University Freshman Mentoring Effectiveness and Scale Enhancement

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Abstract: Graduate unemployment has worsened following the global crisis caused by the coronavirus disease 2019 (COVID-19) and has created increased pressures on universities to enhance their graduates' employability. Past studies have indicated that mentoring programs can positively impact student soft skills development and employability. While undergraduate mentoring programs have mushroomed, research on undergraduate mentoring has not kept pace. This study used a mixed methods approach to examine the effectiveness of a public university's initiative in mentoring new undergraduates. Using the College Student Mentoring Scale (CSMS), this study found that the university's undergraduate mentoring initiative is moderately effective. The CSMS assessed four mentoring dimensions, namely academic subject knowledge support, degree and career support, psychological and emotional support as well as role modelling. The results of this study highlighted the mentoring functions that are considered as least effective so that informed and targeted efforts can be undertaken to enhance university freshman mentoring. Findings from this study suggest that a new dimension namely mentor-mentee compatibility, competencies and expectations could be added to the College Student Mentoring Scale (CSMS) to enhance concept operationalization. A limitation of this study is that it is based on mentees' perspectives only. Future research could include the perspectives of mentors as well.

Keywords: Graduate employability, Mentoring effectiveness, Mentoring scale, University education, University freshman

1. Introduction

The coronavirus disease 2019 (COVID-19) has created unprecedented challenges for tertiary education institutions around the world (Bensaid & Brahimi; Bozkurt, Jung, Xiao, Vladimirschi, Schuwer, Egorov & Olcott 2020; Burgess & Sievertsen, 2020; Dawadi, Giri, & Simkhada, 2020; Saravanakumar & Padmini Devi, 2020; Toquero, 2020). The global economic recession precipitated by the COVID-19 pandemic will reduce graduate employment opportunities. Universities must be more innovative to enhance graduate employability in the face of disruptive workplace changes brought on by the fourth industrial revolution (IR 4.0) as well as the new normal under COVID-19 (Bui, Nguyen, & Cole, 2019). Past studies

have indicated that mentoring programs can positively impact student development and employability (Gershenfeld, 2014; McKinsey, 2016; Spence & Hyams-Ssekasi, 2015). While universities are implementing more mentoring programs in recent years, research on undergraduate mentoring has not kept pace (Law, Hales, & Busenbark, 2020; Lunsford, Crisp, Dolan, & Wuetherick, 2017).

The mentoring literature lacks consensus on the mentoring concept, measurement instruments and theoretical frameworks (Gershenfeld, 2014; Law et al., 2020). The lack of agreement on the operational definition of mentoring has also plagued mentoring research and resulted in a variety of mentoring scales found in the literature (Chen, Watson, & Hilton, 2016). The College Student Mentoring Scale (CSMS) was developed by Nora and Crisp (2007) for measuring undergraduate mentoring and identified four major mentoring domains or functions, namely academic subject knowledge support, degree and career support, psychological and emotional support as well as the existence of a role model. According to Nora and Crisp (2007), the academic subject knowledge support provided by mentors helps mentees in the acquisition of skills and knowledge while mentors' psychological and emotional support entails providing mentees with a listening ear, help in problem identification as well as moral encouragement. Nora and Crisp (2007) also asserted that mentors' degree and career support can assist mentees in setting career goals and decision-making while mentors' role modelling function would help set a good example and enable mentors to serve as role models to mentees.

Research on mentoring program effectiveness and outcomes can provide feedback to further improve the mentoring initiatives undertaken by tertiary institutions. Government universities are often mandated to undertake various initiatives to equip graduates with important soft skills to face challenges in a competitive and constantly evolving job market (Malaysia, 2015). Despite resource constraints, universities have invested heavily in mentoring initiatives in the hope that their mentoring programs can enhance graduate employability and academic success. In this regard, a Malaysian government university had implemented an Employability and Enhancement Programme (EEP) which included a stand alone mentoring component aimed at first year university undergraduates (Chong & Hamid, 2016; Chong & Rahman, 2016). Under the university's EEP initiative, every lecturer was assigned to mentor one or two groups comprising ten students per group. This study employed a mixed methods approach to examine the effectiveness of the public university's mentoring initiative that was implemented under its Employability and Enhancement Programme (EEP) as well to validate the College Student Mentoring Scale (CSMS) which was developed by Nora and Crisp (2007).

2. Methodology

This study employed the concurrent mixed methods research design to collect both structured and unstructured data. The research instrument for this study is a self administered questionnaire comprising both closed ended and open ended questions. The closed ended questions, as listed in Table 1, are adapted from the College Student Mentoring Scale (CSMS) which was developed by Nora and Crisp (2007). In addition, an open-ended question was included to allow respondents to address issues on mentoring effectiveness that were not addressed in the questionnaire.

The CSMS comprises four latent mentoring variables namely academic subject knowledge support, degree and career support, psychological and emotional support as well as the existence of a role model. Respondents were requested to rate each item in the measurement scale using a five point Likert scale (1=strongly agree to 5=strongly disagree).

The population of the study were first year undergraduates from a Malaysian public university. The sample was obtained via cluster sampling and 530 usable questionnaires were obtained from the study population. The quantitative data was analysed using SPSS while the qualitative data was analysed using content analysis.

Table 1. Mentoring scale

Latent Construct	My lecturer mentor...
Academic Subject Knowledge Support	"helps me perform to the best of my abilities in my classes" "provides ongoing support about the work I do in my classes" "helps me work towards achieving my academic aspirations"
Degree And Career Support	"helps me to consider the sacrifices associated with my chosen degree" "helps me realistically examine my degree options" "encourages me to consider educational opportunities beyond my current plans" "discusses the implications of my degree choice" "questions my assumptions by guiding me through a realistic appraisal of my skills"
Psychological And Emotional Support	"expresses confidence in my ability to succeed academically" I can talk with my lecturer mentor openly about any issues related to being in university" "gives me emotional support" "encourages me to talk about problems I am having in my social life" "makes me feel that I belong in university" "encourages me to discuss with him/her to explore what I want"
Role Model	"sets a good example about how to relate to other people" "serves as a model for how to be successful" I admire my lecturer mentor

3. Findings

3.1 Respondents' Profile

The profile of the respondents in this research sample is presented in Table 2 below.

Table 2. Respondents' profile *(N* = 530*)*

	Classification	N	%
College / Field of study	College of Arts and Science (CAS)	60	11.3
	College of Business (COB)	311	58.7
	College of Law, Government and International Studies (COLGIS)	159	30.0
Gender	Female	415	78.3
	Male	115	21.7
Ethnicity	Malay	292	55.1
	Chinese	193	36.4
	Indian	20	3.8
	Peribumi Semenanjung, Sabah dan Sarawak	14	2.6
	Others	11	2.1
University entry qualification	Diploma	107	20.2
	Matriculation Certificate	76	14.3
	Sijil Tinggi Agama Malaysia (STAM).	33	6.2
	Sijil Tinggi Persekolahan Malaysia (STPM)	314	59.2

3.2 Reliability of measurement instrument

The reliability tests for the overall measurement scale and its four sub-scales are presented in Table 3. The Cronbach's alpha values for the overall measurement and its four sub-scales indicated high reliability values of above 0.8.

Table 3. Measurement Instrument Reliability Statistics

	No of Items	Cronbach's Alpha
University Student Mentoring Overall Scale	17	.982
Academic Subject Knowledge Support Subscale	3	.890
Degree And Career Support Subscale	5	.945
Psychological And Emotional Support Subscale	6	.950
Role Model Subscale	3	.922

3.3 Effectiveness of Mentoring Qualities

Inferential statistical t-tests were conducted on the mean scores of the four mentoring categories and mentoring overall effectiveness. The results of the t-tests, presented in table 4 below, were all statistically significant and implied that first year student mentees perceived overall mentoring and its four mentoring dimensions as moderately effective. The role modelling function was rated as the most effective while the degree and career support mentoring component was considered by student mentees as least effective.

Table 4: T-test of Overall and Latent sub-scales (N = 530)

	Mean	SD	Test value=3	
			t(529)	p
University Student Mentoring Overall Scale	2.44	0.98	-13.22	0.00
Academic Subject Knowledge Support Subscale	2.45	1.04	-12.26	0.00
Degree And Career Support Subscale	2.48	0.99	-12.15	0.00
Psychological And Emotional Support Subscale	2.45	0.99	-12.84	0.00
Role Model Subscale	2.35	1.05	-14.34	0.00

Inferential statistical t-tests were also conducted on the sample mean scores of all the measured variables i.e all the seventeen (17) items in the College Student Mentoring Scale (CSMS). The results of the t-tests were all statistically significant and are reported in Table 4 and Table 5. All seventeen (17) student mentoring items in the study were rated by the university freshmen as moderately effective. The seventeen (17) items in the College Student Mentoring Scale (CSMS) are listed in table 5 from the most effective to the least effective as perceived by mentees. The number in the rank order column denotes the effectiveness ranking of the mentoring item, with rank order number one (1) as most effective and rank number seventeen (17) as least effective. The results in Table 4 and Table 5 provides feedback to the university on areas for improvement to enhance student mentoring effectiveness.

Table 5: T-test of individual measured items (N = 530)

My EEP lecturer …	Rank order	Mean	SD	Test value=3	
				t(529)	**p**
"sets a good example about how to relate to other people"	1.	2.32	1.09	-14.29	0.00
I admire my EEP lecturer	2.	2.32	1.16	-13.63	0.00
"helps me work towards achieving my academic aspirations"	3.	2.41	1.13	-12.00	0.00
"serves as a model for how to be successful"	4.	2.41	1.12	-12.14	0.00
I can talk with my EEP lecturer openly about any issues related to being in university"	5.	2.42	1.13	-11.89	0.00
"expresses confidence in my ability to succeed academically"	6.	2.42	1.09	-12.33	0.00
"provides ongoing support about the work I do in my classes"	7.	2.45	1.08	-11.77	0.00
"encourages me to talk about problems I am having in my social life"	8.	2.45	1.11	-11.46	0.00
"discusses the implications of my course options"	9.	2.46	1.09	-11.41	0.00
"encourages me to consider educational opportunities beyond my current plans"	10.	2.47	1.10	-11.00	0.00
"helps me to consider the sacrifices associated with my chosen degree"	11.	2.47	1.10	-11.21	0.00
"makes me feel that I belong in university"	12.	2.47	1.09	-11.07	0.00
"encourages me to discuss with him/her to explore what I want"	13.	2.47	1.08	-11.34	0.00
"helps me realistically examine my course options"	14.	2.48	1.14	-10.50	0.00
"helps me perform to the best of my abilities in my classes"	15.	2.48	1.11	-10.73	0.00
"gives me emotional support"	16.	2.48	1.11	-10.83	0.00
"questions my assumptions by guiding me through a realistic appraisal of my skills"	17.	2.50	1.05	-10.91	0.00

3.4 Mentoring outcomes based on freshmen field of study and university entry qualification

All four mentoring effectiveness dimensions were examined to test for significant differences in mentoring outcomes based on undergraduate field of study and university entry qualification. Undergraduate field study is denoted by respondents' respective colleges in the university, namely College of Business (COB), College of Arts and Sciences (CAS) and College of Law, Government and International Studies (COLGIS). University entry qualification is represented by Sijil Tinggi Persekolahan (STPM), Diploma, Matriculation Certificate and Sijil Tinggi Agama Malaysia (STAM). Oneway Anova was conducted to compare mean differences between groups and the results are shown in Table 6.

Table 6: Test of differences in mentoring outcomes between groups

	Field of Study		Entrance Qualifications	
	Levene test Sig	ANOVA Sig	Levene test Sig	ANOVA Sig
Academic Subject and Knowledge Support	.541	.611	.520	.499
Degree and Career Support	.370	.724	.181	.466
Psychological and Emotional Support	.814	.717	.257	.480
Role Model	.768	.426	.253	.290

p >.05

The Levene test results indicated that the homogeneity of variances assumption is not violated. The ANOVA test results suggest that there are no differences in mentoring effectiveness as perceived by students from different fields of study and also that there are no differences in mentoring effectiveness as perceived by students from different university entry qualifications. The results suggest that there is no significant relationship between students' field of study and entrance qualification and mentoring outcomes.

3.5 Associations between mentoring outcomes

Pearson's correlation test results are presented in Table 8. The results suggest that correlations between different mentoring components are significant and are positively associated. The correlation is strongest between psychological and emotional support with degree and career support.

Table 8. Correlations between mentoring outcomes *(N = 530)*

	Academic Subject and Knowledge Support	Degree and Career Support	Psychological and Emotional Support
Degree and Career Support	.928**		
Psychological and Emotional Support	.916**	.944**	
Role Model	.869**	.891**	.905**

** Correlation is significant at the 0.01 level (2-tailed).

4. Discussion

The results of this study indicate that the undergraduate mentoring program that had been implemented by a Malaysian public university was moderately effective. This study found no significant differences in mentoring effectiveness based on university freshmen's field of study and university entry qualification. This would support the implementation of a university wide freshman mentoring program irrespective of the students' field of study and university entry qualification.

In order to enhance mentoring effectiveness, the university should focus on improving the weak mentoring functions as identified in this research. Among the four mentoring domains, the university's first year undergraduate mentoring initiative was weakest in terms of degree and career support. The university could enhance mentors' capacity to provide academic program and career guidance particularly for university freshmen who are unprepared for tertiary education via workshops and best practices training (Hughes, Gibbons, & Mynatt, 2013). The study found that degree and career support is most strongly correlated with psychological and emotional support. This is likely because new undergraduates experience high anxiety and stress in making decisions on future career paths and lecturers who are able to provide good psychological and emotional support are perceived as effective mentors.

Among the seventeen (17) items in the College Student Mentoring Scale, mentors are perceived as least effective in questioning students' assumptions to guide them in skills appraisal, helping students in examining course options, providing emotional support and helping students to perform to the best of their abilities in class. The university should consider course embedded mentoring for first year university students (Henry, Bruland, & Sano, 2011) as the transition from school-based learning to university-based learning is challenging for many Malaysian students (Terpstra & Ahmad, 2018). Course embedded mentoring can complement stand alone mentoring initiatives for better mentoring effectiveness (Cooper, 2018). This suggestion was also put forward by some respondents in their answers to the open ended question in the survey questionnaire. Mentees have suggested that lecturers who are assigned to mentor them should ideally be one of their course subject lecturers.

This research found that the College Student Mentoring Scale (CSMS) demonstrated high reliability although it was developed by researchers in the Western context (Nora & Crisp, 2007). However,

qualitative data obtained from the study indicated that the mentoring scale developed by Nora and Crisp (2007) can be enhanced. Many respondents emphasized that lecturer mentors should first establish closer rapport with their student mentees. As pointed out by one student from the College of Business, "...*I think that a strong relationship between lecturer and student must be built up first... students will accept suggestions from the lecturer and the lecturer will be able to influence students in a positive way*...". Prior studies have also noted the importance of mentor-mentee relationships in successful mentoring programs (Hudson, 2016). To facilitate development of good relationships with their mentors, students have suggested that the university organize out of campus activities for students and lecturers.

Other suggestions provided by many students included the following:

- Lecturer mentors must be committed, caring, willing and be able to mentor students.
- Lecturer mentors should be equipped with training and counselling skills.
- Lecturer mentors should be contactable by providing their mobile numbers to students.
- Lecturers should use social media to facilitate communications with mentees such as a whatsapp group.
- University should allow students to choose which lecturers they want as their mentors.
- Mentoring sessions should be held at more conducive times and venues for mentees.

Students' suggestions on improving mentoring effectiveness reflects the need to consider mentor-mentee compatibility, competencies and expectations in order to develop effective mentoring programs. The effects of mentor-mentee compatibility, competencies and expectations on mentoring effectiveness have been noted in the literature (Ali, Hassan, Jailani, Zaremohzzabieh, & Lee, 2020; Jailani, Adil, Amat, Othman, Deylami, & Rahim, 2020; Black, Taylor, Reddick, & Smith, 2019; Wyre, Gaudet, & McNeese, 2016). Mentor-mentee compatibility, competencies and expectations are not taken into account in the College Student Mentoring Scale (CSMS) and can be incorporated to improve measurement validity and concept operationalization.

A main limitation of this study is that it provides only student mentees' perspectives and does not include lecturer mentor inputs. A recent study had found that the perspectives of students and lecturers on mentoring programs may differ (Gunn, Lee, & Steed, 2017; Heeneman & de Grave, 2019). Although undergraduate mentoring has been conventionally conducted in person or face to face, future research could look into supporting the development and implementation of e-mentoring or virtual mentoring programs as necessitated by the new normal following the COVID-19 pandemic.

5. Conclusion

This study employed the concurrent mixed methods research design to assess an undergraduate mentoring program that had been implemented by a Malaysian public university and also to validate the mentoring scale developed by Nora and Crisp (2008). This study found that the first year undergraduate mentoring initiative undertaken by the Malaysian public university under its Employability and Enhancement Program (EEP) was considered by student mentees as moderately effective in all the four major mentoring domains, namely academic subject knowledge support, degree and career support, psychological and emotional support as well as in role modelling. This research also highlighted the mentoring functions that were considered by student mentees as less effective so that corrective actions can be undertaken to improve the university's future mentoring initiatives. Although this study found that the mentoring scale that was developed to measure mentoring effectiveness by Nora & Crisp (2007) to be a reliable instrument in the Malaysian context, findings from this research suggest that a new dimension namely mentor-mentee compatibility, competencies and expectations could be added to enhance the College Student Mentoring Scale (CSMS).

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