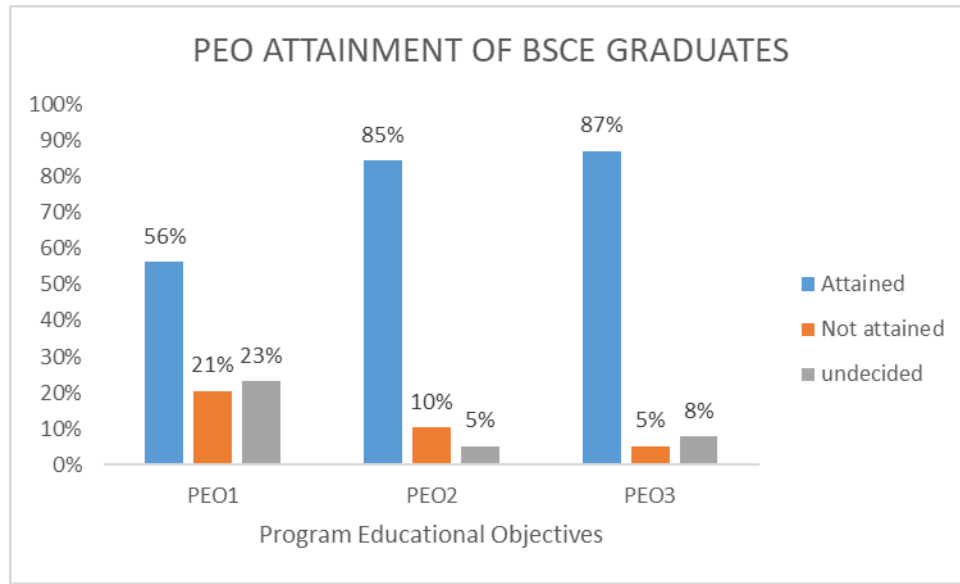


Figure 1. Attainment of PEO of Civil Engineering Graduates

As shown in Figure 1, PEO1 got the moderate attainment of PEO in Civil Engineering graduates while the PEO2 and PEO3 got the high percentage of attainment. The lowest attainment percentage among the three Program Educational Objectives is PEO1 in Civil Engineering. This concerned about acquiring their level of expertise and competency in their chosen field of specializations.

Table 3. Program Educational Objectives of BS Electronics Engineering

<b>PEO 1</b>	Graduates are globally competent Electronics engineers with high level of technical expertise in their chosen field of specialization
<b>PEO 2</b>	Graduates exhibit effective communication and management skills
<b>PEO 3</b>	Graduates engage in life-long learning activities and demonstrate a deep sense of social and ethical responsibility

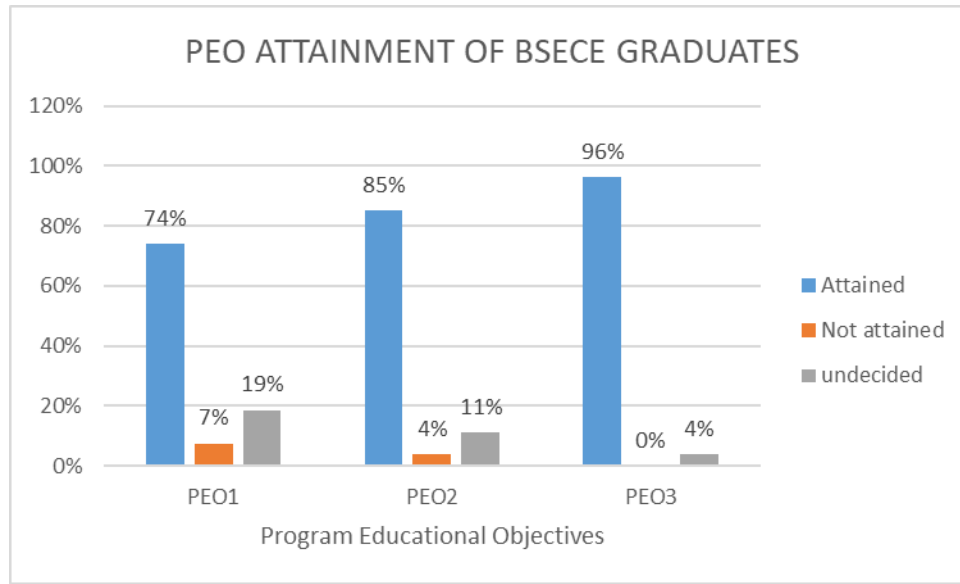


Figure 2. Attainment of PEO 1 of Electronics Engineering Graduates

For the Electronics Engineering program, all the PEO's achieved high attainment as shown in Figure 2. However, the PEO1 which concerns about the global competitiveness and specializations got the lowest percentage of 74%. Meanwhile, PEO3 which concerns about the life-long learning and social and ethical responsibility got the highest percentage of attainment.

Table 4. Program Educational Objectives of BS Computer Engineering

<b>PEO 1</b>	Graduates in Computer Engineering are globally competent with high level of technical expertise in their chosen field of specialization.
<b>PEO 2</b>	Graduates in Computer Engineering exhibit effective communication and management skills.
<b>PEO 3</b>	Graduates in Computer Engineering engage in life-long learning activities and demonstrate a deep sense of social and ethical responsibility.

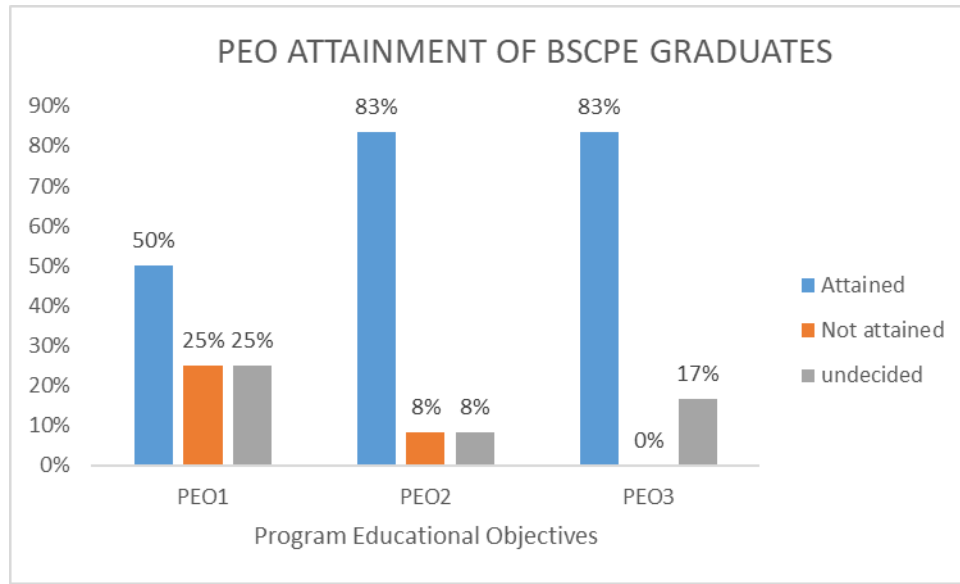


Figure 3. Attainment of PEO 1 of Computer Engineering Graduates

Figure 3 shows the attainment of Program Educational Objectives of Computer Engineering program. PEO1 got the moderate percentage of attainment while PEO2 and PEO3 got the high percentage. PEO1 concerned about the global competitiveness and technical expertise of the alumni. PEO2 referred to the effectiveness in their communication and management skills. The attainment of PEO3 depicts the realization of CPE graduates in their relation to life-long learning and its social and ethical responsibility.

Table 5. Program Educational Objectives of BS Electrical Engineering

<b>PEO 1</b>	Graduates are globally competent Electrical Engineers with high level of technical expertise in their chosen field of specialization.
<b>PEO 2</b>	Graduates in Electrical Engineering exhibit effective communication and management skills.
<b>PEO 3</b>	Graduates in Electrical Engineering engage in life-long learning activities and demonstrate a deep sense of social and ethical responsibility.

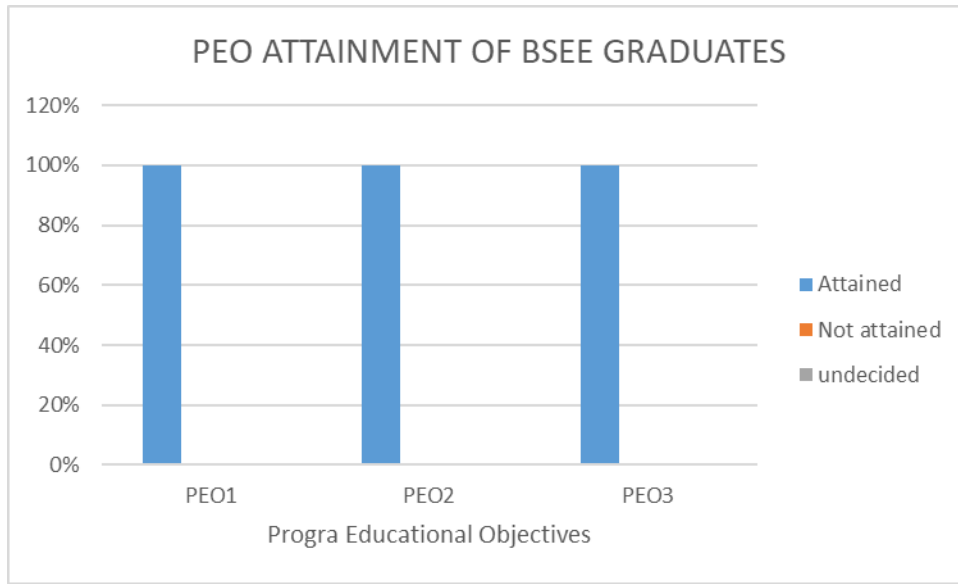


Figure 4. Attainment of PEO 1 of Electrical Engineering Graduates

As shown in Figure 4, all the PEO's of Electrical Engineering achieved high percentage of attainment. In fact, all got 100%. However, it can be noted that there were only two(2) respondents from this program.

Table 6. Program Educational Objectives of BS Geodetic Engineering

<b>PEO 1</b>	Graduates are globally competent Geodetic Engineers with high level of technical expertise in their chosen field of specialization.
<b>PEO 2</b>	Graduates in Geodetic Engineering exhibit effective communication and management skills.
<b>PEO 3</b>	Graduates in Geodetic Engineering engage in life-long learning activities and demonstrate a deep sense of social and ethical responsibility.

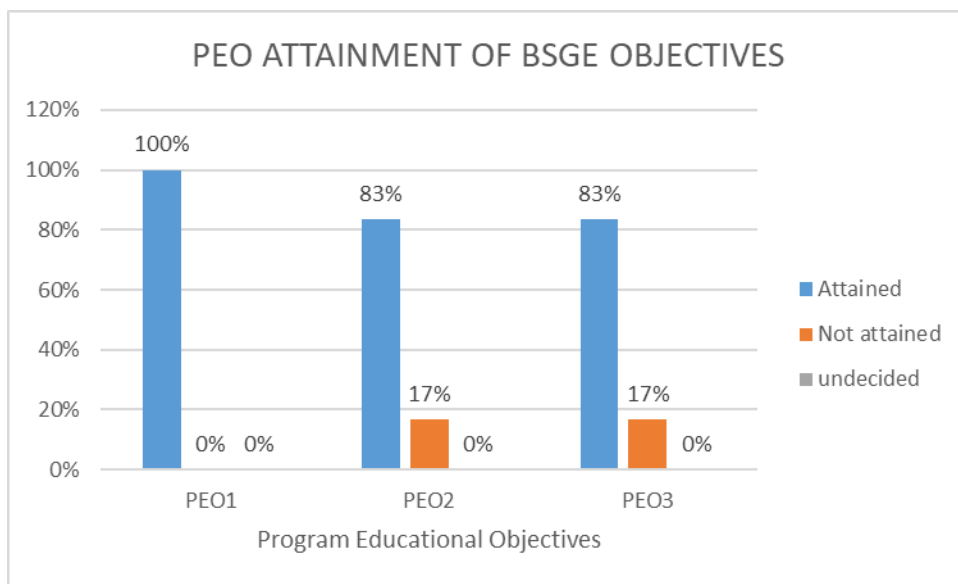


Figure 5. Attainment of PEO 1 of Geodetic Engineering Graduates

For the Geodetic Engineering program, as shown in Figure 5, all PEO's achieved high percentage of attainment. Among the three(3) PEO's, PEO1 got the highest percentage of 100%. This further illustrates that alumni reached the high level of their technical expertise, exhibited effective communication and management skills ,engage in life-long learning activities and demonstrate a deep sense of social and ethical responsibility.

#### **4. Conclusions**

This study has successfully gathered and reported the perceived level of attainment of the Program Educational Objectives of La Salle University's Engineering programs. Results have shown that all PEO's of the five Engineering programs namely Civil Engineering, Geodetic Engineering, Electrical Engineering, Electronics Engineering and Computer Engineering achieved at least moderate ( > 50%) percentage of attainment. The Civil Engineering and Computer Engineering programs each have one PEO with moderate percentage of attainment with the reaining PEO's with high rating. Moreover, the Electronics Engineering, Electrical Engineering and Geodetic Engineering have achieved high percentage of attainment for all their PEO's.

Furthermore, results also show that PEO1 which conerns about the global competency and high level of technical expertise got the lowest percentage of attainment for Civil Engineering, Electronics Engineering and Computer Engineering programs. The graduates perceived that they have not fully attained or reached the technical competency needed in their chosen field of specialization. This can be addressed by putting an emphasis on specialization tracks in each of the programs. This agrees with the latest CHED-CMO's which already highlighted the implementation of the specialization tracks for all engineering programs.

It is recommended to review the curriculum and the curriculum map of the program in relation to the attainment of its Program Educational Objectives. Parallel study may also be conducted to other Engineering HEI's of the region. Further, the integration of the employer and industry feedback may be added in the next cycle of study.

#### **Acknowledgement**

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