

explanations of the learning outcomes to the students, leading to a lack of conscious acquisition of the knowledge, skills and attributes imparted or nurtured in class. Besides, there is a possibility of excessive coursework or over-emphasis on examination results overwhelming the learning processes for components other than the subject matter.

Taking into account the main purposes of pursuing a master's degree as no other than improving one's career prospects, students may also be more partial towards obtaining good grades than paying extra attention to strengthening the desirable graduate attributes. Students may have got carried away in completing the assigned coursework without engaging effectively with fellow coursemates to hone their employability skills as intended. Academic staff are also accountable for the seeming uncertainties felt by students pertaining to the practical skills and knowhow, i.e. PLO2. While the cognitive component is much emphasized at master's level of study, the relation with current field practices, regional as well as global technological advancement and trends need to be given due elaboration too. This would ensure a balanced understanding of the in-depth knowledge and in situ implications and implementation.

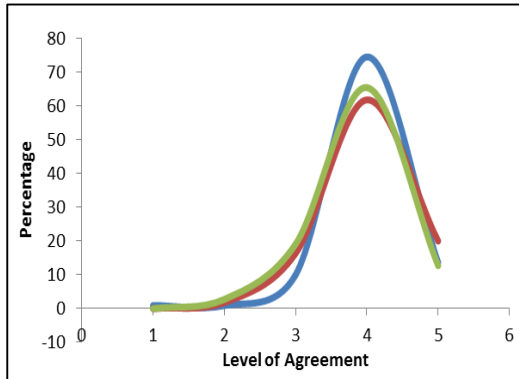


Fig. 7. Level of agreement for attainment of the PEOs in the master's programmes

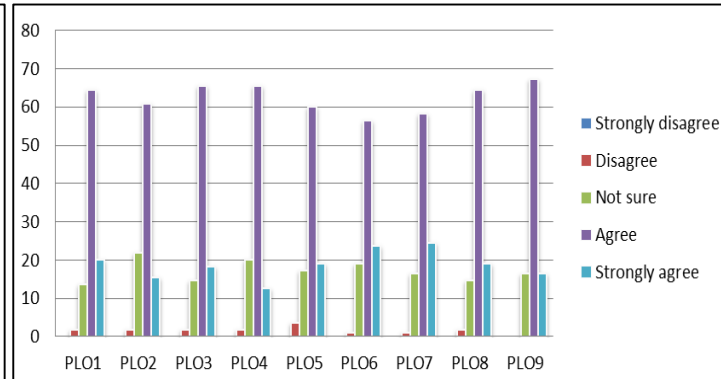


Fig. 8. Level of agreement for attainment of the PLOs in the master's programmes

VII. PART C: CULTIVATION OF GRADUATE ATTRIBUTES

This section presents the results from Part C of the questionnaire, which was an assortment of questions pertaining to graduate attributes arranged in no particular order to avoid unconscious stereotyping the answers by the respondents. As shown in **Tables II - V**, the graduate attributes under each category of academic, personality management, connectivity and exploration, which were scored from 1-5 on a Likert scale are summarized as mean values for each programme. The mean scores hovered between 3.7 and 4.4, corresponding with approximately 74-88 % of the total scores. It follows that in general the students considered postgraduate studies to make meaningful changes and improvement to their outlook in employability skills.

The more significant scores were observed in technical competence (C1-academic), imaginative (C4-exploration), critical (C6-exploration), creative and innovative (C10-exploration) thinking skills, professional accountability (C15-personality management), positive attitude (C17-personality management) as well as technology adoption (C9-connectivity), where the means scores were above 4 for all 3 programmes. It would appear that the respondents found the master's programmes beneficial in enhancing their character building and exploration attributes more than development of the academic and connectivity aspects. This finding suggests maturity in the respondents who no longer consider academic excellence as the narrowly defined purpose of higher education. The eagerness to sharpen their thinking skills reflected the training embedded in the programmes, including group tasks and projects which required students to think in a logical and systematic leading to creative problem solving. Critical thinking skills boost by imagination, creativity and innovation are indeed trademarks of competent engineers in the field faced with myriad unexpected challenges not always taught in lectures. Besides most of the students who enroll in these master's programmes appeared to look forward to personal skills grooming to better prepare them for the job market. These include altruism and professionalism in engineering practices closely associated with socio-economic impact, attributes undeniably crucial in successfully carrying out the balancing act between development for mankind, preservation of nature, cultural heritage and social harmony as well as equitable wealth distribution.

TABLE II. MEAN FOR ACADEMIC ATTRIBUTES

No. of Question	Academic Attribute	Question	Mean		
			MA (N=64)	MM (N=23)	ME (N=23)
C1	Academic performance	I am confident in my ability to apply the knowledge that I have learned in my postgraduate studies.	4.05	4.22	4.22
C5	Job knowledge on discipline of study	I feel well prepared in my area of specialisation.	3.77	3.91	3.96
C11	Academic performance	I am given assignments that match my skills, abilities and interests.	3.94	4.00	3.91
C14	Good degree classification	I believe good grades will help me to get promotions and employment.	3.78	4.09	3.96
C18	College experiences	I participate in a variety of co-curricular activities to enrich my college experience at UTHM.	3.81	3.96	3.96

TABLE III. MEAN FOR PERSONALITY MANAGEMENT ATTRIBUTES

No. of Question	Personality Management Attribute	Question	Mean		
			MA (N=64)	MM (N=23)	ME (N=23)
C3	Adaptability	I am able to respond positively to changing circumstances and new challenges.	3.97	3.96	4.09
C8	Positive attitude	I believe integrity is number one to behold in my future career.	3.78	4.13	4.13
C15	Responsibility	I feel well prepared to carry out my professional responsibility.	4.08	4.04	4.09
C17	Altruism (Public spirit + Compassionate)	I believe a positive attitude will lead to my career advancement.	4.06	4.04	4.04
C20	Leadership	I feel well prepared to assume a leadership position.	3.94	4.13	4.35

TABLE IV. MEAN FOR CONNECTIVITY ATTRIBUTES

No. of Question	Connectivity Attribute	Question	Mean		
			MA (N=64)	MM (N=23)	ME (N=23)
C2	Communication	I feel well prepared to communicate my ideas orally as well as in writing.	4.00	4.00	3.96
C9	Technology integration	I am confident in my ability to use appropriate technologies in my work.	4.08	4.00	4.13
C12	Commercial awareness	I feel well prepared to critically evaluate the literature in my field.	3.95	4.13	4.17
C16	Team working	I am well aware of the different roles within a good team.	4.06	4.04	3.87
C19	Commercial awareness	I establish networking with academics and senior engineers in my area of specialization.	3.77	4.13	4.13

TABLE V. MEAN FOR EXPLORATION ATTRIBUTES

No. of Question	Exploration Attribute	Question	Mean		
			MA (N=64)	MM (N=23)	ME (N=23)
C4	Imaginative	I have enhanced my imaginative thinking.	4.00	4.13	4.09
C6	Critical and creative thinking	I have enhanced my critical thinking skills.	4.19	4.09	4.13
C7	Innovative	I agree pursuing postgraduate is equal with exploration of knowledge.	3.98	4.09	4.09
C10	Innovative	I have enhanced my innovative and creative thinking skills through academics activities in my postgraduate studies.	4.19	4.26	4.04
C13	Critical and creative thinking	I have enhanced my problem solving skills.	3.88	3.87	4.35

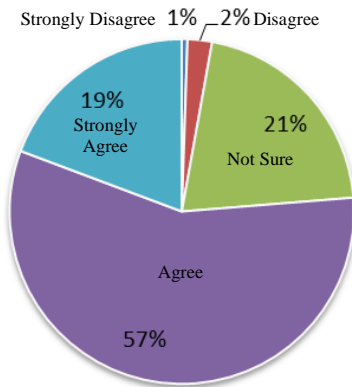


Fig. 9(a). Frequencies of agreement on academic attributes

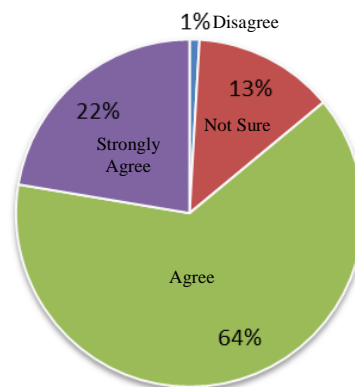


Fig. 9(b). Frequencies of agreement on personality management attributes

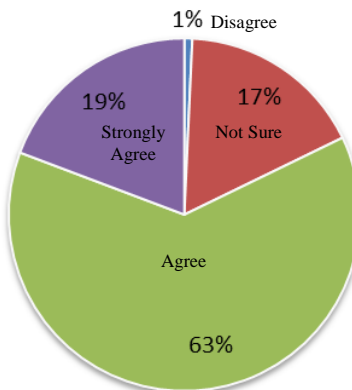


Fig. 9(c). Frequencies of agreement on connectivity attributes

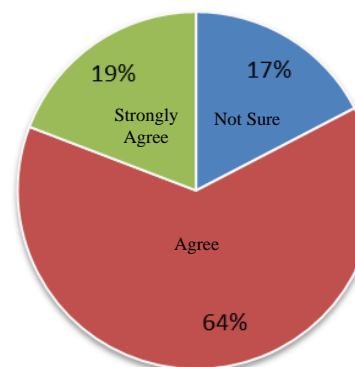


Fig. 9(d). Frequencies of agreement on exploration attributes

Fig. 9 (a)-(d) show the frequencies of agreement for each category of graduate attribute examined. Achievement in the academic aspect saw over 75 % of agreement on the effectiveness of the master’s programmes, though a puzzling 21 % of the respondents reported to be unsure of their learning outcomes in terms of technical competencies (Fig. 9a). This could be constituted by the international students with marginal English proficiency (see Fig. 6) who found the lessons delivered in English a challenge to follow and comprehend. As students were allowed to enrol without the minimum English level requirement (but to graduate with the proficiency level stipulated), the University could perhaps provide extra hours of language skills training to overcome the language barrier. Nonetheless it has since been regulated that the minimum English proficiency level to be an entry requirement for all students, local and international, since late last year to ensure performance quality of the students. 86 % of the respondents agreed that the programmes were helpful in developing their personality management attributes (Fig. 9b). This corresponds with earlier observations that students value the character building exercises incorporated in the programmes, especially in terms of their ability to shoulder professional and social responsibilities upon graduation. The small number of respondents who were unsure (13 %) was most likely caused by immaturity of students who enrolled in the studies without careful thought of what the postgraduate studies can do to their personal advancement besides improved technical knowledge.

In Fig. 9 (c) & (d), the mobile technologically savvy students recorded more than 80 % of agreement that the master’s programme helped them to further develop their connectivity skills and exploration attributes. It is expected that the students utilised their improved connectivity skills to further information search and data management, simultaneously honing their analytical as well as problem solving skills. On contrary, the 17 % response of uncertainty in both categories of attribute point to a small number of students either unwilling or unaware of the urgency to establish their communication, team-working and leadership skills while sharpening their higher order thinking abilities. Shortcomings such as these can be rectified by academic staff relating the course contents and activities to the targeted learning outcomes (CLO) and correlation with the culminating accumulative PLO attainment in class at a regular basis. This constant reminder would guide the students towards conscious cultivation and development of the attributes in the carrying out the assigned tasks respectively. It is often the case where students are unaware of the implicit purpose of a particular task apart from the explicit technical competence components. As a result, students may not be fully informed of the skills to be harnessed throughout the master’s programme.

VIII. CONCLUSIONS

The survey conducted to gauge students enrolled in 3 engineering master's programme (coursework) focused the students' perception of their preparedness for the job market. The questionnaire was designed to direct respondents to a self-examination of the extent of employability skills development via the postgraduate programme. The respondents seemed to be of the opinion that attributes in character building and exploration were more important than those related to technical knowledge and connectivity. This is attributed to the maturity of the postgraduate students in consciously improving their marketability as well as adaptability in the job market via the master's courses. It is also indicative of the compatibility between the programmes' curriculum, learning objectives and outcomes aligned to the designated learning domains by MQF, encompassing the 4 categories of graduate attributes outlined in the National Graduate Employability Blueprint in 2012-2017. Overall the study found no mismatch between the programme contents and delivery with the students' expectations as shaped by the industrial and market demands.

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BIOGRAPHY

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