Learner profiling: a study on Big Five Personality Traits and Lifelong Learning skills

Thirumeni T. Subramaniam[a,1], Nur Amalina Diyana Binti Suhaimi[a]

[a]*Centre for Research and Innovation, Open University Malaysia (Malaysia)*

Abstract

There are many interventions introduced by Open University Malaysia in supporting its learners to successfully complete the programme that they have enrolled in. An example is the use of personality traits dimensions to predict learners' Lifelong Learning skills dimension. The research was carried out using a survey instrument which measures 34 items within six dimensions including the five dimensions based on the Big Five Personality Traits and the Lifelong Learning skills. The sample for this study was taken from the population of first semester learners during the September 2019 semester. All new learners are enrolled in one of the compulsory courses OUMH1603: Learning Skills for 21st Century. Data was collected online using the Survey Monkey platform within a-month duration. 411 out of 2546 (16.14%) responses were obtained. The data analysis was carried out based on descriptive statistics and structural equation modeling by using SPSS and AMOS software. The findings indicate that all dimensions have high Cronbach's Alpha scores (more than 0.8) which means that all dimensions are reliable. In addition, Openness to Experience, Conscientiousness, Agreeableness, and Emotional Stability showed positive correlations with the Lifelong Learning skills dimension. The instrument used in this study is able to support system and propose strategies for improving learners' Lifelong Learning skills.

KEYWORDS: Learner Profiling, Personality Traits, Online Evaluation Tool, Lifelong Learning Skill, Learners Support.

1. Introduction

In the year 2000, Open University Malaysia (OUM) was established as the premier Open and Distance Learning (ODL) private institution in Malaysia. The goals of the university include promotion of Lifelong Learning (LLL) and increase the number of knowledge workers as a strategic move towards becoming a developed nation. Its philosophy of education differs from many other public and private universities as it embraces the open education philosophy and supports a large learner population of working adults. These learners have diverse entry qualifications and face multifaceted challenges. As such flexible education afforded by the open education philosophy is extremely crucial. In line with the vision of OUM of becoming the top flexible learning provider in the country, initiatives carried out at the university are dedicated towards ensuring that all of its programmes are developed according to the national quality assurance framework (the Malaysian Qualification Framework or MQF) and the regulations set by the Malaysian Quality Agency (MQA). Its mission is to widen the access to quality education and provide LLL opportunities by leveraging on technology, adopting flexible mode of learning, and providing a conducive and engaging learning environment at a competitive and affordable cost. Anyone interested to their further study also has the opportunity to enroll with OUM through its 'open entry' admission with Accreditation of Prior Experiential Learning (APEL) Centre.

OUM offers both Blended Learning and Online Learning. Both modes are largely based on self-managed learning using eModule (a self-instructional learning module) developed by OUM's Centre for Instruction Design and Technology (CiDT). Delivery of the programmes is managed by the Centre for Learning

[1] corresponding author - email: thirumeni@oum.edu.my

Technology (CLT) as well as the Centre for Teaching and Learning Management (CTLM). The former leverages the use of technology to create a conducive and engaging learning environment for OUM learners known as myINSPIRE (a moodle-based learning platform) that is located on a customized learner management system (MyLMS). myINSPIRE is a learning system that host e-modules, forum, live forums, additional learning resources and assessments. Meanwhile, CTLM administers teaching and learning support for learners by managing the manpower support and other resources: e-tutors and face-to-face tutors. eTutors support learners via asynchronous forum and synchronous live forum sessions, while face-to-face tutors support learners via face-to-face tutorial sessions at the university's well-distributed learning centres. Learners at OUM are also supported by other providers such as the Digital Library and the Centre for Learner Affairs (CLA); all support services are integrated through MyLMS.

The presence of an online learning environment that allows for a much more flexible learning environment is better suited to adult learners. Transition to a predominantly online learning environment is a natural move for OUM given that most adults in Malaysia have acceptable level of digital literacy (T Subramaniam et al., 2019). This is an even more pressing need in a world where physical social distancing is a new norm brought about by the COVID-19 pandemic. Past studies have often deliberated the issue of perceived isolation that online learners face even before the pandemic (Croft et al., 2010). This issue is further emphasized since many are returning to the world of education after a long absence. These learners need support. There are many initiatives that have been carried out to create a better understanding of OUM learners, and improving the curriculum in order to achieve the targeted outcomes of the programmes offered. The Centre of Research and Innovation (CRI) at OUM has been testing the use of personality traits to understand OUM learners better for some time and has successfully developed a simple and a reliable tool. This study reports the centre's effort to use the profile to also explore the relationship between the traits identified and the LLL skill that OUM hopes to foster among its learners. LLL is also one of the targeted learning outcomes in all OUM programmes.

2. Literature review

In 1987, psychologists, Costa and McCrae had introduced Big Five Personality Traits model in identifying personality dimensions of human being which is now widely used by many other researchers. The five dimensions identified by Costa and McCrae are: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. In 1992, Costa and McCrae had elaborated the representation of basic dimensions of personality using the five factors on the basis of four lines of reasoning and evidence.

Through the years the items were improved and amended to suit the need of the study and the relevance of these dimensions were highlighted again by McCrae and Costa in 2004. In 2016, Cubel et al. had reported the relationship between the Big Five Personality Traits and Productivity. A person's productivity was shown partially influenced by the Big Five Personality Traits. The use of the Big Five Personality Traits to predict dimensions such as academic performance, job performance and life satisfaction was also proven by Lounsbury et al. in 2005. The Covid-19 pandemic also sees the use of the Big Five Personality Traits in predicting anxiety and depression (Nikcevic et al., 2021). Another interesting relation that was explored was between entrepreneurial personality and the Big Five Personality Traits by Luetner et al. (2014). Study also indicate that the Big Five Personality Traits have positive influence in academic performance (2011).

Academic performance at OUM refers to successful completion of the programmes undertaken that are marked by the achievement of the targeted learning outcomes of the programmes enrolled. Learning outcomes in all OUM programme are designed using the domains outlined in the Malaysian Qualification Framework (MQF). The eight domains under the first MQF version are: (i) Knowledge, (ii) Practical Skills, (iii) Social Skills and Responsibilities, (iv) Values, Attitude and Professionalism, (v) Communication, Leadership and Team Skills, (vi) Problem Solving and Scientific Skills, (vii) Information Management and Lifelong Learning Skills, and (viii) Managerial and Entrepreneurial Skills (MQA, 2010). Domains such as Knowledge, Practical Skills, Problem Solving Skills and Scientific Skills are measured through well-designed assessment methods within the courses the students are enrolled-in. Meanwhile, learners' development in four other domains: (i) Values, Attitude and Professionalism, (ii) Communication, Leadership and Team Skills, (iii) Information Management and Lifelong Learning Skills, and (iv) Managerial and Entrepreneurial Skills are developed through generic university courses: (i) Professional Ethics, (ii) Introduction to Communication (iii) Learning Skills for Open and Distance Learners, Basic Concept of Information Technology, (iv) Principles of Management, (v) Entrepreneurship, and (vi) Thinking Skills and Problem Solving. The domain under social skills and responsibilities are built into the hidden curriculum through interactions in forums, live forums and tutorial sessions. Responsibility is a facet that has been clearly identified under the Conscientiousness dimension. Thus, highly conscientiousness learners are likely to be responsible learners. Likewise, good social skills can be reflected in the measure of the Agreeableness dimension. Therefore, it is possible that a well-tested Learner Profiling System could be used as tool to depict the strength of learners in terms of the soft-skills targeted under selected MQF domains. The domains under MQF 2.0 differ slightly from those analysed earlier with the introduction of numeracy and digital literacy. The Learning Skills for

Open and Distance Learners course has been revised recently to improve its curriculum and to introduce learners to Numeracy, Digital Literacy, 4C (Creative Thinking, Critical Thinking, Communication Skills and Collaborative Skills), Global Citizenship and the Environment.

The plausibility of LLL skills to serve as important indicators for the performance of an adult learner are explored in this study. LLL can be defined as an on-going learning process that a person could engage with no age barrier and can occur in any format (formal, non-formal or informal). It is often self-initiated, but there are several underlying factors that could bring about the intention to embark on continuous learning. LLL skills can be influenced by few important elements such as self-directedness. Self-directness is an intrinsic element. It is also a facet that has been identified under the Conscientiousness dimension. Highly conscientiousness learners are likely to be self-directed in managing their learning process. Such learners are also likely to persist in completing their studies and thus successfully retained within the university. The correlation between personality characteristics and retention is also suggested in the study by Frydenberg (2007). LLL skills are also dependent on extrinsic elements such as the learning environment. Mourtos (2003) emphasized the need for students to be organized in embracing LLL. As such the design element of the online learning environment can be geared towards the development of LLL skills.

The aim of this study is to develop an online evaluation tool to identify the profiles of OUM learners using their personality traits and to understand how these traits influence skills such as LLL skills.

The objectives of this study are to:
- develop a learner profile system for OUM;
- identify the general profile of OUM learners;
- determine the correlation between the learner profiling and LLL skills.

3. Methodology

This study uses a survey instrument which was developed through review of previous studies and items that were developed based on the conceptual understanding of the previous studies. The items have been amended, and improved through several cycles before the items were determined fit for purpose of the current study. Six dimensions were explored including the Big Five Personality Traits (Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Emotional Stability) and the LLL set of skills. Neurotism was renamed as Emotional Stability as suggested by O'Connor (1951). The items under LLL are largely adopted from the 2003 work by Mourtos. The quantitative method adopted in this study is a useful approach to describe the group of learners as the responses can be obtained much more efficiently

through online mechanism. The survey instrument comprises of Learner's Identity Number and 34 items that were grouped under the six dimensions: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, Emotional Stability, and LLL skills. Learners were asked to respond to the items using a five-point Likert type scale, 1: Strongly disagree; 2: Disagree; 3: Neutral; 4: Agree; and 5: Strongly agree.

The population of this study is all first semester learners in September 2019 intake (Cohort 193). The online survey was carried out through an announcement containing the link to the Survey Monkey URL which was embedded on the Learning Skills for 21st Century (OUMH1603) course, which is a compulsory course for all first semester learners. Learners were requested to fill up the survey questions. A total of three reminders were sent to a total population of 2546 learners. Data cleaning resulted in a total of 411 responses (16.1%). The data were analyzed using the Statistical Package for Social Sciences (SPSS) Version 22 and AMOS Version 25. The analysis performed includes Descriptive Statistics (mean and standard deviation) of each items and dimensions. Meanwhile the relation between the LLL skills and the five personality traits were tested using Structural Equation Modeling (SEM).

4. Findings

The finding in Table 1 shows the data obtained from the 411 learners. The highest mean value was observed for Openness to Experience with score of 4.30 (sd = 0.68). This is followed by construct Conscientiousness (mean = 4.21, sd = 0.71), Agreeableness (mean = 4.21, sd = 0.70), LLL skills (mean = 3.90, sd = 0.73), and Extraversion (mean = 3.79, sd = 0.87). Meanwhile, the lowest construct is Emotional Stability with mean 3.44 (sd = 0.92).

Dimensions	Mean (s.d)	Mean Ranking	Cronbach's Alpha (CA)	CA Ranking
Openness to Experience	4.30 (0.68)	1	0.855	3
Conscientiousness	4.21 (0.71)	2	0.857	4
Extraversion	3.79 (0.87)	3	0.831	5
Agreeableness	4.21 (0.70)	2	0.906	1
Emotional Stability	3.44 (0.92)	4	0.876	2
LLL skills	3.90 (0.73)	n/a	0.908	n/a

Table 1 - Summary dimensions of Learner Profiling and ranking.

It can be concluded that OUM learners have shown higher level of openness to experience, conscientious and agreeableness. They have shown moderate level of

Constructs	Items	Mean	Standard Deviation
Openness to Experience	I am always looking for new experiences	4.37	.695
	I view challenging situations as an opportunity to grow and learn	4.36	.661
	Creative ideas inspire me	4.27	.692
	I like to try new things	4.30	.661
	I like to find new ways of doing things	4.20	.690
Conscientiousness	I make careful judgement before making any conclusion	4.19	.723
	I think first before I act upon something	4.14	.726
	I always find the source to a problem	4.14	.685
	I check my work thoroughly before submitting	4.29	.717
	I am determined to complete my task well	4.28	.687
Extraversion	I find it easy to get close to people	3.74	.894
	I like the company of others	3.77	.835
	I like group activities	3.84	.889
	I like talking to people	3.83	.837
	I love bright colours	3.77	.919
Agreeableness	I am always polite to people	4.15	.751
	I am considerate and kind towards people	4.19	.682
	I like to cooperate with people	4.16	.700
	I like helping others	4.29	.671
	I am supportive of others	4.24	.709
Emotional Stability	I am free of worries	3.24	.994
	I usually feel relaxed	3.44	.907
	I remain calm in most tense situation	3.52	.906
	I am not affected by moods	3.40	.925
	I am an emotionally stable person	3.62	.854
LLL skills	I enjoy learning new things on my own	4.11	.699
	I am willing to read new materials on my own	4.02	.737
	I can assess the quality of the information that is available	3.91	.740
	I can analyse new content, patterns, ask key questions and synthesize new concepts	3.77	.744
	I can reason by inferring, predicting and inquiring	3.72	.699
	I reflect upon my learning process	3.88	.676
	I evaluate my achievement of the targeted learning outcomes	3.94	.683
	I use Continuing Professional Development (CPD) activities to improve my work	3.75	.827
	I am keen on sharing my knowledge and skills towards the development of best practices at work	4.07	.719

Table 2 - Details item of Learner Profiling survey.

LLL skills and Extraversion but low scores in Emotional Stability. The findings also indicate that all dimensions have a high Cronbach's Alpha scores (more than 0.8) which means that all items in the constructs are reliable. Further explorations on the constructs were discussed in the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) section.

In measuring the suitability of the data for EFA and CFA, the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test was conducted prior to the analysis. KMO measures the sampling adequacy for each construct and for overall model. Finding in Table 3 shows that the sample size is adequate as indicated by the KMO value that is close to 1 (0.937). The data is also suitable for reduction since the result is significant in Bartlett's test of sphericity.

In extracting the factors in EFA, the Principal Component Analysis method was used. The factors then were rotated by Varimax Rotation. The findings in Table

4 shows that there are 7 extracted constructs and the total variance from the Initial Eigenvalues explains that 40.03% in construct 1 (Openness to Experience) followed by 8.01% in construct 2 (Emotional Stability), 6.11% in construct 3 (Agreeableness), 4.38% in construct 4 (LLL), 3.63% in construct 5 (Conscientiousness), 3.25% in construct 6 (Extraversion) and 2.98% in the last construct of LLL. The construct for LLL skills was found to be divided into two distinct constructs. For the continuation of analysis in CFA by performing SEM method, both constructs were retained under the same construct.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.937
Bartlett's Test of Sphericity	Approx. Chi-Square	8985.592
	df	561
	Sig.	.000

Table 3 - KMO and Bartlett's Test.

Figure 1 presents the SEM for LLL skills against the big five traits: Openness to Experience, Conscientiousness, Extraversion, Agreeableness and Emotional Stability.

Further analysis on the modeling between the LLL skills and all five dimensions that were evaluated revealed that there is a significant relationship between the LLL skills and Openness to Experience (p-value = 0.025<0.05), between the LLL skills and Conscientiousness (p-value<0.05), between the LLL skills and Agreeableness (p-value = 0.05), and between the LLL skills and Emotional Stability (p-value <0.05). Meanwhile the relationship between the Extraversion construct and the LLL skills is not significant as the p-value = 0.918 > 0.05.

Table 6 summarizes the score of the model and level of acceptance for each fitness index based on the level of

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.609	40.026	40.026	13.609	40.026	40.026	3.854	11.334	11.334
2	2.724	8.011	48.037	2.724	8.011	48.037	3.743	11.008	22.342
3	2.077	6.109	54.146	2.077	6.109	54.146	3.686	10.841	33.183
4	1.490	4.383	58.529	1.490	4.383	58.529	3.509	10.320	43.503
5	1.235	3.633	62.162	1.235	3.633	62.162	3.024	8.894	52.397
6	1.105	3.250	65.412	1.105	3.250	65.412	2.838	8.348	60.745
7	1.013	2.978	68.390	1.013	2.978	68.390	2.599	7.645	68.390

Table 4 - Total Variance Explained, Extraction Method: Principal Component Analysis.
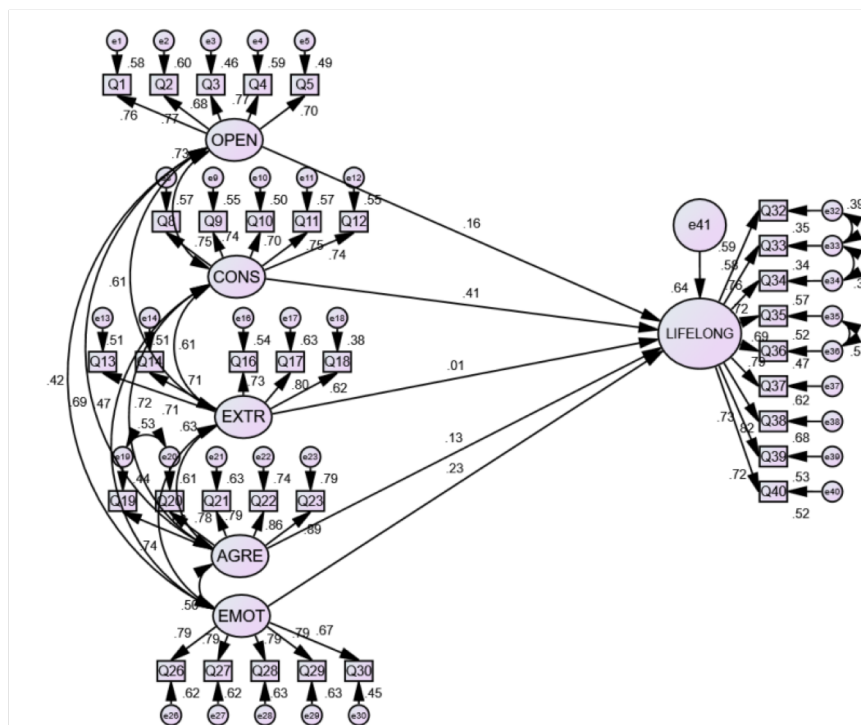

Figure 1 - SEM for LLL skills against 5 big traits.

			Estimate	S.E.	C.R.	P	Label
LIFELONG	<---	OPEN	.129	.057	2.244	.025	Significant
LIFELONG	<---	CONS	.337	.066	5.105	***	Significant
LIFELONG	<---	EXTR	.006	.055	.102	.918	Not Significant
LIFELONG	<---	AGRE	.110	.056	1.962	.050	Significant
LIFELONG	<---	EMOT	.165	.049	3.361	***	Significant

Table 5 - The regression weight for every path estimate in Figure 1.

Model/Fitness Index	GFI	CFI	RMSEA
Default model score	0.848	0.915	0.059
Level of acceptance	> 0.90	> 0.90	< 0.08
Comments	Moderate	Satisfactory	Satisfactory

Table 6 - Summary Fitness Indexes for the model in Figure 1.

acceptance suggested by Awang (2012). In conclusion, the model shows a satisfactory score for RMSEA (0.059<0.08) and CFI (0.915>0.90), and a moderate score for GFI (0.848<0.90).

Findings in this study suggest that learners with high degree of Openness to Experience, Conscientiousness, Agreeableness, and Emotional Stability are likely to have good LLL skills. This finding seems to echo the idea mooted by Riggio (2008) that the Extraversion trait may not matter.

5. Discussion

This study proves successful development of an online evaluation tool that can measure the five personality traits that were based on the Big Five Personality Traits developed by Costa and McCrae. The developed instrument is based on 25 items was integrated with 9 items within the LLL skills dimension, resulting in a total of 34 items. The instrument developed for this study was tested and is found to be a reliable instrument for the identification of learner's personality traits. Seven constructs were found instead of six through EFA, and confirmed through CFA. The LLL skills fell into two distinct constructs. Thus, it is necessary for the set of LLL Skills to be reviewed again in order to understand them better. A study by Solmaz in 2017 suggests that LLL skills can divided into four constructs: motivation, perseverance, curiosity, and self-regulations. The instrument tested leans towards self-regulation, and motivation. It is necessary to maintain the number of items to a minimum as past studies have shown that increasing the number of items and the longer response time cause learners to lose interest affecting the validity of their responses.

Findings in this study also depict the overall personality traits of OUM learners. The good news is that they have a high degree of openness to experience, conscientious and agreeableness between 4.3 to 4.2 mean values. They also seem to have moderate level of LLL skills and Extraversion with a mean between 3.8 and 3.9. This study suggests that perhaps effort is needed to improve the learning environment by analyzing the design element of the present online learning environment can be geared towards encouraging the learners to be organized in their learning process and therefore enhance their LLL skills (Mourtos, 2003). As an open university, OUM is concerned with the level of LLL skills among new learners.

However, the lowest mean among all construct are Emotional stability at 3.44. There are two concerns here. One, the low level of emotional stability has a negative impact of learners' LLL skills. Second, the level of emotional stability itself is a concern. A good level of emotional stability suggests maturity and potential to persist in their programme. This is a new pattern found amidst the studied cohort. Is this a trend among OUM learners who belong to the 25 to 35 age group? If this is

so, it is of great concern and there is a need create the necessary support. The importance of e-counselling service that the university offers to its learners is even more important now than before. This relation was explored and shown to have positive impact in a recent study by Martin and Kuboja (2022).

This study also shows that all construct (Openness to Experience, Conscientiousness, Agreeableness, and Emotional Stability) have significant influences on the LLL skills except for Extraversion. This has been suggested by Riggio and Reichard (2008). The moderate level of the extraversion trait is not a concern as it does not relate to the LLL skills. Nevertheless, this prompts us to reconsider the design strategies that are used in designing materials, courses, learning environment and other systems. This study also found that OUM learners have high degree in three out four traits that have strong relation with LLL skills. Learners generally have positive traits in Openness to Experience, Conscientiousness, and Agreeableness. Learners will have good chance of mastering the LLL skills as long as they are supported through good counseling service. As such CRI is exploring the option of continuing this study by establishing a new project through a collaborative effort between CLA and OUM's experts in psychology.

This study can also be extended to explore how the personality traits are linked with the revised domain under MQF 2.0. Conceptual understanding of the traits may suggest a few links such as: (i) the Conscientious trait could have a strong positive influence on the facet of responsibilities (one of the MQA programme outcomes); (ii) the Openness to Experience could have a positive influence on the expected programme outcomes such as problem solving and scientific skills; and (iii) the Conscientious traits could also have positive influence on expected programme outcomes such as values, attitude and professionalism, as well as managerial skills. A desired programme outcome could also have positive correlations with more than one personality trait. These hypotheses can be tested by extending this study. Learner profiling instrument used as pre-test and post-test could potentially serve as a tool to provide indirect measure of learners' achievement of the 21st Century soft skills. The relation between the Big Five Personality Traits and the 21st Century Soft Skills that are also known as the Life Career Skills as identified under P21 Framework must be explored first. The list includes Flexibility & Adaptability, Initiative and Self-Direction, Social & Cross-cultural Skills, Productivity & Accountability, as well as Leadership & Responsibility. The overlap between these set of skills and LLL skills must be identified.

6. Conclusion

This study presents the continuous work carried out towards refinement of the instrument which measure the profile of learners based on the Big Five Personality

Traits. A set of items measuring LLL skills among learners was incorporated into the developed instrument. OUM learners from the 193-cohort showed high degree of Openness to Experience, Conscientiousness, and Agreeableness; moderate degree of Extraversion and LLL skills; and a low degree of Emotional Stability. Positive correlations between four out of the five personality traits and the LLL skills were established in this study. It appears that the importance of the Extraversion traits among learners might have been overemphasized. Learner with high degree of Openness to Experience, Conscientiousness, Agreeableness, and Emotional Stability would also be likely to have good LLL skills. The instrument could be used to identify learners who may not possess the traits to become a successful LLL skills, for example those with low degree of emotional stability. A specially designed counseling programme that could potentially improve learner's emotional stability must be introduced. Meanwhile, the design of the online learning environment can be improved towards encouraging the learners to be organized in their learning process and enhance their LLL skills.

Acknowledgements

References

Awang, Z. (2012). *Structural Equation Modelling using AMOS Graphic.* Shah Alam: Universiti Teknologi MARA (UiTM Press).

Croft, N., Dalton, A., and Grant, M. (2010). Overcoming Isolation in Distance Learning: Building a Learning Community through Time and Space. *Journal for Education in the Built Environment, 5:1, 27-64, https://doi.org/10.11120/jebe.2010.05010027*

Cubel, M., Nuevo-Chiquero, A., Sanchez-Pages, S., and Vidal-Fernandez, M. (2016). Do Personality Traits Affect Productivity? Evidence from the Laboratory. *The Economic Journal*, *126*(592), 654–681. http://www.jstor.org/stable/24738158

Frydenberg, J. (2007). Persistence in University Continuing Education Online Classes. *The International Review of Research in Open and Distributed Learning, 8(3)*.

Komarraju, M., Steven J. Karau, S. J., Schmeck, R. R., and Avdic, A, (2011). The Big Five personality traits, learning styles, and academic achievement. *Personality and Individual Differences, 51(4), 472-477. https://doi.org/10.1016/j.paid.2011.04.019.*

Lounsbury, J.W., Saudargas, R.A., Gibson, and Leong F.T. (2005). An Investigation of Broad and Narrow Personality Traits in Relation to General and Domain-Specific Life Satisfaction of College Students. *Research in Higher Education, 46(6), 707-729. https://doi.org/10.1007/s11162-004-4140-6*

Leutner, F., Ahmetoglu, G., Akhtar, R., and Chamorro-Premusiz, T. (2014). The relationship between the entrepreneurial personality and the Big Five personality traits. *Personality and Individual Differences, 63, 58-63. https://doi.org/10.1016/j.paid.2014.01.042*

Martin, Y. R., and Kuboja, J. M. (2022). Effect of Guidance and Counseling on Students' Emotional Stability: A Case of Higher Learning Institutions in Arusha, Tanzania. *East African Journal of Education and Social Sciences, 3(1), 94-101, https://doi.org/10.46606/eajess2022v03i01.0151*

Malaysia Qualification Agency (2010). *Malaysian Qualification Framework. MQA:* Kuala Lumpur.

McCrae, R.R., and Costa, P.T. (1987). Validation of the Five-Factor Model of Personality Across Instruments and Observers. *Journal of Personality and Social Psychology, 52(1), 81-90.*

McCrae, R.R., and Costa, P.T. (1992). Four Ways Five Factors are Basic. *Personality and Individual Differences, 13(6), 653-665.*

McCrae, R.R., and Costa, P.T. (2004). A Contemplated Revision of the NEO Five-Factor Inventory. *Pergamon: Personality and Individual Differences.*

Mourtos, N. J., (2003). Defining, Teaching and Assessing Lifelong Learning Skills. Paper presented at 33rd ASEE/IEEE Frontiers in Education Conference. *Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.501.8223&rep=rep1&type=pdf*

Niksevic, A. V., Marino, C., Kolubinski, D. C., Leach, D., Spada, M. M. (2021). Modelling the contribution of the Big Five personality traits, health anxiety, and COVID-19 psychological distress to generalised anxiety and depressive symptoms during the COVID-19 pandemic. Journal of Affective Disorders, 279, 578-584.

O'Connor, N. (1951). Neuroticism and Emotional Instability in High-Grade Male Defectives. *J.Neurol.Neurosurg. Psychiat., 14, 226-230. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC499522/pdf/jnnpsyc00311-0074.pdf*

Riggio, R. E. & Reichard, R. J. (2008). The emotional and social intelligences of effective leadership: an emotional and social skills approach. *Journal of Managerial Psychology. 23(2). 169-185.*

Rothmann, S., & Coetzer, E. (2003). The Big Five Personality Dimensions and Job Performance. *SA Journal of Industrial Psychology, 29(1). doi:10.4102/sajip.v29i1.88*

Solmaz, D. Y. (2017). Relationship between Lifelong Learning Levels and Information Literacy Skills in Teacher Candidates. *Universal Journal of*

Educational Research 5(6), 939-946, https://doi.org/10.13189/ujer.2017.05060

T Subramaniam, T., Suhaimi, N. A. D., Latif , L. A., Abu Kassim, Z., and Fadzil , M. (2019). MOOCs Readiness: The Scenario in Malaysia. The International Review of Research in Open and Distributed Learning, 20(3). https://doi.org/10.19173/irrodl.v20i3.3913