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Competency of Pre-Service Elementary School Teacher Based on Multiple Intelligences Theory in Riau Province

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ABSTRACT

The general vision of higher education is to develop educated people with noble character, who are intelligent and competent to develop a dignified and highly competitive nation. Thus, an educator should consider multiple intelligences to cater the differing abilities of the students. This study aimed to uncover generic competency of pre-service elementary school teacher (PEST) in the Province of Riau based on multiple intelligences theory to examine if differences of ethnicity, place of study, and interaction pattern of PEST had any influence on their multiple intelligences. This research employed a survey study. A total of 150 PEST from two state universities in Riau province were involved as the samples of this study. The survey instrument of multiple intelligences (MIT) was developed and tested, and yielded the high Cronbach alpha reliability value of 0.85. Data analysis revealed that there were no significant differences in scores of ethnicity and university on PEST multiple intelligences. In terms of interaction, there was also no significant effect of interaction between ethnicity and university on PEST multiple intelligences in both universities.

Keywords: *Intelligence, multiple intelligences, teacher education, professional teachers*

1. INTRODUCTION

The goal of education is to instil the population with noble character, intelligence and competency in order to develop a competitive and dignified nation; ensuing prosperity, peace, security and justice. This mission can be accomplished if the higher education curriculum effectively meets the needs of the graduates, in terms of developing values, knowledge and technology, competency, mental attitude and ethics, in order to become responsible citizens who can contribute towards society (Diknas. 2009; Tan 2003; Vebrianto et. al. 2016).

The theme of this study is in line with the missions of the UIN Suska Riau 2023, in developing "Science and Islamic Integration", where scientific technology is fused with Islamic values to build a world-class university. The Republic of Indonesia's Government Regulation Number 19 Year 2005 on National Education Standards and Number 23 Year 2013 in Amendments of National Education Standards Article 1 Paragraph 8 explicitly affirm

that education personnel should meet the pre-service and in-service criteria and requirements. Teachers are given the primary task of educating, guiding, directing, training, assessing, and evaluating students throughout their time in formal education school (Diknas 2009). Professional teachers should create a quality educational process with the aim of developing Indonesian people who are intelligent and competitive, i.e., who are devoted to God the Almighty, have good moral character, strength, knowledge, creativity, and become democratic, responsible citizens (PSPNK. 2006; PPK. 2001; Vebrianto & Osman 2011).

Psychologist Howard Gardner introduces the multiple intelligences theory (MIT) as an alternative to the old approach in cognitive psychology, where mathematical logic was used to measure intelligence. This theory maintains a pluralistic view of the mind, recognizing that many different aspects of cognition have their own specializations, and recognizes abilities and unique cognitive styles.

The MIT is primarily based on the latest model of cognitive science (which studies the mind) and neuroscience (which studies the brain) (Gardner 1993). In Gardner's view, rating intelligence based only on an IQ test (i.e., the test of logical-mathematical analytical ability together with linguistic ability) means that other cognitive abilities that exist are ignored, when they are no less significant. While still appreciating the psychometric instrument of the IQ test, Gardner unequivocally states that this instrument is "totally unfair" (Gardner 1993; Anderson & Krathwohl 2001; Bahrul & Suhendra. 2010).

MIT is an alternative approach designed by Professor Howard Gardner from Harvard after years of research, which describes all humans as having more than one intelligence. The implication in education is that MIT views students as unique individuals, there is no such thing as an unintelligent person. Teachers will see that there are variations in learning that each creates consequences in its perspective and evaluation.

According to Gardner (1993) and Armstrong (2009), there are nine types of intelligences in MIT: (1) verbal-linguistic intelligence, (2) logical-mathematical intelligence, (3) visual-spatial intelligence, (4) bodily-kinesthetic intelligence, (5) musical intelligence, (6) interpersonal intelligence, (7) intrapersonal intelligence, (8) naturalist intelligence, and (9) existential/spiritual intelligence.

In Gardner's view, by using the MIT model, all educational activities would be focused on whatever cognitive ability exists in each individual, rather than just their logical-mathematical ability. For example, even though Student A achieved a low score for their mathematics subject, the teacher should be aware that they may achieve an excellent score in another type of intelligence such as music. The student's cognitive development at school should be centred on his or her musical intelligence so that they can be exposed to the opportunities needed to excel their musical intelligence.

2. RESEARCH METHOD

2.1 Research Design and Respondents of the Study

A survey was conducted in this study which focused on pre-service elementary school teachers (PEST) from two state universities in Riau Province, Madrasah Ibtidaiyah Teacher Education Program (PGMI) FTK UIN Sultan Syarif Kasim and Primary School Teacher Education Program (PGSD) FKIP University of Riau. The total sampling of

respondents in this study was 150, comprising of students from the two universities (Krejcie & Morgan 1970).

2.2 Developed Instrument

The MIT research instrument had an overall reliability value of 0.89 using SPSS (Pallant 2005). The reliability scores for each construct of MIT were as follows: verbal-linguistic intelligence (0.79), logical-mathematical intelligence (0.83), visual-spatial intelligence (0.88), bodily-kinesthetic intelligence (0.82), musical intelligence (0.85), interpersonal intelligence (0.85), intrapersonal intelligence (0.79), naturalist intelligence (0.89) and existential-spiritual intelligence (0.89).

2.3 Data Analysis

The data was analyzed using descriptive and inferential statistics. Inferential statistics was used to explain the differences and relationship between the variables in the hypothesis tested in this study to find answers to the research problem (Pallant 2015). In this research, an investigation was carried out to determine the differences in MIT based on ethnicity and university by using the two-way ANOVA test involving two independent variables.

3. RESULTS AND DISCUSSION

3.1 Respondents Profile

The respondents in this study were university students from the Madrasah Ibtidaiyah Teacher Education Program (PGMI) at FTK UIN SUSKA RIAU and Primary School Teacher Education Program (PGSD) at FKIP UR. The data was collected in accordance with the instrument provided, and obtained from the 150 respondents with details appropriate to Section A (Demographics, Lecture and Life Skills) of the developed instrument. The details of the respondents' demographic background are presented in Table 1.

Table 1. Respondents' Demographics

NO	Independent Variables	Study Sample	Frequency	Percentage (%)
1	Gender	Male	16	10.7
		Female	134	89.3
2	Ethnicity	Malay	51	34.0
		Javanese	34	22.7
		Minang	37	24.7
		Others	28	18.7
3	Sponsorship	Scholarship	17	11.3
		Self-Financing	133	88.7
4	University	UIN	62	41.3
		UR	88	58.7
5	Residence	Rent a house	106	70.7
		Hostel	2	1.3
		Parents	42	28

As can be seen in Table 1, 16 (10.7%) respondents were male students while 134 (89.3%) were female, suggesting that more women chose PEST compared to men.

Examining the aspect of ethnicity, 51 (34%) respondents were Malays, 34 (22.7%) were Javanese, 37 (24.7%) were Minang, and 28 (18%) were of other ethnicities. This indicates that the ethnicities in the primary/madrasah ibtidaiyah education program at the universities were equally distributed between nearly all main ethnicities in Riau Province. This demographic is excellent for the future development of this education program because it is not dominated by just one ethnic group.

In terms of sponsorship, 17 (11.3%) respondents were on scholarships while 133 (88.7%) respondents were self-financing their studies. Because a majority of students were self-financing their studies, it is hoped that faculties and government can provide more opportunities for PGMI and PGSD students to obtain scholarships in the future so as to be motivated towards better academic achievement.

In relation to university, 62 (41.3%) respondents were students of PGMI FTK UIN SUSKA RIAU while the other 88 (58.7%) were from PGSD FKIP UR. This comparison was deemed appropriate for carrying out further analysis in making a comparison and examining differences between MITs at the two universities.

With residence, student profiles show that a total of 106 (70.7%) respondents rented a house, while 42 (28%) still lived with their parents, and only 2 (1.3%) stayed at hostels.

The next part presents the analysis of section A on pedagogic subjects which is shown in detail in Table 2.

Table 2. PEST achievements of pedagogic subject in learning pedagogical subjects

NO.	SUBJECTS	Grades of Subjects Total and Percentage (%)						
		C (%)	C+ (%)	B- (%)	B (%)	B+ (%)	A- (%)	A (%)
1	Learning Media	-	-	-	13 (8.7%)	36 (24%)	60 (40%)	41 (27.3%)
2	Teaching Strategies	1 (0.7%)	-	3 (2%)	28 (18.7%)	55 (36.7%)	31 (20.7%)	32 (21.3%)
3	Learning Evaluation	-	-	1 (0.7%)	27 (18%)	60 (40%)	37 (24.7%)	24 (16%)
4	Introduction to Computer	-	-	1 (0.7%)	22 (14.7%)	38 (25.3%)	27 (18%)	62 (41.3%)

Table 2 shows the learning pedagogical subjects' grades for the study respondents. It can be seen that for Learning Media, 13 (8.7%) students scored a B - the lowest grade for this subject, while an A was achieved by 41 (27.3%). For Learning Media, the majority of students obtained A-, a total of 60 (40%). For Learning of Teaching Strategies, only one student (0.7%) got a C grade (Failed) while 32 (21.3%) obtained an A; however, the majority, 55 students (36.7%), obtained B+ for this subject.

For the subject of Learning Evaluation, only one student (0.7%) obtained a C+ while 24 (16%) achieved the highest grade, A. 60 students (40%) obtained B+ for this subject. Finally, for the subject of Introduction to Computer, 62 students (41.3%) obtained grade A and only one (0.7%) scored a C. The findings of this study show that the students' achievement for teaching subjects were in the category of 'Good' and even 'Excellent', especially for the subject of Introduction to Computer; thus indicating the students excellent computer competency. For the aspect of life skills courses, the respondents' profile is depicted in Table 3.

Table 3. Respondents' Participation Life Skills

NO.	Life Skills	PROGRAMS THAT HAVE BEEN TAKEN(%)	
		NO (%)	YES (%)
1	English Language Course	66 (44%)	84 (56%)
2	Driving Course (Car)	75 (50%)	75 (50%)
3	Computer Course	78 (52%)	72 (48%)
4	Introduction to Personality	120 (80%)	30 (20%)
5	Music Course	84 (56%)	66 (44%)

Courses

Table 3 shows that 84 (56%) respondents in this study attended English language course while 66 (44%) never attended it. In the Driving course, 75 (50%) respondents took the course while the other

half did not. For the Computer course, 72 (48%) respondents attended computer training while 78 (52%) did not. Only 30 (20%) of students attended the Introduction to Personality course, while the other 120 (80%) respondents did not. Finally, for music skills, only 66 (44%) respondents took the course. The findings of this study reveal that English language course was considered one of the most important courses (because of its attendance) in comparison to Personality Skills.

3.2 Differences in MIT Intelligences based on Ethnicity and University

Based on the data shown from the respondents' profile, further analysis that was to be carried out could only be done on the basis of ethnicity and university. Further analysis could not be carried out for gender, sponsorship and residence because comparison of the biggest sample to the smallest sample was larger than 1.5 (Chua 2009; Creswell, 2012). A two-way ANOVA analysis was performed to compare students' MIT based on their ethnicity and university. Before the two-way ANOVA analysis could be performed however, a normality test was executed to ensure the data was normally distributed. According to Pallant (2005), if the measured sample size exceeds thirty, the population data is considered normally distributed. In this study, a total of 150 respondents were involved as the sample, therefore the population data met the requirements of variance analysis, so the two-way ANOVA analysis could be performed (Hair et.al. 1998). The results of the study are explained in detail in Table 4 – Table 6.

Table 4. Descriptive Statistics on Interaction of Ethnicity and University

Ethnicity	University	Mean	Std. Deviation	N
Malays	UIN	3.9059	0.26986	18
	UR	3.8799	0.31268	33
	Total	3.8891	0.29578	51
Javanese	UIN	3.8410	0.25705	12
	UR	3.9625	0.25096	22
	Total	3.9197	0.25608	34
Minang	UIN	3.9815	0.27820	12
	UR	3.9915	0.31573	25
	Total	3.9882	0.30021	37
Others	UIN	3.9528	0.28783	20
	UR	4.1725	0.24577	8
	Total	4.0155	0.29012	28
Total	UIN	3.9231	0.27266	62
	UR	3.9589	0.30065	88
	Total	3.9441	0.28901	150

Table 4 shows that the study samples comprised of three major ethnicities in Riau Province, namely the Malays, Javanese and Minang, as well as other minority ethnic groups. Of the total number of students (150) sampled, 62 were from PGMI FTK UIN SUSKA Riau and 88 were from PGSD FKIP University of Riau. From the 62 students of PGMI FTK UIN SUSKA Riau, 18 were Malays, 12 were Javanese, 12 were from the Minang ethnic group and 20 were from the other ethnic backgrounds. As for the 88 students from PGSD FKIP University of Riau, their ethnic composition consisted of 33 Malays, 22 Javanese and 25 from the *Minang* ethnic group, 8 were from other ethnic backgrounds.

To explain the results obtained from the descriptive statistics, inferential statistics was performed using the two-way ANOVA. Before it was conducted, a Levene's test was carried out to compare students' MIT. Results of the Levene's test shows that the significance value was $F(7,142) = 0.489, P=0.841$, indicating that the value was not significant ($P>0.05$). This shows that the homogeneity of variance was met, as can be seen in Table 5.

Table 5. Levene's test result for multiple intelligences (MIT)

F	df1	df2	Sig.
0.489	7	142	0.841

Table 5 shows that the data fulfilled the requirement of ANOVA test ($P>0.05$). The result of the Two-Way ANOVA inferential statistical analysis test is presented in Table 6 below.

Table 6. Result of the Two-Way ANOVA test for multiple intelligences (MIT) based on ethnicity and university

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Ethnicity	0.556	3	0.185	2.258	0.084
University	0.206	1	0.206	2.512	0.115
Ethnicity * University	0.281	3	0.094	1.143	0.334
Error	11.657	142	0.082		
Total	2345.803	150			

a. R Squared = .063 (Adjusted R Squared = .017)

Based on Table 6, the significance value for ethnicity was 0.084 ($p>0.01$). This means that there was no significant difference in mean score for the ethnicity on students' MIT ($F=2.258; df=3;142; p=0.084$). For university, the obtained significance value was 0.115 ($p>0.01$), there was no significant

difference in the mean score of MIT ($F=0.206$; $dk=1;142$; $p=0.115$).

In terms of interaction, the obtained significance value was 0.334 ($p>0.01$). This indicates that there was no significant interaction effect between ethnicity and university on MIT ($F=0.00$; $df=3;142$; $p=0.334$). Figure 1 shows the graph of interaction effect between ethnicity and university on students' multiple intelligences (MIT).

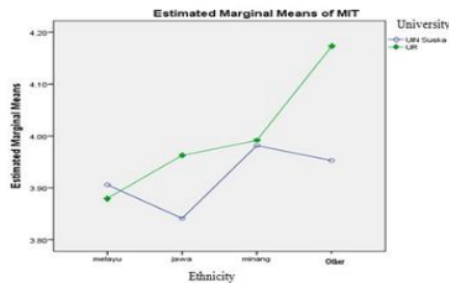


Figure 1. Interaction effect of Ethnicity and University on Multiple Intelligences (MIT)

4. CONCLUSIONS

Based on the results of this study, it can be concluded that there was no significant difference or effect of interaction in the mean score of MIT in relation to ethnicity and university at PEST in Riau. This shows that admission to university is not influenced by type of university or ethnicity involved, rather, it takes into consideration the aspect of gender and sponsorship. Sponsorship is an important aspect that needs to be considered by government to ensure students are exposed to the right opportunities and have more learning motivation. This is crucial for the development and progress of the people of Riau, Indonesia. In addition, the findings from this study also infer that students consider English language as well as computer skills as crucial courses to be mastered in the twenty-first century.

For future studies, our research could be developed on a wider scale to also consider pre-service teachers, in order to help improve their competency, quality and professionalism.

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