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1. Designing Online Teaching and Learning Activities for
Higher Education in Hong Kong 1
Kevin Downing
Ivan Lam
Kristina Shin
2. Evaluating Critical Thinking in Computer Mediated
Communication Discussions 13
Faizah Mohamad
3. Promoting Human Capital: The Importance of Dialogic
Teaching in Higher Education 31
Frank Hardman
4. Globalisation of Education: The Experience of the
National University of Singapore 49
Tan Eng Chye
5. Refining English Language Tests for University Admission:
A Malaysian Example 57
Arshad Abd Samad
Sharifah Zainab Syed Abd Rahman
Siti Norbaiti
6. Knowledge Management Practices in Higher Learning
Institutions in Sarawak 69
Abang Ahmad Ridzuan
Hong Kian Sam
Mohd Asri Adanan

7. Evaluating University Teaching and Learning 91
Patricia J. Rogers
8. The Construction of the Malaysian Educators Selection
Inventory (MEdSI): A Large Scale Assessment Initiative 113
Joharry Othman
Lihanna Borhan
Nabilah Abdullah
W. Marzuki W. Jaafar
Sidek M. Noah
Jamaludin Ahmad
Tajularipin Sulaiman
Abdul Malek Abdul Karim
Sapon Ibrahim
Mohd Yusop Ab. Hadi
Abdul Malik Abdul Rahman
Syed Mohamed Shafeq Syed Mansor
Norlena Salamuddin
Mohd Taib Harun
Zulkifli Mohamed
Munirah Ghazali
9. Culture and Learner Beliefs: A Study of Three Malay
Postgraduate Students 127
Faizah A Majid

The Construction of the Malaysian Educators Selection Inventory (MEdSI): A Large Scale Assessment Initiative

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ABSTRACT

The crucial role that teachers and schools play in the development of a nation's human resource is undeniable. In Malaysia, teaching has always been perceived as a financially secure and relatively easy job by many, resulting in mass application for entry into teacher education programmes. Many of those who aspire and opto to go into the teaching profession however do so regardless of their personal interests, potential, and values. Pursuing a program that does not fit a person's personality and interest – despite initially having good academic credentials and excellent co-curricular involvement in school – may result in unsatisfactory academic performance, frustration, change of program and even withdrawal at college level. Hence, in the quest for selecting suitable teacher trainee candidates, a psychometrically sound instrument known as the Malaysian Educators Selection Inventory (MEdSI) was developed as a screening measure to filter the large number of teacher hopefuls. This paper specifically describes the theoretical basis and the constructs of the instrument developed.

Introduction

As a small and developing nation, education has long been a very important part in the social development of Malaysia. Before Independence in 1957, the education system was used to segregate the different ethnic and social groups in the country. After independence, the system has attempted to unite these groups and decrease the differences among the various races of the Malaysian population. As Malaysia is poised to become a fully developed nation by 2020, education is again at the forefront. The development of a country hinges on the development of its people and the role that schools and teachers play in this early phase of human resource development is of utmost importance. The best policies and curricula may be drawn up, but unless the best teachers are recruited, these may all come to naught. Therefore, in order to make the best possible use of the expertise and facilities that are already in place in the various teacher training programmes in the public universities, new policies have been drawn up in the teacher trainee selection process. In addition to meeting scholastic requirements and passing the interview process, candidates for teacher training courses

are now also screened with a psychometric test, the Malaysian Educators' Selection Inventory (MEdSI).

Given the large number of applicants who meet the academic criteria, and as interviewing is a very labourious and time-consuming process, another screening test is deemed necessary before the applicants are short-listed for interview. But what kind of screening test? Academic qualifications alone are not a guarantee of a capable teacher. Thus, we go to the personality and career aptitude frameworks in designing the instrument. The objective is not simply to decrease the number of candidates to be interviewed. We want an instrument that will filter out less suitable teacher trainee candidates and which is not only based on sound theoretical background but will also have the psychometric properties of a valid and reliable instrument.

Theoretical Background

The match between a person's characteristics and his or her career is essential for motivation, work satisfaction, achievement, productivity and career stability (Holland, 1998). This is also similar to Parson's view that a career well-chosen is like fitting a square peg into a square hole and a round peg into a round hole, and not the other way around. This essentially means there is a need to choose the right person for the right job, and on this premise, our teacher trainee candidates have to have some intrinsic qualities that will, with training, make them into capable teachers. The intrinsic qualities that we measured in MEdSI fall under four components: Personality, Career Aptitude, Integrity and Emotional Intelligence.

Incompatibility between personality, interest and career choice may be manifested not just in unsatisfactory performance during training, but it may also be shown on the job through excessive sick leave taken, job truancy, insufficient commitment and so on. (Carmeli & Gefan, 2005). As teachers, this should be taken seriously as there may be damaging ramifications for the pupils' performance and self-development when teachers are under-performing or prone to truancy – either physically or psychologically. Thus, personality and career aptitude are two of the major components in MEdSI.

Matching individual characteristics with the needs of training and career choices through psychometric testing is not new. For example, the Vocational Preference Inventory (VPI), Self-Directed Search (SDS),

Strong-Campbell Interest Inventory (SCII) are tests that have been widely used in the United States in hiring and also in student admission processes. What is common to these tests is the concept of Person-Environment Fit (P-E Fit) (Sekiguchi, 2004). Instead of taking any one of these tests wholesale, it was decided that the cultural differences between Malaysia and the United States and the societal needs of Malaysia are pertinent enough to mandate a homegrown instrument, while still relying on well-established psychological and psychometric principles.

The Integrity Scale is a unique contribution to this teacher trainee candidate's selection process as it takes into account the current problems that have plagued the Malaysian schools and teachers. The items were basically designed to discriminate between those who think teaching is an easy half-day job and those who have a strong interest in teaching. Integrity here subsumes positive values that can be measured within the confines of knowledge, behaviour and attitude. Integrity is a projection of teacher professionalism regarding discipline, diligence, responsibility, optimism, leadership, patience, creativity and innovation.

Emotional Intelligence is considered a necessary component of a teacher's persona as teachers are constantly dealing with students. Teachers who can understand and manage their emotional life and those of their students are better off in handling conflicts that arise in classrooms. Those teachers who are competent and able to solve such problems and demonstrate good planning skills while managing daily tasks generally are more effective in classroom management.

Administration of MEdSI

MEdSI is a 300-item instrument designed to capture four intrinsic qualities i.e., Personality, Career Interest, Integrity and Emotional Quotient. Personality was adapted from Sidek's Personality Inventory, Career Interest was modeled upon Holland's SDS and Emotional Intelligence was adapted from EQMap. The Integrity dimension was drawn up based on the spirit of the National Philosophy of Education, the five pillars of nationhood and the Malaysian Educators Code of Ethics.

Given the number of applicants and the high stakes nature of the assessment, ease of administration and scoring is also important. Hence, MEdSI is a paper-and-pencil multiple-choice test with a time-limit of 60 minutes.

Psychometric Properties: Reliability and Validity

The finalized version was administered to 1,069 students currently undertaking education courses in three universities for establishing reliability and norms. The data presented here came from this norm group.

Table 1 shows the number of items and internal consistency of each dimension as measured through the Cronbach alpha.

Table 1: Reliability Measures of MEdSI

Dimension	Number of items	Cronbach alpha
Personality	110	.834
Career interest	60	.886
Integrity	70	.825
Emotional Quotient	60	.890
Total	300	.901

Personality

In MEdSI, the personality items were presented as a yes/no statement. The applicant is required to answer whether the item describes them or not. Included in the Personality dimension is a Lie Scale. This Lie Scale is very important to the entire test as applicants who fail the Lie Scale (a minimum answer of 4 out of the 10 items) are discarded from the pool of applicants. The Lie Scale is made up of items which applicants should not be expected to truthfully answer 'yes' but in the hope to appear good they would answer 'yes.'

An example of a Lie Scale item is:

'I never disagree with my parents'.

The personality model is taken from Cattell. Apart from the Lie Scale, the sub-scales are Assertive, Analytical, Autonomous, Extrovert, Intellectual, Resistance, Self-Criticism, Leadership, Helping and Achievement. Factor analysis was done on all the 11 sub-scales of the Personality dimension of MEdSI to determine the number of factors produced. For this purpose, the 11 x 11 correlation matrices were analyzed using the varimax rotation. Using this approach, the factors that are maintained for further processing are those that produced a high percentage value in terms of the variance and have eigenvalue more

Table 2: Factor Analysis Results of Personality Cluster, MEdSI

Personality Trait	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Communality
Intellectual	.76*	.30	.23	.12	.32	.25	.22	.65
Analytical	.66*	.17	.25	.27	.31	.32	.19	.56
Persistence	.17	.67*	.11	.16	.21	.28	.31	.61
Extrovert	.44	.23	.56*	.33	.39	.13	.31	.54
Helping	.37	.28	.57*	.41	.32	.19	.17	.57
Achievement	.19	.26	.33	.61*	.26	.21	.24	.57
Assertive	.11	.23	.19	.54*	.15	.19	.29	.71
Leadership	.20	.18	.12	.56*	.21	.13	.21	.43
Autonomy	.17	.14	.36	.37	.57*	.18	.22	.72
Self-Critic	.37	.32	.21	.28	.10	.54*	.19	.51
Honesty	.23	.19	.29	.34	.26	.36	.56*	.59

Note:

h2 - communality

* - variables with loadings > .50

than one. In terms of variance, Edwards and Whitney (1972) have proposed a variance of 75% or higher. Results show that factor analysis produced seven factors (see Table 2) with eigenvalues of more than one. Four of these are single factors, while the other three are combined factors.

An inspection of the factors show that Factor 1 has two variables with a loading of more than .50, i.e., Intellectual (.76) and Analytical (.66). While Factor 3 has two variables with loadings more than .50 i.e. Extrovert (.56) and Helping (.57).

Career Interest

The career interest section follows Holland's Career test. For example:

Artistic : Seek opportunity for self expression like composing lyrics, paints, perform drama or theatre, etc.

Investigative : Like to experiment things, interested in nature and why things happen, enjoys using logic and solving complex problems.

Social : Like to work with other people, have high needs to work as a team, like to solve interpersonal problems.

The Construction of the Malaysian Educators Selection Inventory (MEdSI)

Factor analysis was done on the six subscales in the Career Interest Dimension of MEdSI. The 6x6 correlational matrices with varimax rotation were used. The results are displayed in Table 3.

Table 3: Result of Varimax Rotation Factor Analysis on Career Interest

Variables	Factor 1	Factor 2	Factor 3	h2
Realistic	.83*	.30	.12	.78
Investigative	.68*	.19	.29	.59
Conventional	.18	.75*	.08	.60
Enterprising	.17	.64*	.39	.58
Social	.11	.23	.63*	.47
Artistic	.21	-.00	.57*	.37

Note:

h2 - communality

* - variables with loadings > .50

An examination of Factor 1 revealed that only 2 of the factors have loadings of more than .50 i.e., Realistic (.83) and Investigative (.68). Factor 2 has 2 variables with loadings more than .50 i.e. Conventional (.75) and Enterprising (.64), while Factor 3 has 2 variables with loadings more than .50 i.e., Social (.63) and Enterprising (.64). Although the results are different from Holland's findings of six separate factors (1997), it is still compatible with his theoretical leanings.

Integrity

The Integrity Scale is made up of three sub-scales i.e., Trustworthiness, Honesty and Wisdom. Table 4 shows the reliability coefficient of each of these subscales as measured through the Cronbach alpha.

Table 4: Reliability Coefficient of Integrity Subscales

No.	Cluster	Cronbach alpha
1.	Trustworthiness	.856
2.	Honesty	.848
3.	Wisdom	.852

Emotional Intelligence

The internal reliability of the Emotional Intelligence subscales was calculated and the result as manifested through the Cronbach alpha is shown in Table 5.

Table 5: Internal Reliability of Emotional Intelligence Subscales

No.	Sub-scale	Reliability coefficient
1.	Emotional self-awareness	.875
2.	Emotional expression	.825
3.	Other People's Emotional Awareness	.925
4.	Resilience	.825
5.	Interpersonal Relationship	.800
6.	Relationship Quotient	.767

Norms

Tables 6 to 9 display the means, standard deviations and the 50th percentile score for all the Dimensions of MEdSI.

Table 6: Mean, Standard Deviation and Percentile Scores for Personality

No.	Personality Trait	Mean	SD	50 th Percentile
1.	Assertive	5.83	1.74	6.0
2.	Analytical	7.10	2.22	7.0
3.	Autonomy	7.37	1.73	7.0
4.	Extrovert	6.84	2.22	7.0
5.	Intellectual	5.21	2.23	5.0
6.	Persistence	7.06	1.92	7.0
7.	Self-Critic	5.58	1.90	6.0
8.	Leadership	4.88	2.64	5.0
9.	Helping	8.43	1.47	9.0
10.	Achievement	7.75	1.62	8.0
11.	Honesty	3.58	2.12	3.0

The Construction of the Malaysian Educators Selection Inventory (MEdSI)

Table 7: Mean, Standard Deviation and Percentile Scores for Career Interest

No.	Career Interest	Mean	SD	50 th Percentile
1.	Realistic	2.53	2.80	1.0
2.	Investigative	4.30	3.01	4.0
3.	Artistic	5.55	2.57	5.0
4.	Social	7.48	1.89	8.0
5.	Enterprising	4.44	2.65	4.0
6.	Conventional	4.06	2.71	4.0

Table 8: Mean, Standard Deviation and Percentile Scores for Integrity

No.	Integrity	Mean	SD	50 th Percentile
1.	Honesty	88.54	5.15	89.0
2.	Being Clean	66.91	4.20	67.0
3.	Being Wise	38.79	2.49	39.0

Table 9: Mean, Standard Deviation and Percentile Scores for Emotional Intelligence

No.	Emotional Intelligence	Mean	SD	50 th Percentile
1.	Emotional Self-Awareness	31.78	3.00	31.0
2.	Emotional Expression	23.89	2.59	24.0
3.	Emotional Awareness toward Others	35.14	3.77	35.0
4.	Resilience	36.94	3.62	37.0
5.	Interpersonal Relationship	27.55	2.58	28.0
6.	Relationship Quotient	22.02	2.71	22.0

The overall norms of the MEdSI assessment are displayed in Figure 1.

Conclusion

In general, the MEdSI instrument has been able to achieve its aims. The reliability and validity analyses show that the psychometric properties of good measurement are not compromised even with a large-scale and high-stake instrument such as this. Follow-up studies of teacher trainee cohorts who were admitted to teacher training programmes in the various Malaysian public universities showed encouraging results. Preliminary observations from several universities

PERCENT TITLE SCORE	PERSONALITY								CAREER INTEREST						INTEGRITY			EMOTIONAL INTELLIGENCE														
	AS E A	AN U A	EA KS L AT	IT HL N	TH RN D	KR EP	TL GP	PC PP	JJ RR	RR 7.0	9.0	9.0	10.0	8.0	10.0	8.0	8.0	9.0	10.0	10.0	10.0	76.44	39.4	45.4	45.4	30.4	45.4	33.4	28.0			
-99-	9.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		
-90-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
8.0	10.0	10.0	9.0	8.0	8.0	9.0	10.0	10.0	7.0	9.0	9.0	10.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	
-80-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.0	9.0	9.0	9.0	7.0	7.0	7.0	10.0	9.0	5.0	7.0	7.0	8.0	9.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

(continued)

Figure 1: Norms for MEdSI

indicated that the new cohorts demonstrated a more committed personality and seemed to be more motivated compared to previous cohorts who did not undergo MEdSI.

Since this instrument is being used by the Ministry of Higher Education of Malaysia in its goal of selecting better qualified and more suitable teacher training candidates for entering Malaysian public universities, its importance, relevance and usefulness need to be addressed. Its psychometric properties at this point have been shown to be strong with high validity and reliability. The team of researchers that constructed MEdSI are now in the process of conducting more work in the form of building newer and better items for future cohorts and are continually trying to further improve and validate the instrument.

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