Graduate Students' Perspectives on Study Environment Based on Exit Survey

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Abstract

Graduate exit survey was conducted in the Faculty of Engineering and Built Environment, UKM for students graduating from Masters and PhD programs between June 2010 to May 2011. A random sampling was responded by 82 students consisting of Malaysian and international students. The survey consisted of four main parts: respondents' profile; assessment of learning gains; assessment of educational experience; assessment of academic and non-academic support issues and assessment of facilities and resources. All the data were analysed using the Statistical Package for the Social Sciences (SPSS) software version 16.0. Learning gains were evaluated by relating the gains with six Program Outcomes (PO). PO6 on lifelong learning ability was marked *"very good"* by masters students (53.5%) whilst the majority of PhD students gave the highest score to PO1 on comprehension and in depth understanding of field study (72.7%). For educational experience, attribute on exposure to common and professional tools, was rated *"excellent"* with the highest percentage of 36.6%. A percentage of 42.7% was given to commitment of the lecturers/supervisors in assisting students for assessment of academic and non academic support issues. In terms of facilities and resources, security and safety was found to be the highest satisfactory factor (39.0%) among other factors.

Keywords: study environment, learning gains, program outcomes, educational experience

1. Introduction

1.1 Graduate Exit Survey

Graduate exit survey is a method of collecting information on the quality of graduate education from the perspectives of graduating students upon the completion of their degree programs. The Office of Postgraduate Studies for the Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia recently completed an effort to get responses to exit surveys by students as they prepare to graduate with a master's degree or PhD. This survey asked graduate students about their experiences and perceptions they had as a graduate student. The responses were provided at program level, classified as either taught or research at master or doctoral levels, so that results could be used for program improvement. Such survey is important since the responses to the questions will be used to review and enrich the quality of the program so as to meet the future needs of the various stakeholders. The survey probes assessment on learning gains, educational experience, academic and non academic support issues and facilities and resources.

1.2 Program Outcomes

The degree to which students gain learning experience and knowledge significantly correlates with perceived

learning outcomes (Haverila, 2011). In 2004, Malaysian universities started concerted effort in the implementation of Outcome Based Education (OBE) in the teaching of engineering. OBE is an educational philosophy that is founded on the idea that educational assessment should recognize and reflect progress made by individual students. Program Outcomes (PO) are statements that describe what graduates are expected to know or be able to do by the time of graduation. The faculty has devised 6 PO to specifically address the achievement of learning outcomes.

1.3 Educational Experiences

Educational experience and academic performance are two inter-related educational outcomes as educational experience fosters student achievement and confidence. The educational experience of the students was assessed in terms of the technical content of the program, team work, access of information, environmental and ethical issues in engineering, exposure to common and professional tools and students' confidence level.

Relations between staff (whether academic or non academic) and students will provide learning environment which enable students to fulfill their personal potential. A healthy work environment can only be created if the academic staff foster positive relationships with the students, conducting themselves at all times in ways that are consistent with the university policy and procedures.

Academic staffs are also required to compromise their professional responsibilities and ethics to protect the interests of students. In addition, the contribution of non-academic staff highly impacts the student experience at the faculty. Support academic and administrative staff serving in the departments or in the student service units, are usually the initial and ongoing point of contact for the students who need assistance in one form or another. Good facilities and resources appear to be another important factor to student learning.

Through this assessment, the faculty and university can plan and create programs and learning opportunities for students, intended to meet the needs of the students. Uline and Tschannen-Moran (2008) did a study to link between the quality of school facilities and student achievement in English and Mathematics. The results confirmed the hypothesis that school climate plays a mediating role in the relationship between facility quality and student achievement. This survey covered the issues on on-campus computer facilities and availability of ancillary support services, quality of workspace and office facilities, aspect library resources and availability of project-specific needs.

2. Method

In conducting the study, a set of questionnaires was developed consisting of four main parts:

1) Respondents' Profile

2) Assessment of Learning Gains

3) Assessment of Educational Experience

4) Assessment of Academic and Academic Support Issues

5) Assessment of Facilities and Resources

A quantitative survey of Master's and PhD degree holders was conducted between June 2010 to May 2011. The survey was carried out from a sample size of 82 respondents consisting of Malaysian and international graduates of the Faculty of Engineering and Built Environment, UKM. A random sampling method was used in the selection of the respondents. In this maiden study, more than 276 sets of questionnaires were distributed. However, only 82 graduates responded or a very close to 30% rate of return.

All the data were analysed using the Statistical Package for the Social Sciences (SPSS) software version 16.0. The analysis of the results covered four aspects of the evaluation process, namely:

1) Assessment of learning gains relating to program outcomes (PO),

2) Assessment of educational experience in the faculty,

3) Assessment of academic and non-academic issues that relate to student-staff relationship, and

4) Perception on available facilities and resources.

The survey used a Likert Scale rating of 1 to 5 for all parts. A description of the study's findings is discussed below.

3. Results

3.1 Profile of the Respondents

An interesting profile of respondents based on (a) Program of Study, (b) Gender, (c) Nationality, (d) Educational Financing, (e) Post-Graduation Plans, (f) Planned Employment Sectors, and (g) Job Offer was gathered in the study.

For the *Program of Study* aspect, it was found that 13.4% of the respondents underwent doctoral studies whereas 42.7% did masters by coursework and the remaining 43.9% opted for masters by research. This is depicted in Figure 1 (a). Further, Figure 1 (b) shows the gender of the respondents of which 61% were male and 39% were female. Nationality-wise, 67.1% were Malaysians and the remaining 32.9% were international graduates from Indonesia, Iran, Iraq, Libya, Jordan and Yemen, and Figure 1 (c) reflects this. Figure 1 (d) describes the financing mode of graduates with 25.6% respondents getting financial assistance through the Graduate Research Assistance scheme, fellowship scheme, etc. and the remaining 74.4% reported not receiving any financial assistance.
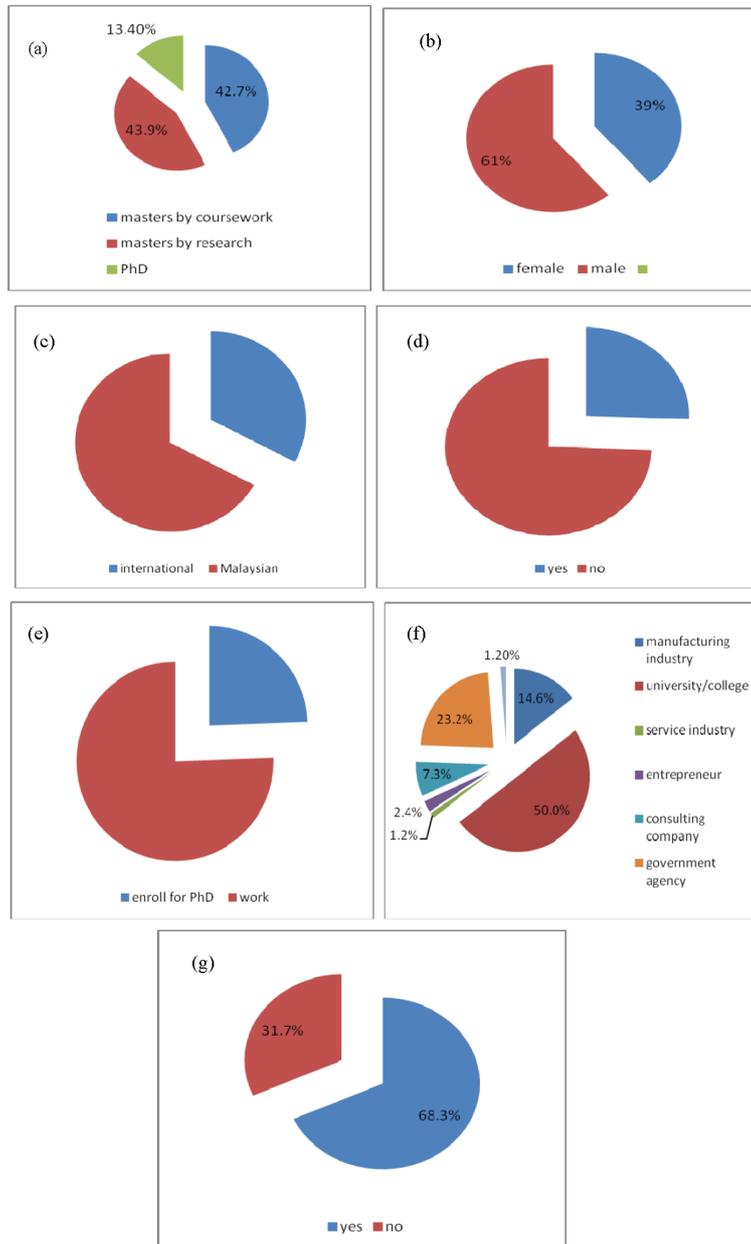
Figure 1. Profile of respondents based on: (a) Programme of study (b) Gender (c) Nationality (d) Educational financing (e) Post-graduation plans (f) Planned employment sectors (g) Job offer

Meanwhile, Figure 1 (e) illustrates that 75.6% of the respondents plan to work upon graduation while 24.4% plan to enroll for a PhD program. Figure 1 (f) conveys the sectors graduates plan to work in after graduation. Half of the graduates chose the tertiary university level as the sector of employment interest whilst 23.2% were interested in working in government agencies. In addition, 14.6% opted to be in the manufacturing industry whereas 7.3% planned for consulting work. Completing the picture, 2.4% were into entrepreneurship and 1.2% wanted to be gainfully employed in the service industry. Finally, Figure 1 (g) describes a total of 68.3 % of respondents receiving job offers upon graduation whilst the remaining 31.7% have yet to receive any offers.

3.2 Assessment of Learning Gains

Learning gains were evaluated by relating the gains with the Program Outcomes (PO). In assessing the learning gains, six statements related to the POs were provided and for each a response, a Likert scale of 1 to 5 was given with "1" indicating "weak" and "5" indicating "excellent". The assessment of learning gains is divided into two categories, the Master's level and the PhD one.

3.2.1 Response to Master's Degree POs

For the Master's level, the POs were as follows:

PO 1 Ability to acquire and apply fundamental and advanced knowledge in the field of study

PO 2 Ability to integrate knowledge and manage advanced engineering problems related to the field of study

PO 3 Ability to execute research plan, analyse and deliver research results through written and oral presentations

PO 4 Having the understanding of the elements related to project planning and management (if applicable)

PO 5 Ability to evaluate and make decision by considering social and environmental responsibilities that relates to engineering ethics

PO 6 Ability to demonstrate lifelong learning skill and acquire additional knowledge

Table 1. Respondents' perception on programme outcomes (master's degree)

PO		Responses				
		Weak	Average	Good	Very Good	Excellent
PO 1	No	1	3	31	23	13
	%	1.4	4.2	**43.7**	**32.4**	18.3
PO 2	No	1	14	14	27	15
	%	1.4	19.7	19.7	**38.0**	21.1
PO 3	No	0	2	15	28	26
	%	0.0	2.8	21.1	**39.4**	**36.6**
PO 4	No	2	1	13	34	21
	%	2.8	1.4	18.3	**47.9**	29.6
PO 5	No	1	2	28	29	11
	%	1.4	2.8	**39.4**	**40.8**	15.5
PO 6	No	0	2	19	38	12
	%	0.0	2.8	26.8	**53.5**	16.9

Table 1 describes the number and percentage of responses related to the attributes of POs for the Master's degree.

For PO 1, 43.7% of the respondents concurred that they positively gained (i.e. "good") in the *ability to acquire and apply fundamental and advanced knowledge in their fields of studies*. The other 32.2% responded "very good" while 18.3% expressed "excellent". The remaining 4.2% voted "average" whilst 1.4% provided a "weak" indication.

Second, 38.0% of the respondents answered "very good" for PO 2, which is the *ability to integrate knowledge and manage advanced engineering problems related to the field of study*, while 21.1% of them expressed "excellent". Other than this, both groups who answered "good" and "average" achieved an identical score of 19.7%. The remaining 1.4% disclosed a "weak" response.

Third, in PO 3 (*Ability to execute research plan, analyse and deliver research results through written and oral presentations*), 39.4% of the survey takers indicated "very good" while 36.6% responded "excellent". The remaining 21.1% remarked "good" and 2.8% stated "average".

Turning to PO 4, that is, *having the understanding of the elements related to project planning and management*, 47.9% of them revealed a "very good" understanding followed by 29.6% declaring "excellent". Other than this, 18.3% of the respondents communicated "good" comprehension and the remaining 2.8% responded "weak". To round off this PO, 1.4% disclosed "average" to their understanding of the said elements.

The analysis for PO 5, that is, the *ability to evaluate and make decision by considering social and environmental responsibilities that relates to engineering ethics* uncovered a response in the following order: 40.8% of respondents expressed "very good"; 39.4% indicated "good"; 15.5% responded "excellent"; 2.8% disclosed "average"; and 1.4% stated "weak" to this attribute.

Finally, for the *ability to demonstrate lifelong learning skill and acquire additional knowledge* (PO 6), 53.5% of graduates surveyed posted a "very good" response to this PO while 26.8% of them called it "good". Capping this PO, 16.9% reported "excellent" ability and 2.8% conveyed an "average" response.

3.2.2 Response to PhD POs

This study also rated PhD graduates with a different set of POs. Table 2 shows the number and percentage of responses related to the PhD POs which are as follows:

PO 1 Ability to demonstrate a systematic comprehension and in-depth understanding related to the field of study

PO 2 Ability to demonstrate mastery of skills to formulate problems, design and implement research with scholarly strength

PO 3 Ability to make critical analysis, evaluation and synthesis of new and complex ideas

PO 4 Ability to contribute new knowledge to the area of research and publish results of research through thesis and writings for publication at the international level

PO 5 Ability to communicate with peers, scholarly communities and society at large concerning the field of expertise

PO 6 Ability to undertake lifelong learning skills necessary in fulfilling responsibilities to the society.

Table 2. Respondents' perception on programme outcomes (PhD)

		Responses				
PO		Weak	Average	Good	Very Good	Excellent
PO 1	No	0	0	1	8	2
	%	0.0	0.0	9.1	**72.7**	18.2
PO 2	No	0	2	1	6	2
	%	0.0	18.2	9.1	**54.5**	18.2
PO 3	No	0	1	2	6	2
	%	0.0	9.1	18.2	**54.5**	18.2
PO 4	No	0	2	2	4	3
	%	0.0	18.2	18.2	**36.4**	27.3
PO 5	No	0	2	2	6	1
	%	0.0	2.8	2.8	**54.5**	9.1
PO 6	No	0	1	2	6	2
	%	0.0	9.1	18.2	**54.5**	18.2

Table 2 describes the number and percentage of responses related to the attributes of POs for the PhD degree.

For PO 1, 72.7% of the respondents expressed a "very good" response to their *ability to demonstrate a systematic comprehension and in depth understanding related to the field of study*. Completing this PO, 18.2% of them indicated "excellent", while 9.1% felt they had "good" comprehension.

Further, for PO 2, which is the *ability to demonstrate mastery of skills to formulate problems, design and implement research with scholarly strength*, 54.5% of survey takers disclosed a "very good" response while an identical 18.2% responded to both "excellent" and "good". Completing this part, the remaining 9.1 % stated "good" as their response.

Moving on to PO 3 (*ability to make critical analysis, evaluation and synthesis of new and complex ideas*), 54.5% of returnees believed they have achieved a "very good" critical ability while for both "excellent" and "good" responses, an identical score, i.e., of 18.2% was achieved. Lastly, 9.1% reported "average" for this ability.

PO 4, meanwhile, asked graduates to rate on their *ability to contribute new knowledge to the area of research and publish results of research through thesis and writings for publication at the international level*. A total of 36.4% of respondents expressed that they were able to contribute new knowledge at a "very good" level. This was followed by 27.3% of returnees stating "excellent". Both sets of the respondents matched at "good" and "average" at 18.2%.

PO 5, which considered the graduates' *ability to communicate with peers, scholarly communities and society at large concerning the field of expertise*, saw 54.5% of graduates remarking that they communicated at a "very good" level. In turn, 9.1% felt they have "excellent" communication. Matching scores at 2.8%, two groups of graduates responded with "good" and "average" responses.

Concluding this section's analysis at PO 6, that is, the *ability to undertake lifelong learning skills necessary in fulfilling responsibilities to the society*, 54.5% of survey takers were tagged at "very good" while responses of "good" and "excellent" were tied at 18.2%. The remaining 9.1% responded to an "average" rating.

3.3 Assessment of Educational Experience in UKM

Apart from the assessment of learning gains, an assessment of graduates' educational experience was also conducted. For educational experience, these attributes were gauged:

E 1 The overall quality of the learning experience at the faculty

E 2 The overall quality of the technical content of the program

E 3 Working in teams in order to solve problems

E 4 Accessibility to information (such as scholarly journals, books)

E 5 Applying knowledge on environmental and ethical issues in engineering

E 6 Exposure to common tools (such as MSWord and Excel) and professional tools (such as AutoCad, Matlab)

E 7 Confidence in working as a graduate engineer

Table 3. Respondents' perception on educational experience

Attribute		Responses				
		Weak	Average	Good	Very Good	Excellent
E 1	No	1	17	16	34	14
	%	1.2	20.7	19.5	**41.5**	17.1
E 2	No	1	1	36	30	14
	%	1.2	1.2	**43.9**	**36.6**	17.1
E 3	No	8	16	13	35	10
	%	9.8	19.5	15.9	**42.7**	12.2
E 4	No	0	15	10	30	27
	%	0.0	18.3	12.2	**36.6**	**32.9**
E 5	No	3	5	33	29	12
	%	3.7	6.1	**40.2**	**35.4**	14.6
E 6	No	3	5	13	31	30
	%	3.7	6.1	15.9	**37.8**	**36.6**
E7	No	3	3	20	37	19
	%	3.7	3.7	24.4	**45.1**	23.2

Table 3 depicts respondents' ratings on their educational experience in UKM.

For E 1, 41.5% of graduates responded that the *quality of the learning experience at the faculty* was "very good". Besides this, 20.7% indicated an "average" learning experience quality. In turn, 19.5% believed that it was of "good" quality. Bringing up the rear, 17.1% thought it was "excellent" while only 1.2% felt it was "weak".

Graduates assessing the *overall quality of the technical content of the program* (E 2) returned a 43.6% score for "good" whereas 36.6% reported that the content was "very good". "Excellent" content responders totaled 17.1%. Both "average" and "weak" sentiments garnered identical scores of 1.2% each.

For E 3, the majority of respondents (42.7%) had faith in *working in teams in order to solve problems* by giving it a "very good" response. A step further, 19.5% stated "average" in teamwork while 15.9% gave it a "good" rating. Graduates with a score of 12.2% expressed "excellent". At the bottom rung, 9.8% posted a "weak" for this attribute.

E 4 sees a total of 36.6% of graduates returning a "very good" response to *accessibilty to information (such as scholarly journals, books)*. Following closely, 32.9% of returnees posted "excellent" to this accessibility. Bottom feeders composed of batches indicating "average" (18.3%) and "good" (12.2%).

Further in the issue of *applying knowledge on environmental and ethical issues in engineering* (E 5), 40.2% of respondents stated "good" as a response with another 35.4% declaring "very good". Besides these, the other 14.6% called it "excellent", 6.1% deemed it "average" and 3.7% termed it "weak".

For E 6, that is, *exposure to common tools (such as MSWord and Excel) and professional tools (such as AutoCad, Matlab)*, 37.8% of returnees gave a "very good" response while 36.6% responded to this exposure with "excellent". A total of 15.9% disclosed it as "good" and 6.1% saw it as "average". Propping up this attribute at 3.7%, a response of "weak" was recorded.

At the tailend of this section (E 7), 45.1% of the respondents recorded a "very good" response to *confidence in working as a graduate engineer*. Responders at a score of 24.4% provided a "good" response to this attribute. Rounding up this sub-section, 24.4% of survey takers declared "good" confidence whilst two groups at 3.7% each indicated matching "average" and "weak" responses.

3.4 Assessment of Academic and Non-academic Support Issues

In the area of *Assessment of Academic and Academic Support Issues* graduates were asked to offer insights into the faculty delivery process. The two main threads of this is lecturer-student and academic support staff-student relationships. Five attributes were offered and they are given below:

R 1 Commitment of the lecturers/supervisors in assisting students

R 2 Opportunities to meet the lecturers outside lecture hours in order to seek general advice and matters related to the course. (For coursework program only)

R 3 The overall quality of student-lecturer relationship

R 4 The overall quality of student-administrative staff relationship

R 5 The overall quality of student-laboratory staff relationship

Table 4. Respondents' perception on student-staff/student-lecturer relationship

Attribute		Responses				
		Weak	Average	Good	Very Good	Excellent
R 1	No	1	3	12	31	35
	%	1.2	3.7	14.6	**37.8**	**42.7**
R 2	No	2	5	19	28	28
	%	2.4	6.1	23.2	**34.1**	**34.1**
R 3	No	1	3	12	37	29
	%	1.2	3.7	14.6	**45.1**	**35.4**
R 4	No	5	7	14	34	22
	%	6.1	8.5	17.1	**41.5**	26.8
R 5	No	3	7	25	31	16
	%	3.7	8.5	30.5	**37.8**	19.5

Table 4 shows the results of the respondents' assessment on student-staff relationship.

For the attribute of R 1, i.e., the *commitment of the lecturers/supervisors in assisting students*, 42.7% of the respondents said that the commitment given was "excellent" while 37.8% disclosed that it was "very good". At 14.6%, responders commented that it was "good". Rounding off this attribute, 3.7% called it "average" and 1.2% termed it as "weak".

For R 2, responders who sought *opportunities to meet the lecturers outside lecture hours in order to seek general advice and matters related to the course* numbered 34.1% each at both the "excellent" and "very good" levels. A further 23.3% claimed that it was "good". Very few survey takers adjudged a lack of opportunities with 6.1% reporting "average" and 2.4% calling it "weak".

In terms of the *overall quality of student-lecturer relationship* (R3), 45.1% of the respondents deemed the quality as "very good", while 35.4% stated that it was "excellent". At 14.6%, 3.7% and 1.2% returnees rated them as "good", "average" and "weak" respectively.

Commenting on the overall quality of student-administrative staff relationship (R 4), 41.5% of the respondents posted a "very good" response to this attribute. A total of 26.8% ranked the quality as "excellent" whilst 17.1% called it "good". Rounding up, 8.5% stated it "average" and 6.1% conveyed it "weak".

Finally, for R 5, 37.8% of graduates thought that the *overall quality of student-laboratory staff relationship* was "very good" with a further 30.5% calling it "good". A total of 19.5% declared the quality, "excellent". Capping off this attribute, 8.5% responders rated it "average" and 3.7% recorded it as "weak".

3.5 Assessment of Available Facilities and Resources

In the education eco-system, facilities are important in terms of educational hardware. The teaching and learning process would be greatly enhanced provided that there are sufficient facilities for students to thrive academically. Figure 2 shows the percentage of respondents' ratings towards the sufficiency of facilities at the faculty.

Results show that 39.0% of the respondents were satisfied with the faculty's *security and safety*. Graduates satisfied with the *on-campus computer facilities* and *availability of ancillary support services* numbered 34.1% each.

The respondents' satisfaction, however, diminished in the *quality of workspace and office facilities* aspect with a rating of 31.7%, *library resources* (29.3%) and *availability of project-specific needs* (26.8%). A review of these facilities looks desirable.
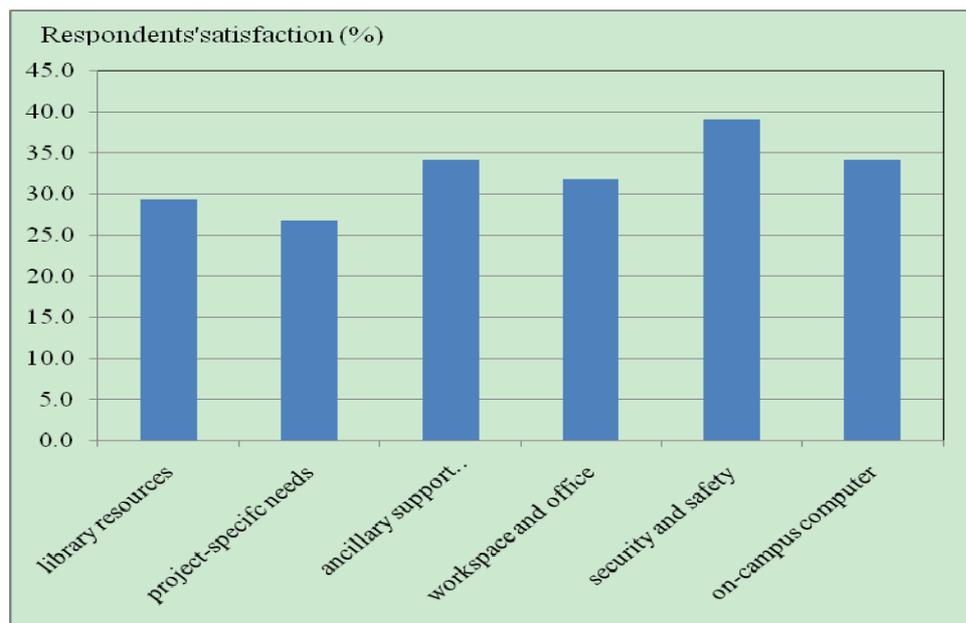
Figure 2. Response of graduate students to the faculty's facilities and resources

4. Conclusion

A survey was conducted among Masters and PhD graduates of the Faculty of Engineering and Built Environment, UKM. The results of the survey indicates considerable *learning gains* since students opted for *"good"*, *"very good"* and *"excellent"* measures of achievement for all the Program Outcomes (PO) devised by

the faculty. The same results were found for all the factors assessed for *educational experience in UKM*. Achievement for *Assessment of Academic and Non-academic Support Issues* is even better when the students chose only *"very good"* and *"excellent"* criteria. But for the *facilities and resources assessment,* the achievement is not good since students gave lower rates of satisfaction ranging from 26-39% for all the criteria measured.

Acknowledgements

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