Politeknik Kota Kinabalu Programme Exit Survey (PES) for Diploma in Electronic Engineering (Communication) DEP December 2012 Session

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Abstract: The purpose of this Programme Exit Survey (PES) was to provide data to gauge perceptions of various aspects of programmes and services offered and to identify areas where improvements may be needed in the Department of Electrical Engineering (JKE), Politeknik Kota Kinabalu (PKK). This PES was conducted on 43 final semester students, graduating from Diploma in Electronic Engineering (Communication) (DEP). They were the first Cohort whose intake was in June 2010. The survey questionnaire had five main sections: respondents' profile; assessment of overall quality; assessment of skills and knowledge; assessment of Lecturers and Academic Advisor; and assessment of academic resources and facilities. The assessment of the overall quality, attribute for teaching and learning experience was rated 94% with "very good" and "good". Skills and knowledge section was evaluated by relating the statements with nine items as stated in the Programme Learning Outcomes (PLO). All the PLOs' were marked at least "adequate" by 99.8% of the students. Assessment on lecturers and academic advisor were rated 46.53% as "very good" and 49.78% as "good". In terms of academic resources and facilities, the access to Wi-Fi had the highest unsatisfactory concerned from the respondent whereby 30.2% rated the item as "marginal".
Keywords: overall quality, skills and knowledge, academic resources and facilities

I. Introduction

1.1 Programme Exit Survey (PES)

PES is a method of collecting information on the quality of diploma education from the perspective of graduating students upon the completion of their diploma programme. This report refers to an indirect measurement method by way of self-evaluation based on individual perception for the assessment of PLO. PLOs are the specific statements of graduates' knowledge, skills and attitudes acquired at the end of the programme as evidence for the programme objectives achievements [1]. This PES was conducted to assess the graduate students' satisfaction and perceptions about various aspects of their academic experiences [2]. 86% of the final semester students from the DEP programme had participated in the survey.

The main objectives of this PES are to [3]:
1) Determine the students perception in their attainment on the overall quality of learning and teaching in PKK;
2) Determine the students self-assessment of knowledge, skills and soft skills achievement after going through the PLOs of the programme;
3) Evaluate the students' opinion towards contributions of Lecturer and Academic Advisor system implemented based on Outcome Based Education (OBE) approach;
4) Evaluate the students' opinion towards academic resources and facilities provided in PKK.

1.2 Programme Learning Outcomes (PLO)

OBE is an educational philosophy that believed that educational assessment should recognise and reflect progress made by individual students. PLOs are statements that describe what graduates are expected to know or be able to do on graduation. In the curriculum for DEP programme it has been specified that there are nine (9) PLOs' to be acquired by the graduates upon graduation [4]. The nine PLOs are as follows:

i.   Apply knowledge of mathematics, science and engineering fundamentals to well defined electrical and electronic engineering procedures and practices.
ii. Demonstrate practical skills which includes the ability to troubleshoot, repair and do maintenance work for electrical and electronics equipment with specialization in communications.
iii. Communicate effectively with the engineering community and the society at large.
iv. Apply creative and critical thinking in solving problem related to assigned tasks.

v. Demonstrate awareness and consideration for societal, health, safety, legal and cultural issues and the consequent responsibilities, taking into account the need for sustainable development.

vi. Recognize the need for professional development and engage in independent acquisition of new knowledge and skill.

vii. Recognize the need for entrepreneurship.

viii. Demonstrate an understanding of professional ethics, responsibilities and norms of electrical and electronic engineering practices.

ix. Function individually or in teams, effectively, with a capability to be a leader.

II. Methodology

This survey involved 43 DEP students from December 2012 semester. Students were asked to fill up the PES questionnaires which were posted online and 86% of them responded. The respondents were required to evaluate and rate themselves based on 5-Likert Scale indicated below [5]:

1 = Poor
2 = Marginal
3 = Adequate
4 = Good
5 = Very good

Student's satisfaction and acceptance level were determined from the level of the scale. *Very good, Good* and *Adequate* indication rate shows the students were satisfied with the item. While *Marginal* and *Poor* indication rate shows the program needs some improvements and correction. This online survey was conducted between Marchs until May 2013.

The survey questionnaires were divided into five sections as follows:

i. Section A: General Information
ii. Section B: Overall Quality of Teaching and Learning
iii. Section C: Skills and Knowledge
iv. Section D: Contributions of Lecturers and Academic Advisors
v. Section E: Academic Resources and Facilities

The data collected in this survey was processed through Statistical Product and Service Solutions (SPSS) software version IBM SPSS Statistics 19.0.

The questionnaires were based on students' perception on teaching and learning in PKK, students' response on skills and knowledge related to PLO's, students attainment on the soft skills, students' rating for lecturers and academic advisors contribution, student's opinion towards academic resources, overall services and facilities in PKK [6,7]. This assessment strategy was aligned with the Curriculum Development Cycle - "develop-implement-review" as required by the MQA in order to improve the quality of programme. A description of the survey findings is discussed below

III. Result

The response from the students were analysed based on the following four criteria:

i. Students' response towards the Overall Quality
ii. Students' response on Skills and Knowledge
iii. Students' ratings for Lecturer and Academic Advisor contributions
iv. Students' opinion towards Academic Resources and Facilities

In Section C: (Skills and Knowledge) the statements have been classified under a particular PLO so that the data analysis can be done appropriately for accreditation purposes. The results can be used an indicator to show how well the students have acquired their skills and knowledge as required in the PLOs of the programme.

3.1 SECTION B: OVERALL QUALITY

Overall Quality was evaluated by relating the students experience with the teaching and learning environment in PKK. Two survey statements were as follows:

a) What is your impression on the overall quality of curriculum; and teaching and learning at PKK?
b) To what extent has the quality of teaching and learning in PKK improved since you were here?

For statement (a) (Figure 1), 23 of the respondents (53.5%) agreed and categorized as "good" for the *impression on the overall quality of curriculum and teaching and learning at PKK*. The other 18 (41.9%) responded "very good" while 2 (4.7%) expressed as "adequate". No respondent rated for "marginal" and "poor" indication.

While for statement (b), 26 (60.5%) of the respondents agreed that item "to *what extent has the quality of teaching and learning in Politeknik Kota Kinabalu improved since you were here*" the scale given was

"good". The other 14 (32.6%) responded "very good" while 3 (6.9%) expressed "adequate". No respondent rated for "marginal" and "poor" indication.

From the analysis on overall quality, 100% of DEP students were satisfied with the overall quality for this programme during their study in PKK based on the experience with the teaching and learning environment.

3.2 SECTION C: SKILLS AND KNOWLEDGE
In assessing the skills and knowledge of the students, the statements had been classified into nine PLOs as follows:

3.2.1 PLO 1 (Knowledge)
For PLO 1 (Knowledge), four statements were given as follows:
 a) I am able to apply knowledge of core discipline courses in my programme.
 b) I am able to apply knowledge of specialized courses in my programme.
 c) I am able to apply knowledge of elective courses in my programme.
 d) I am able to understand the technological applications relevant to my programme of study.

For statement (a) (Figure 2), *I am able to apply knowledge of core discipline courses in my programme* a total of 30 (69.8%) respondent selected "good" and 10(23.0%) respondent selected "very good" and there is 1(2.3%) respondent selected marginal. For statement (b) *I am able to apply knowledge of specialized courses in my programme*, a total of 12 (27.9%) respondents rated "very good". The other 28 (65.1%) respondent selected "good" while 3 (6.9%) responded "adequate", respectively.

For the third statement (c) *I am able to apply knowledge of elective courses in my programme*, a total number of 14 (32.6%) respondents rated "very good" while 26 (60.5%) rated as "good".

Moving to the fourth statement (d) *I am able to understand the technological applications relevant to my programme of study*, the highest score was for "good" with 23(53.5%) respondent. Meanwhile 16 (37.2%) respondents rated "very good" and 4 (9.3%) responded for "adequate". No respondent rated for "marginal" and "poor".

97.7% of DEP students were satisfied with the knowledge they gained and agreed that they had understood the relevancy of the technological application during their studies in PKK. Only 1(2.3%) respondent recommends the program needs some improvements and correction.

3.2.2 PLO 2 (Technical & Practical Skills)
For PLO 2 (Technical & Practical Skills), three statements were given as follows:
a)   I am able to apply information technology in my programme.
b)   I am able to demonstrate my practical skills effectively.
c)   I am able to use computing technology for applications in my programme.

For statement (a) (Figure 3), *I am able to apply information technology in my programme* 14 (32.6%) respondents rated "very good". The other 27 (62.8%) responded "good" while 2 (4.7%) expressed "adequate".

Moving to statement (b) *I am able to demonstrate my practical skills effectively*, the highest rated is for "good" indicator with 21 (48.8%) respondent while 14 (32.6%) respondents rated "very good" and 8 (18.6%) responded "adequate" rating.

While for statement (c) *I am able to use computing technology for applications in my programme*, the highest rated was for "good" indicator with 24 (55.8%) respondents while 13 (30.2%) respondents rated "very good" and 6 (13.9%) responded "adequate" rating. No respondent rated for "marginal" and "poor" indication for all statements under PLO 2. As a conclusion, 100% of DEP students were satisfied and were able to make use of technical & practical skills they gained during their studies in PKK.

3.2.3 PLO 3 (Communication Skills)
For PLO 3 (Communication Skills), three statements were provided as follows:
 a) I am able to communicate effectively orally/visually (informal / formal / conversational / presentation).
 b) I am able to communicate effectively in writing (writing reports and expressing ideas and opinions clearly and concisely).
 c) I am able to use computing technology in communications.

For statement (a) (Figure 4), 16 (37.2%) respondents rated "very good" for *I am able to communicate effectively orally/visually (informal / formal / conversational / presentation)*. The other 24 (55.8%) responded "good" while 3 (6.9%) responded "adequate". Statement (b), meanwhile, a majority of 27 (62.8%) respondents rated "good". The other 16 rated for "very good" with 14 (32.6%) respondent and 2 (4.7%) for "adequate" respectively. In fact, all the DEP students were getting familiar with reports writing since their first semester in PKK.

Further, for statement (c), 14 (32.6%) respondents rated "very good". The other 21 (48.8%) responded "good" while 8 (18.6%) responded "adequate". Still no respondent rated for "marginal" and "poor" indication for all statements under PLO 3.We can conclude that, 100% of DEP students were satisfied and were able to communicate effectively after finish their studies in PKK.

3.2.4 PLO 4 (Critical Thinking & Problem Solving Skills)
For PLO 4 (Critical Thinking & Problem Solving Skills), three statements were given as follows:
a) I am able to solve problems using methods, tools and skills related to my programme.
b) I am able to think critically and logically.
c) I am able to plan, organize and complete a task.

Under PLO 4 (Figure 5), Critical Thinking & Problem Solving Skills, for statement (a) a majority of 23 (53.5%) respondents rated "good". The other 13 (30.2%) responded "very good" while 7 (16.3%) responded "adequate". Moving to statement (b) *I am able to think critically and logically*, the highest rated was for "good" indicator with 30 (69.8%) respondents while 11 (25.6%) respondents rated "very good" and 2 (4.7%) responded "adequate" rating.

Finally for statement (c), a total of 16 (37.2%) respondents rated "very good". The other 24 (55.8%) responded "good" while 3 (6.9%) responded expressed "adequate". No respondent rated for "marginal" and "poor" indication for all statements under PLO 4. As a conclusion on this section's analysis, that is, 100% of DEP students were equipped with critical thinking & problem solving skills which they gained during their studies in PKK.

3.2.5 PLO 5 (Social Skills and Responsibilities)
For PLO 5 (Social Skills and Responsibilities), three statements were given as follows:
a) I am able to understand the role of my work in relation to social or cultural issues.
b) I am aware of the value of considering diversity and differences in cultures in my work.
c) I am aware of the impact of my work in a social context.

Figure 6, statement (a) *I am able to understand the role of my work in relation to social or cultural issues* were rated by 26 (60.5%) respondents as "good". Statement (b) was answered by a total of 17 (39.5%) rated as "very good" while statement (c) was by 27 (62.8%) as "good".

Statement (a) *I am able to understand the role of my work in relation to social or cultural issues* was rated by 14 (32.6%) respondents as "very good". For statement (b) *I am aware of the value of considering diversity and differences in cultures in my work* was 22 (51.2%) rated as "good" while statement (c) is by 11 (25.6%) rated as "very good".

A total of 3 (6.9%) respondents rated for statement (a) as "adequate". Then 4 (9.3%) rated for statement (b) as "adequate" while statement (c) *I am aware of the impact of my work in a social context* rated with 5 (11.6%) respondents rated as "adequate". No respondent rated for "marginal" and "poor" indication for all statements under PLO 5.

Thus under PLO 5 we can conclude that, 100% of DEP students were aware of their responsibilities in social context and able to associate with community effectively which they gain during their studies in PKK.

3.2.6 PLO 6 (Continuous Learning & Information Management Skills)
For PLO 6 (Continuous Learning & Information Management Skills), four statements were provided as follows:
a) I am able to continuously learn new skills and knowledge.
b) I am able to engage in continuous learning beyond the classroom.
c) I am able to learn and apply new concepts.
d) I am able to use information resources (databases, libraries, internet etc).

For PLO 6 assessments, statement (a) (Figure 7), *I am able to continuously learn new skills and knowledge* 22 (5 1.2%) respondents rated "very good". A total of 19 (44.2%) responded "good" while 2 (4.7%) responded "adequate".

Moving to statement (b), the highest rated was for "very good" indicator with 21 (48.8%) respondents while 16 (37.2%) respondents rated "good", 5 (11.6%) responded "adequate" rating and 1 (2.3%) responded choose marginal. For statement (c) 13 (30.2%) respondents rated "very good" for *I am able to learn and apply new concepts*. The other 24 (55.8%) responded "good" while 5 (11.6%) responded "adequate" with 1 (2.3%) respondents rated marginal.

Finally for statement (d) *I am able to use information resources (databases, libraries, internet etc)*, 17 (39.5%) respondents rated "very good". 22 out of 40 (51.2%) responded "good" while 4 (9.3%) responded "adequate". No respondent rated for "marginal" and "poor" indication for statements (a) and (d) under PLO 6.

So under PLO 6 we can summarize that, 95.4% DEP students were able to learn new skills and knowledge and able to use information resources effectively after their study in PKK.

3.2.7 PLO 7 (Management & Entrepreneurial Skills)
For PLO 7 (Management & Entrepreneurial Skills), two statements were provided as follows:
a)   I am able to build/develop my career upon completion of my studies.
b)   I am able to develop time management skills.

Figure 8 shows the rating result for PLO 7. For statement (a) *I am able to build/develop my career upon completion of my studies* and statement (b) I am able to develop time management skills. The highest rating is for "good" indicator which is 27 (62.8%) respondents for statement (a) and 23(53.5%) for statement (b). 11 (25.6%) responded "very good" for statement (a) and 14 (32.6%) for statement (b). About 5 (11.6%) and 6 (13.9%) responded "adequate" for statement (a) and (b).
No respondent rated for "marginal" and "poor" indication for all statements under PLO 7. That showed, most of the respondents feel satisfied and believed that their management & entrepreneurial skills were developed in PKK.

3.2.8 PLO 8 (Professionalism, Ethics & Moral)
For PLO 8 (Professionalism, Ethics & Moral), two statements were provided as follows:
a)   I am able to understand the professional and ethical responsibilities related to my work.
b)   I am aware of the importance of safety issues related to my work.

Under PLO 8, for "very good" rating (Figure 9), statement (a) *I am able to understand the professional and ethical responsibilities related to my work* rated by 11 (25.6%) respondents while statement (b) *I am aware of the importance of safety issues related to my work* rated by a number of 22 (51.2%) respondents.

While for "good" rating, statement (a) was rated by 28 (65.1%) respondents and for statement (b) was rated by 19 (44.2%) respondents. Finally for "adequate" rating, total of 4 (9.3%) rated for statement (a) while only 2 (4.7%) rated for statement (b). No respondent rated for "marginal" and "poor" indication for all statements under PLO 8.

So we can conclude that, 100% of DEP students understood the professional and ethical responsibilities and were aware of the importance of safety issues related to their work during their studies in PKK.

3.2.9 PLO 9 (Leadership & Teamwork Skills)
For assessment of the PLO 9 (Leadership & Teamwork Skills), four statements were provided as follows:
a)   I am able to work with individuals from different backgrounds.
b)   I am able to work successfully as a member of a team.
c)   I am able to work successfully as a leader of a team.
d)   I am able to function in multidisciplinary teams.

For "very good" rating (Figure 10), statement (a) *I am able to work with individuals from different backgrounds* rated by 20 (46.5%) respondents while statement (b) was rated by a number of 23 (53.5%) respondents, statement (c) *I am able to work successfully as a leader of a team* by 14 (32.6%) respondents and statement (d) *I am able to function in multidisciplinary teams* rated by 16 (37.2%) respondents.

On the other hand, statement (a) was rated by 22 (51.2%) as "good", statement (b) was 18 (41.9%), statement (c) received 25 (58.1%) and statement (d) was 25 (58.1%) respondents. Next for "adequate" rating, only 1 (2.3%) rated for statement (a), 2 (4.7%) rated for statement (b), statement (c) by 4 (9.3%) while statement (d) rated by 2 (4.7%) respondents. There is no respondent who rated for "marginal" and "poor" indication for all statements.

So under PLO 9 we can summarize that, 100% of DEP students were able to work in a team successfully and capable of being a leader after finishing their studies in PKK.

3.3 SECTION D: CONTRIBUTIONS OF LECTURERS AND ACADEMIC ADVISORS
Responses from students towards the lecturers and academic advisors' contributions are summarized below. Graduates were asked to offer insights of encouragement given into the programme delivery process. Six attributes of encouragement were offered and they are given as follows:
To what extent did your lecturer/academic advisor encourage you to:
a)   Set high expectations for learning?
b)   Be an actively involved learner?
c)   Show concern for student learning?
d)   Provide feedback frequently and promptly?
e)   Effectively communicate critical concepts and ideas?
f)   Incorporate teamwork as part of the learning process?

From (Figure 11) for the attribute of statement (a), 23 (53.5%) of the respondents said that it was "very good" while 18 (41.9%) disclosed that it was "good". Only 1 (4.7%) respondent rated that it was "adequate".

For statement (b), 19 (44.2%) respondents rated it as "very good". While 21 (48.8%) rated that it was "good" and 3 (7.0%) rated it as "adequate". For statement (c), 18 (41.9%) of the respondents rated as "very good" and 24 (55.8%) respondents rated that it was "good" and rest 1 (2.3%) respondents rated it as "adequate". For statement (d), 20 (46.5%) of the respondents rated the feedback as "very good", while 21 (48.8%) stated that it was "good" and 2 (4.7%) rated as "adequate". For statement (e), 18 (41.9%) of the respondents rated it as "very good" while 24 (55.8%) rated it as "good" and 1 (2.3%) rated it as "adequate".

Finally, statement (f), 22 (5 1.2%) of the respondents rated it as "very good" while "good", 21 (48.8%) respondents. No respondent rated for "marginal" and "poor" indication for all six statements under this section. So 100% of DEP students were satisfied with the contributions of lecturers and academic advisors during their studies in PKK.

3.4 SECTION E: ACADEMIC RESOURCES OR FACILITIES

In the education eco-system, academic resources/facilities were important in terms of educational hardware. The teaching and learning process would be greatly enhanced provided that there were sufficient resources/facilities for students to thrive academically. Figure 12 shows the percentage of respondents' ratings towards the sufficiency of resources/facilities at the PKK. Eleven statements of resources/facilities were given as follows:

To what extent did Politeknik Kota Kinabalu provide you with the following resources/facilities?
a) Operation hours of the library
b) Access to databases and collections both physically and online in the library
c) Easy and responsive services of the HEP staff
d) Easy and responsive services of the counselling staff
e) Easy and responsive services of the library staff
f) Easy and responsive services of the administration staff
g) Access to Wi-Fi internet
h) Quality of computer labs
i) Quality of laboratories / workshops / kitchens
j) Quality of classrooms
k) Quality of sports and recreational facilities

From (Figure 12) for the statement (a), 16 (37.2%) of the respondents said that the *operation hours of the library* was "very good" and "good" rating, 21 (48.8%). Next 5 (11.6%) respondents, rated that it was "adequate" and 1 (2.3%) rated for marginal. No respondent rated for "poor".

For statement (b) 11 (25.6%) of the respondents rated it as "very good" for the *library collection*, while 23 (53.5%) stated that it was "good" and 9 (20.9%) rated as "adequate". No respondent rated for "marginal" and "poor".

Statement (c), 13 (30.2%) of the respondents rated the *services of the HEP staff* "very good" and 27 (62.8%) stated that it was "good" and 3 (7.0%) as "adequate". No respondent rated for "marginal" and "poor".

Moving to statement (d), 14 (32.6%) of the respondents rated the *counselling services* as "very good". While 23 (53.5%) rated that it was "good" and 6 (14.0%) rated as "adequate". No respondent rated for "marginal" and "poor". Next for statement (e), 13 (30.2%) of the respondents rated the *services of the library staff* as "very good" and "good" and 25 (58.1%) while 5 (11.6%) rated as "adequate".

For statement (f) 17 (39.5%) of the respondents rated the *services of the administration staff* as "very good" on the other hand 22 (51.2%) rated it as "good". 4 (9.3%) rated it as "adequate". Statement (g), 2 (4.7%) respondents rated it as "poor" for the *Wi-Fi internet services* in PKK. While 8 (18.6%) rated that it was "marginal" and 13 (30.2%) rated as "adequate". 5 (11.6%) rated it as "very good" and 15 (34.9) "good".

Next for statement (h), a total of 20 (46.5%) respondents rated "good" on the *quality of computer labs*. While 12 (27.9%) rated it as "very good" and 10 (23.3%) rated it as "adequate". Only 1 (2.3%) rated it as "marginal". For statement (i) 8 (18.6%) of the respondents rated the *quality of laboratories / workshops / kitchens* as "very good" and 25 (58.1%) as "good" and 8 (18.6%) rated as "adequate". On the other hand for "marginal" was 2 (4.7%) respondent. No rated for "poor".

Moving to statement (j), 8 (18.6%) respondents rated the *quality of classrooms* as "very good". While 25 (58.1%) rated it as "good" and 10 (23.3%) rated as "adequate". No respondent for "marginal" and "poor".

Finally for statement (k), 11 (25.6%) respondents rated the *quality of sports and recreational facilities* in PKK as "very good" and 20 (46.5%) rated it as "good". 1 (2.3%) rated for "marginal" and 10 (23.3%) rated for "adequate". Only 1 (2.3%) rated it as "poor". Concluding this section's analysis, 96.6% of DEP students were satisfied with the academic resources/facilities provided during their study in PKK.

IV. Conclusion

The results of the survey indicated high considerable for Overall Quality of teaching and learning since 94% students rated as "very good", "good" and "adequate" measures of achievement for all the statements. Thus students were satisfied with the overall quality of teaching and learning in PKK.

Over 99.8% of graduates agreed that they had achieved the PLOs of the programme. The data showed majority of students responded between "very good' to "good" scale in this Skills and Knowledge assessment. The rest of the graduates perceived and rated at least "adequate" scale for all PLOs (soft-skills and knowledge-skills) acquired by the graduates.

Evaluation of the graduates' opinions towards contributions of lecturers and academic advisors system implemented also showed that graduates were satisfied with the lecturers. Result showed that 100% of graduates rated very "good", "good" and "adequate" scale. This also supports the implementation of OBE in PKK which emphasized for student-centred learning.

Finally 96.6% graduates were satisfied with the academic resources and facilities provided. The most significant item that graduates were not satisfied with was the Wi-Fi internet access in PKK where 45% of them rated for "marginal" and "poor". Insufficient Wi-Fi coverage around PKK was due to lack of Access Point (AP) installed.

This exit survey was found to be an essential tool to help identify the areas needs to be improved in the quality of education as a whole in PKK especially for Diploma in Electronic Engineering (Communication) (DEP).

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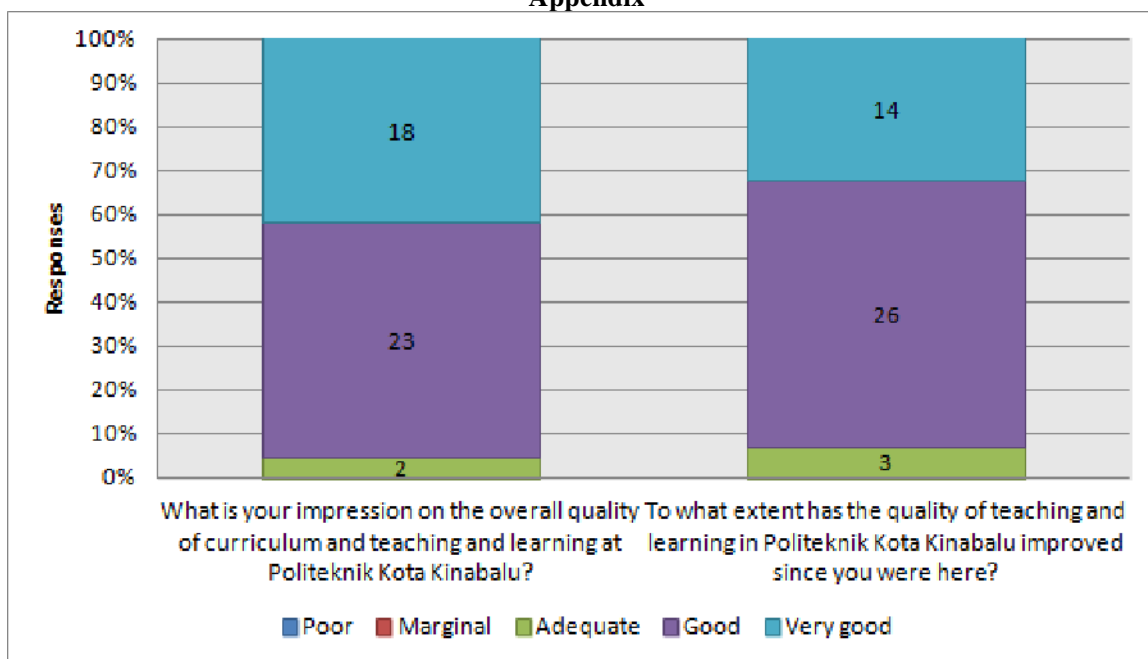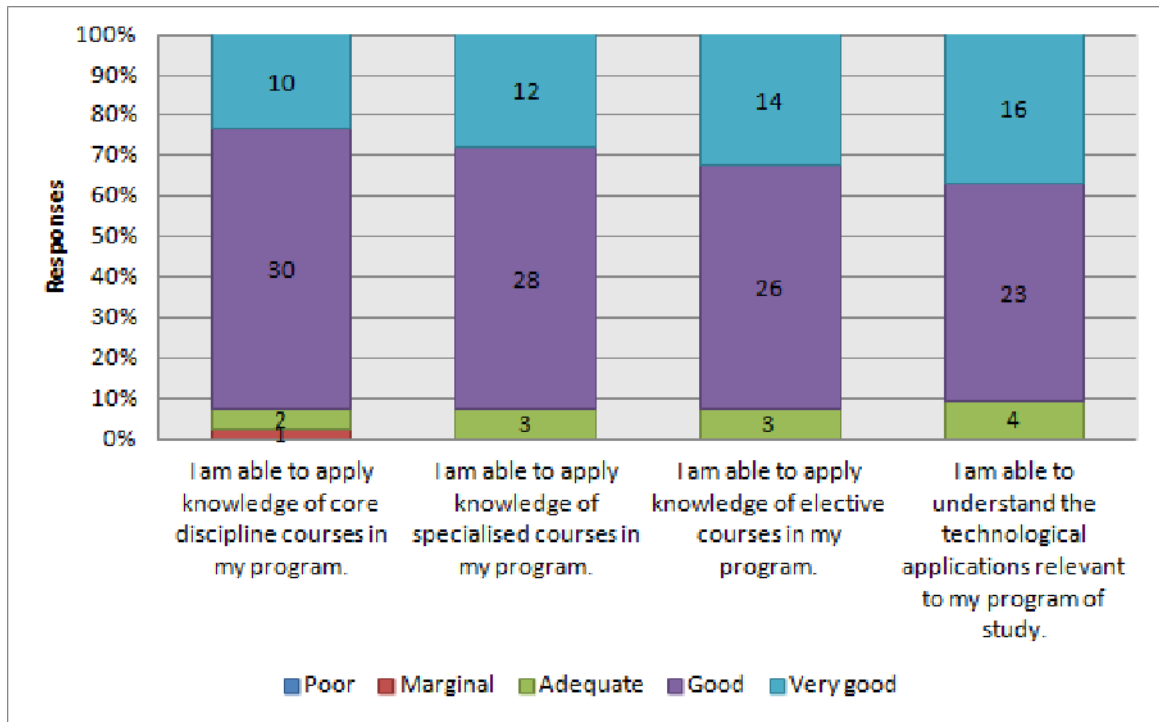
Appendix

Figure 1: Overall Quality rating

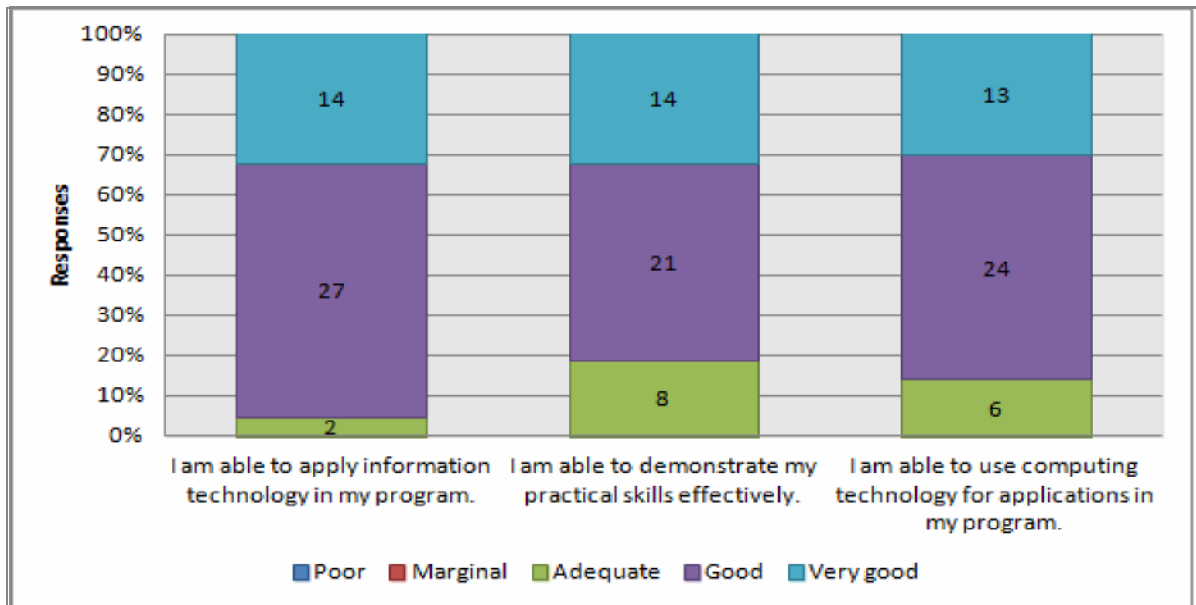Figure 2: PLO 1 Knowledge rating

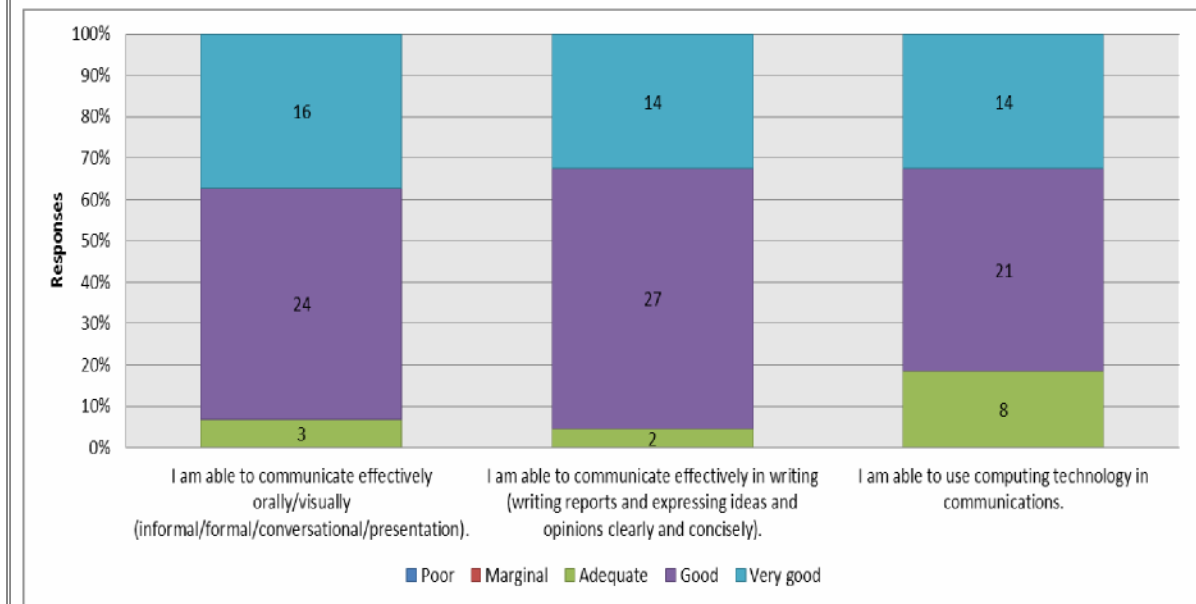Figure 3: PLO 2 Technical & Practical Skills rating

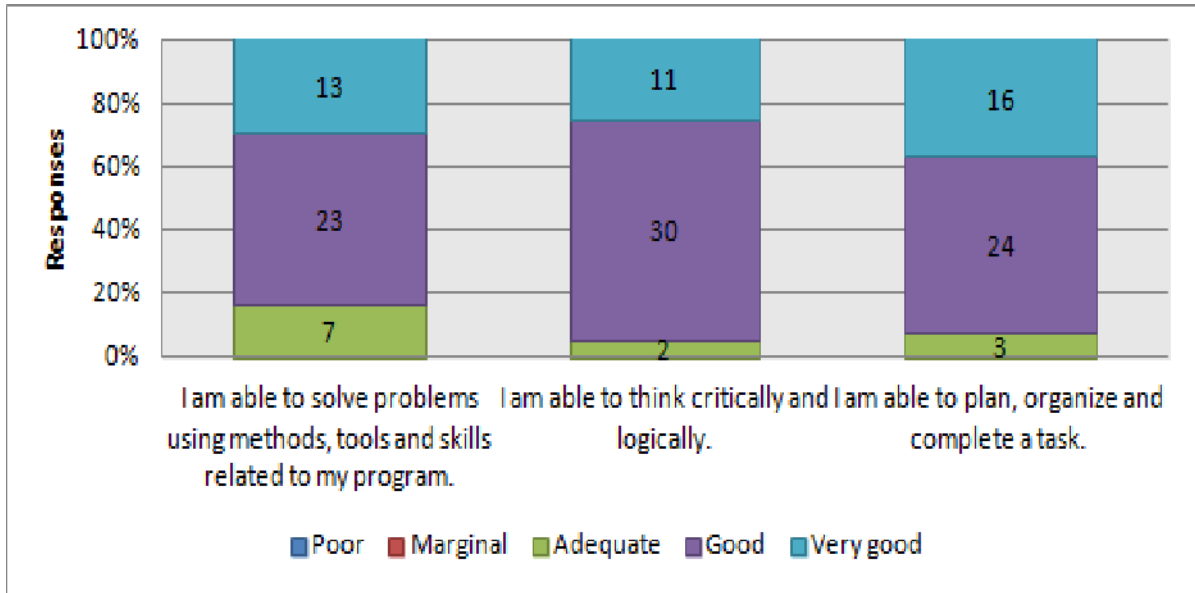Figure 4: PLO 3 Communication Skills rating

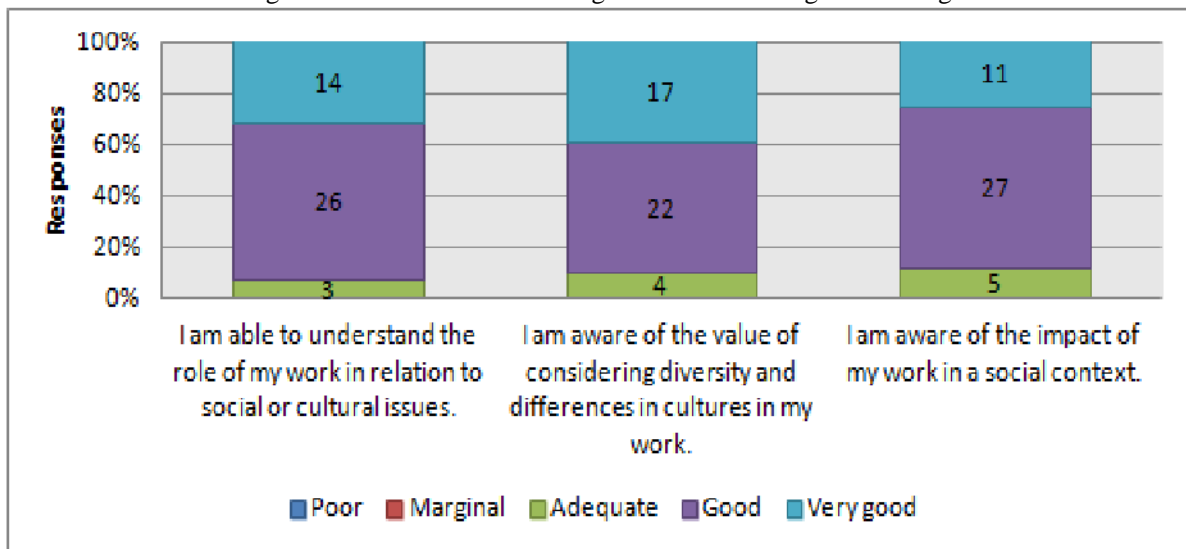Figure 5: PLO 4 Critical Thinking & Problem Solving Skills rating

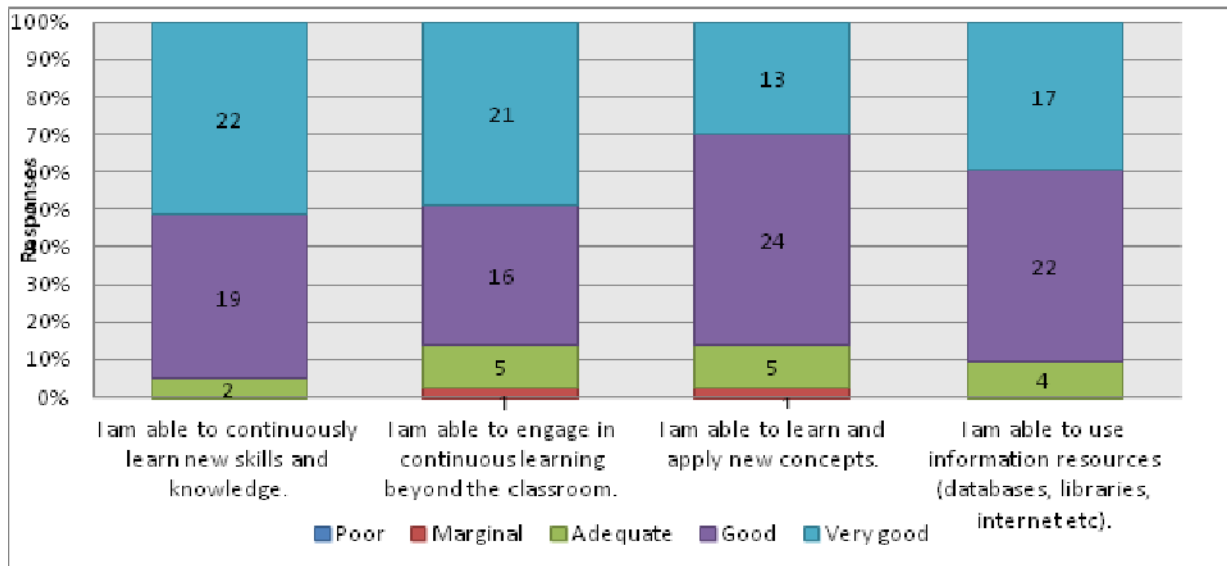Figure 6: PLO 5 Social Skills and Responsibilities rating

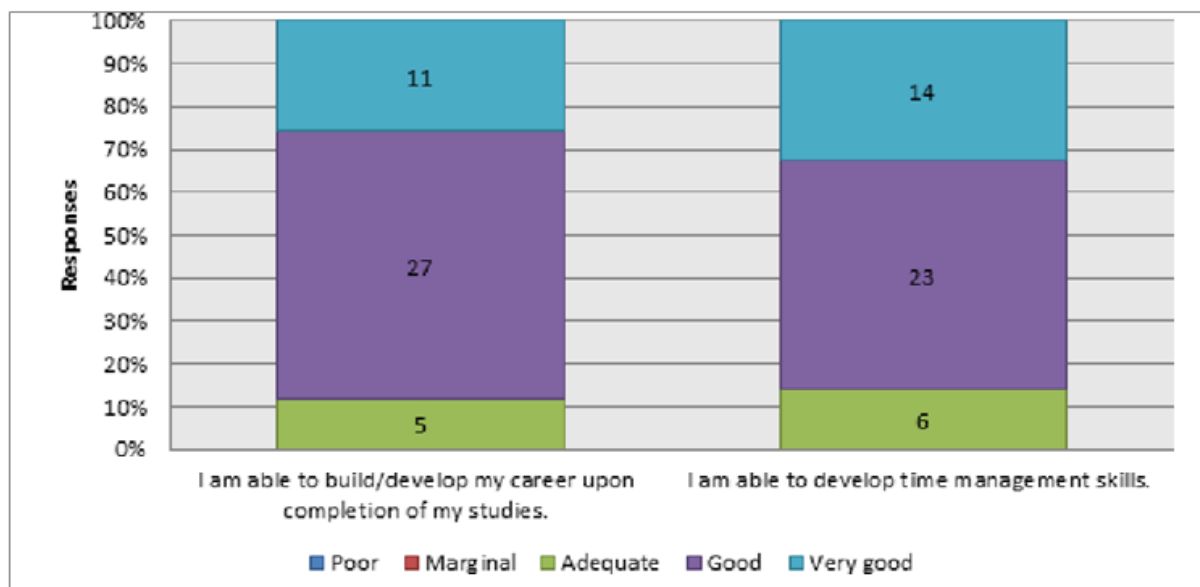Figure 7: PLO 7 Management & Entrepreneurial Skills rating

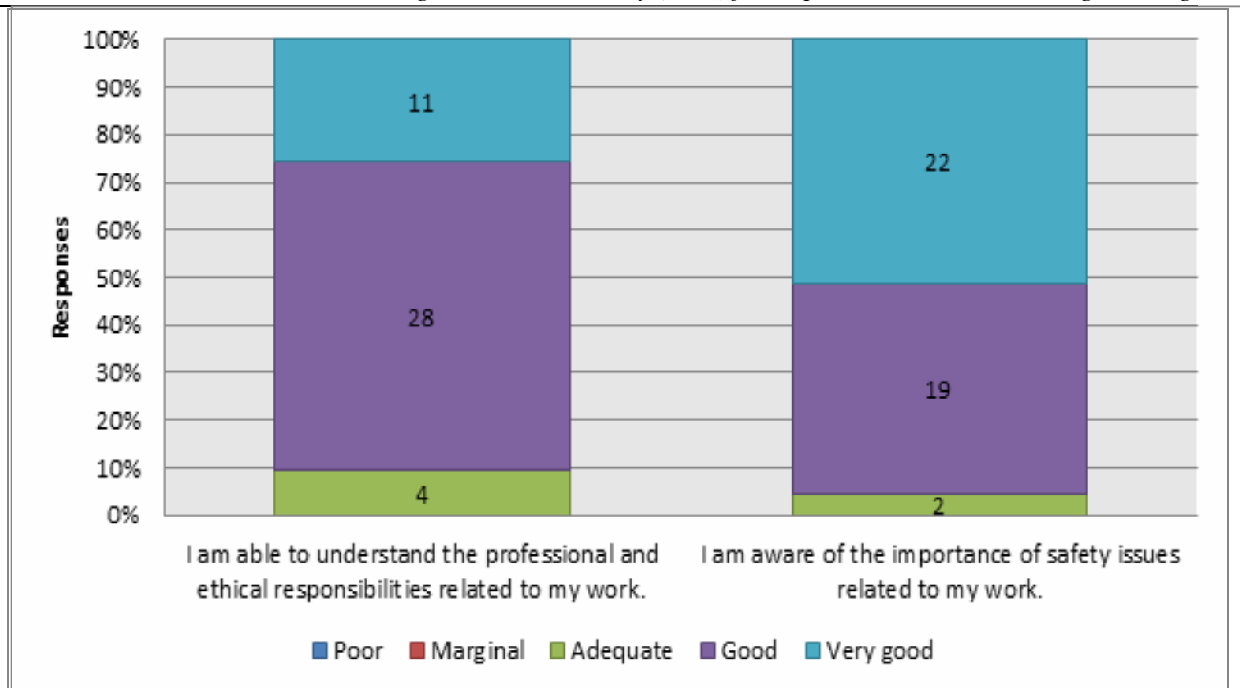Figure 8: PLO 8 Professionalism, Ethics & Moral rating

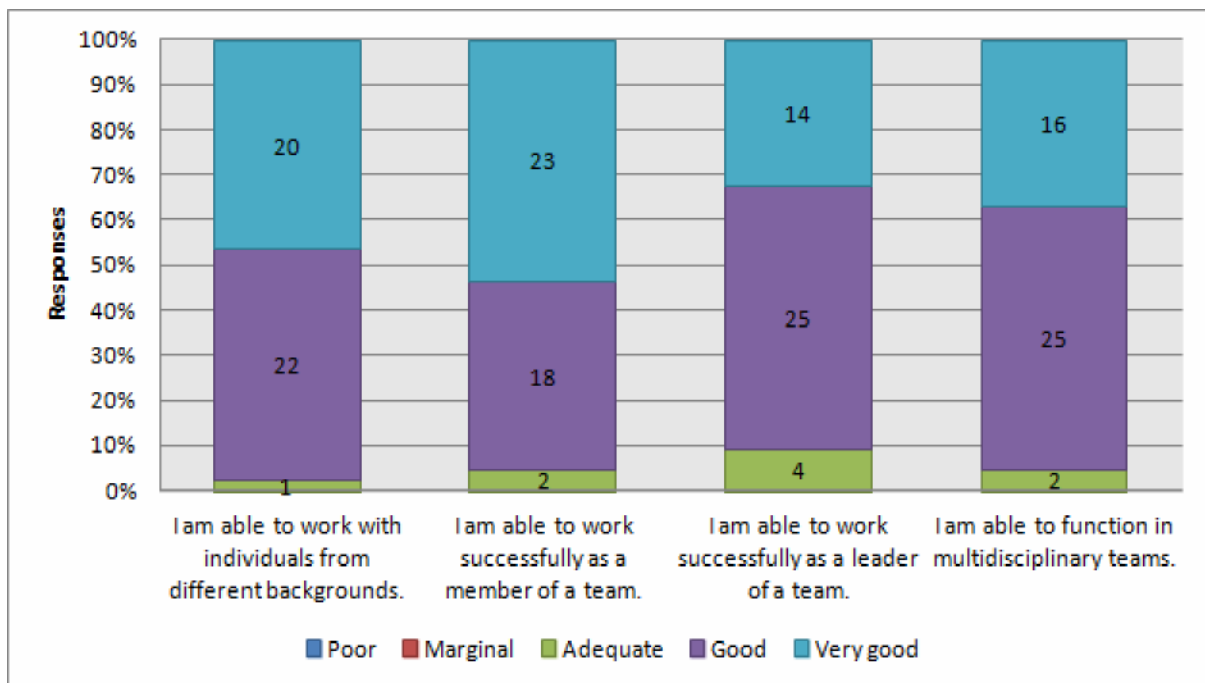Figure 9: PLO 8 Professionalism, Ethics & Moral rating
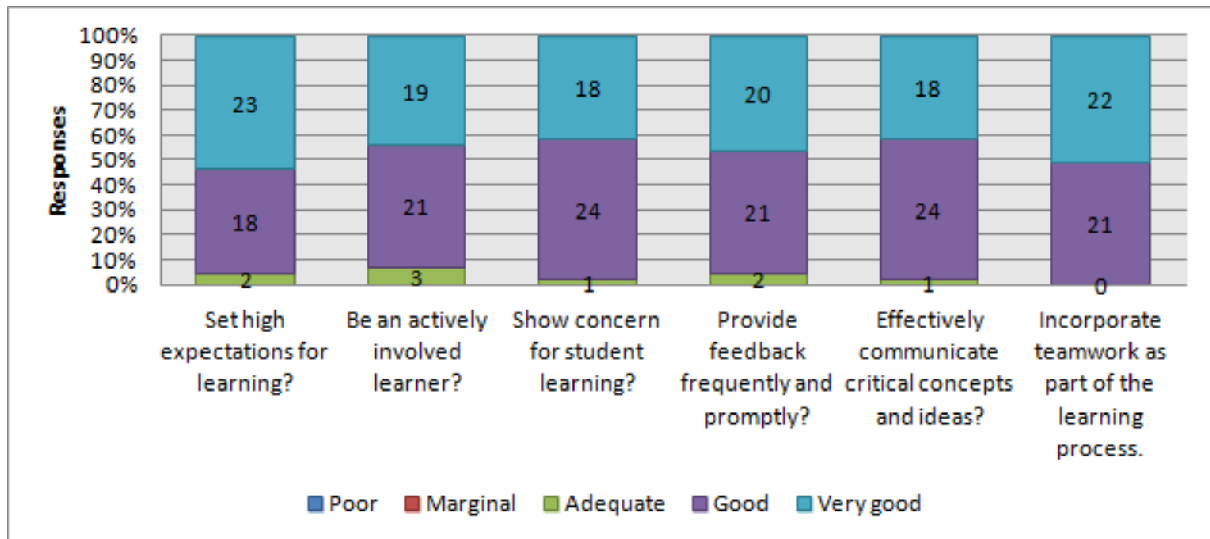

Figure 10: PLO 9 Leadership & Teamwork Skills rating

Figure 11: Contributions of Lecturers and Academic Advisors rating