
Civil Engineering Licensure Examination Performance Improvement Program: The TIPQC Experience

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ABSTRACT

The Technological Institute of the Philippines Quezon City (TIPQC) initiated measures which resulted in a significant improvement in the Civil Engineering licensure examination performance, as TIPQC graduates got higher than national passing percentages in eleven (11) out of thirteen (13) civil engineering licensure examinations from May 2003 to May 2009.

This paper discusses the correlates of TIPQC performance in the Civil Engineering Licensure Examination, the TIPQC in-house review implementing guidelines and procedures, monitoring activities, and evaluation of the effectiveness of the program. The study shows that there is a significant difference between the scores obtained by examinees who attended the in-house review program and those who did not.

Keywords: Licensure Examination Performance, Accreditation Requirements

I. INTRODUCTION

The Technological Institute of the Philippines (TIP) is a private tertiary institution offering programs in engineering, architecture, computer science, information technology, information management, business, maritime and education. Since its founding in 1962, the Technological Institute of the Philippines has endeavored to continuously re-define the meaning

of academic life, in terms of its own identity and processes as well as the level of excellence and quality of the educational services it offers to its clientele. TIP is one among a select number of schools in the Philippines with a Quality Management System (QMS) certified compliance to the international standard ISO 9001:2000.

In line with its commitment to excellence and total quality education and its mission to transform students into graduates with full competence in their respective fields of study [1], the School implements practical measures to promote effective delivery of instruction.

1. The requirement of *Weekly Lesson Activity Plan (WLAP)* ensures that faculty members and trainers conduct classroom instruction and carry out laboratory and training activities in a manner that fully covers all of the required course/subject topics and scope with the utmost preparation and readiness in each session.
2. The *Academic Improvement Visitation (AIV) Program*, a flagship initiative of the school, is used to determine the development needs of the faculty in pedagogical competence and mastery of content.
3. *Student Competency Assessment Tests* are conducted to monitor the effectiveness of teaching and learning in relation to curriculum content and the learning outcomes of programs.
4. The implementation of a *Customer Satisfaction Feedback Mechanism* ensures continuous improvement in the delivery of instruction.
5. The School has a *Center for Teaching Excellence (CTE)* that provides opportunities for continuous personal and professional

development of faculty members. The CTE has been created primarily to maintain a continuing faculty development program and upgrade the members of the faculty in the skills their job requires.

As a way of ensuring EXCELLENCE and TOTAL QUALITY in education[2], the Technological Institute of the Philippines voluntarily submitted itself to the accreditation process through the Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA), an accrediting agency under the umbrella of the Federation of Accrediting Agencies of the Philippines (FAAP) .

1.1 The TIPQC In-house Review Program

To improve the school's passing percentage in the engineering licensure examinations which is a basic accreditation requirement, the school has conducted free review classes for licensure examinations since the 2nd Semester, SY 2002-2003. This is open to all graduating students and TIPQC Alumni who are planning to take the licensure examination. Competent reviewers from various review schools and universities have been tapped to conduct review classes. The review program is designed to include the following: 1) review sessions covering all subjects included in the syllabus prescribed by the Professional Regulation Commission (PRC), 2) periodic competency assessment examinations, 3) remedial classes, 4) pre-board examinations, and 5) academic counseling.

The in-house review program has three primary objectives, namely:

1. To familiarize the students/graduates with licensure examination-related topics/questions;
2. To improve the school's passing percentage in the licensure examination; and
3. To attain a passing percentage higher than the national passing percentage.

The following procedures/guidelines have been established to govern the conduct of the in-house review program:

1. A review program covering 34 major topics considers the following design inputs:
 - 1.1 Professional Regulations Commission Memo Circulars

- 1.2 CHED Policies and Standards for Civil Engineering Program
- 1.3 Result of the Correlation Study on Graduates' Performance
- 1.4 Feedback from students, faculty members and industry

2. Review classes are integrated in an identified course for graduating students. Students who are enrolled in the identified course are required to attend the review sessions, an additional requirement on top of the course requirement indicated in the course description and syllabi.
3. Experienced reviewers from other schools and universities have been hired with a special hourly rate. Only those with at least 3 years experience as competent reviewers were considered for hiring.

1.2 Correlation Study on TIPQC Graduates' Performance in Civil Engineering Licensure Examinations

In order to identify and properly address the weaknesses of TIPQC graduates in the licensure examinations, a correlation study on the performance of graduates in the November 2002 and May 2003 Licensure Examinations was conducted. The study aimed to analyze the scores obtained by TIPQC graduates in the following subjects in the civil engineering licensure examinations and determine the correlation to their final rating.

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|-----------|---------------------------------|
| Subject 1 | Engineering |
| Subject 2 | Hydraulics and Geotechnical Eng |
| Subject 3 | Construction and Structural Eng |

In the November 2002 Examination, the examinees did not perform well in Subject 2 with 22.812% passing percentage and a mean score of 55.12 while in May 2003, their lowest performance was in Subject 1 with 41.86% passing percentage and a mean score of 65.65.

Shown below is the summary of TIP Graduates' performance in the CE Licensure Examinations under study:

Table 1: Summary of TIP Graduates Performance in the November 2002 Civil Engineering Licensure Examination

	Subject 1	Subject 2	Subject 3
Mean	63.00	55.12	65.51
% of Passing	40.35	22.81	47.37

Table 2: Summary of TIP Graduates Performance in the May 2003 Civil Engineering Licensure Examination

	Subject 1	Subject 2	Subject 3
Mean	65.65	69.30	68.47
% of Passing	41.86	53.49	60.47

Table 3: Correlation of Scores in the November 2002 Civil Engineering Licensure Examination

RELATIONSHIP	Correlation Coefficient
Correlation between Score in Subject 1 and Final Rating	0.71
Correlation between Score in Subject 2 and Final Rating	0.83
Correlation between Score in Subject 3 and Final Rating	0.53

Table 4: Correlation of Scores in the May 2003 Civil Engineering Licensure Examination

RELATIONSHIP	Correlation Coefficient
Correlation between Score in Subject 1 and Final Rating	0.62
Correlation between Score in Subject 2 and Final Rating	0.79
Correlation between Score in Subject 3 and Final Rating	0.69

An analysis of the relationship of the individual subject scores to their final rating was conducted to

find out if there was a correlation between them. The results of the correlation study are shown in tables 3 and 4.

In both the November 2002 and May 2003 CE Licensure Examinations, it is noted from Tables 3 and 4 that **performance in Subject 2 has the highest correlation** to the over-all performance (final rating) in the licensure examination. The magnitude of the correlation in November 2002 indicates a more significant relationship.

Further investigation on the individual scores of the examinees led to the following identified weak areas of TIPQC graduates in the Civil Engineering Licensure Examination:

Weakest Area: Hydraulics and Geotechnical Engineering (Subject 2)

Second Weak Area : Mathematics, Surveying and Transportation Engineering (Subject 1)

1.3 Monitoring Activities

Every semester, the following examinations are administered to monitor the progress of students and graduates in the review program and to assess their preparedness to take the licensure examination:

- 1.3.1 weekly examination on a per topic basis
- 1.3.2 at least three comprehensive examinations
- 1.3.3 pre-licensure examination at the end of the review program

The results of the above assessments were used as a basis for counseling and proper guidance of those who are ready to take the licensure examination.

The students' feedback on the conduct of the review program was gathered through the evaluation forms which were administered at the end of the review session. In one of the sessions, forty one (41) out of forty nine (49) respondents (78%) said they would encourage others to attend the review program. Thirty-eight (70%) students agreed that the reviewers have shown effectiveness in communicating the subject matter. The students gave an average rating of 2.39 when they were asked to give an over-all rating of the review program on a scale of 1 to 5, 1 being the highest.

1.4 Evaluation of the Effectiveness of the Review Program

Another study was conducted to analyze the performance in the licensure examination of graduates who took the TIPQC in-house review classes. The data provided by the Professional Regulation Commission (PRC) from September 2003 up to May 2005 showed that 63.12% of the TIPQC examinees who graduated from March 2003 onwards were provided free review classes through the TIP in-house review program. On the other hand, 36.88% of the examinees graduated before March 2003 and were not given in-house review classes.

A comparative study on the performance of examinees who were provided in-house review and those who were not provided in-house review is shown on Table 5.

Table 5: Performance of examinees who attended in-house review and those who did not attend in-house review classes

SUBJECTS	Mean Score	
	With in-house review	Without in-house review
Mathematics, Surveying and Transportation Engineering	67.29	54.69
Hydraulics and Geotechnical Engineering	65.99	53.68
Construction and Structural Engineering	68.99	56.92
Final Rating	67.6	55.39
Passing Percentage	51.49%	20.34%

As shown in Table 5, the performance of graduates who took the TIP in-house review classes is better with **51.49%** passing percentage as compared to the **20.34%** performance for those who did not attend.

The t test shows that there is a significant difference between the mean scores obtained by examinees who attended review classes and those who did not.

Table 6 shows the performance in civil engineering licensure examination of the Technological Institute of the Philippines Quezon City from May 2003 up to May 2009.

Table 6. TIPQC Passing Percentage vs. National Passing Percentage

Date of Exam	TIP Passing Percentage	National Passing Percentage	Remark
May-03	41.86	37.03	Higher than National Passing
Nov-03	39.66	36.43	Higher than National Passing
May-04	44.83	33.56	Higher than National Passing
Nov-04	45.95	36.27	Higher than National Passing
May-05	30.56	35.78	
Nov-05	36	33.99	Higher than National Passing
May-06	46	35.49	Higher than National Passing
Nov-06	56.52	44.37	Higher than National Passing
May-07	34.38	33.19	Higher than National Passing
Jan-08	44.44	41.14	Higher than National Passing
May-08	22.22	36.66	
Nov-08	36	34.6	Higher than National Passing
May-09	58	43.71	Higher than National Passing

As indicated in Table 6, the TIPQC graduates almost consistently exhibited higher than national passing percentage from May 2003 up to the most recent May 2009 Civil Engineering licensure examination. The school has also produced five (5) board topnotchers over the past three (3) years including top1 (May 2009), top 4 (November 2008 and November 2006), and top 9 (April 2009 Jeddah, KSA)

2. PROGRAM OUTCOME

Under PACUCOA Accreditation policies, the requirements on licensure examination performance per level are as follows:

Candidate Status- the average percentage of graduates who passed the licensure examination for the last 3 years should be equivalent to 50% of the national passing average.

Level 1 Formal – the average percentage of graduates who passed the licensure examination for the last 3 years should be equivalent to 60% of the national passing average.

Level II Reaccreditation- the average percentage of graduates who passed the licensure examination for the last 3 years should be equivalent to 75% of the national passing average.

Level III- the average percentage of graduates who passed the licensure examination for the last 3 years should be beyond the national passing average.

Figure 1 shows that as of May 2009, the average performance of the graduates in the licensure examination over the last three years is beyond the national average and meets the accreditation requirements for level III status.

As a result of the improved performance in the licensure examination, the Civil Engineering program

of TIPQC was granted level III Reaccredited by PACUCOA on November 7, 2008 as embodied in CHED Memorandum Order No. 01 Series of 2005. This accreditation status is valid up to November 2013.

3. CONCLUSION

It has been hypothesized that the conduct of review program will improve the performance of TIPQC graduates in the licensure examination and that accreditation to Level III will depend on the general performance of the graduates in the licensure examination. Since the Civil Engineering graduates have achieved performance in the licensure examination that is higher than national average over the last five years as shown in Table 6 and Figure 1, then it can be said that the review program has contributed to the granting of Level III reaccreditation

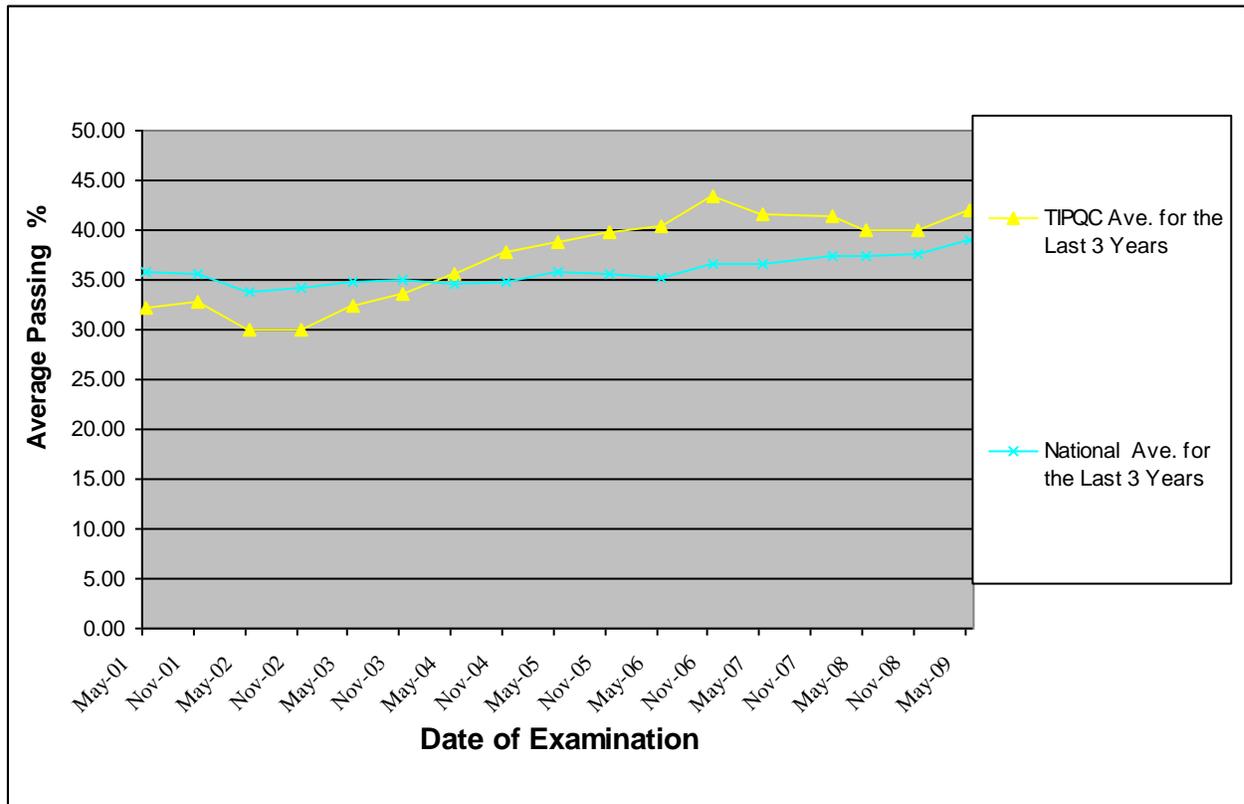


Figure 1. TIPQC Average Performance vs. National Average Performance in Civil Engineering Licensure Examination

status of the Civil Engineering program of TIPQC. However, much is still to be desired. TIP would like to maintain the highest standard of instruction that would show remarkable improvement on the performance of graduates in the licensure examination. Quality circles are continually looking into possible areas of improvement on the delivery of instruction in order for the Civil Engineering program to maintain this good performance and to achieve the institution's target to exceed the national passing percentage by at least 50% by the year 2012.

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