The Correlation between Multiple Intelligence Scores and English Language Reading Skill among Business Management Students

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ABSTRACT

The growth of methods in doing business has made it vital for students in that area to be exposed to their Multiple Intelligence in relation with their skills in English Language. Concerning the fact that English is a universal language and reading is one of the fundamental skills in marketing, it is essential for the students to recognize their Multiple Intelligence to determine their best approach in doing business. Thus, a study was carried out among Business Management students in UiTM Alor Gajah Melaka to identify the relationship of Multiple Intelligence and the students' performance on two types of reading texts which are the linear and non-linear. The findings show that the most significant Intelligence of the students is interrelated with their reading skills. Indeed, it is necessary for the students in Business Studies to get exposed to their significant Intelligence especially its relation in the skills of using English as a medium of communication in written and spoken forms.

Keywords: *reading skills, linear text, non-linear text, business strategies*

INTRODUCTION

In attaining proficiency in language learning, learners must deal with the basic four skills namely listening, speaking, writing and reading. Each skill requires different ability on the learners' part. Indeed, reading skill itself has the elements of linear and non-linear texts to be comprehended by language learners as tested in Malaysian University English Test (MUET). Upon realizing the different approaches needed for both types of reading comprehension texts, this research aims to relate it with Multiple Intelligence Theory in order to find out the correlation between the learners' performances in both linear and non-linear reading comprehension components with their dominant intelligence as well as to disclose the main type of Multiple Intelligence that relatively influences the students' performance on different types of texts in reading comprehension.

In addition, this research leads the educators to provide sufficient and suitable input for the learners to cater their individual preferences in terms of utilizing their reading skills. Apart from that, it is also vital on the Business Students' part to know their intelligence type as they can work on the weaknesses for a better performance in language learning as well as to prepare for the working world as they are exposed to the compatible strategies to be used in marketing based on their Multiple Intelligence strengths.

Multiple Intelligence Theory

Multiple Intelligence theory had been developed by Howard Gardener in the early 1980s due to the intellectual differences that people possess when they respond to different tasks (Gardner, 1983, p. 5 as cited in Javanmard, 2012, p. 61). There are seven types of intelligence proposed by Howard Gardner which are described as followed:

Bodily-Kinesthetic Intelligence: the ability to learn by expressing thoughts using body language and movements in the process of learning (Javanmard, 2012). Ahmad Muhamed (2012) stated that surgeon could belong to this category.

Interpersonal Intelligence: the ability to learn through communicating with other people and in groups (Mckenzie, 2009).

Intrapersonal Intelligence: the ability to learn from experiences and values as well as things that happen around them (Mckenzie, 2009).

Logical-Mathematical Intelligence: the ability to use numbers proficiently and provide logical explanations for every situation (Javanmard, 2012). According to Ahmad Muhamed (2012), this kind of intelligence is highly developed amongst engineers, scientists, economists, accountants, detectives and lawyers.

Music-Rhythemic Intelligence: the ability to learn through sounds and music in which they learn best by listening (Lazear, 2004 as cited in Karim, Kourosh & Anderson, 2012). This skill is clear among musicians and sound engineers (Ahmad Muhamed, 2012).

Verbal-Linguistic Intelligence: the ability to learn through spoken and written language and able to express intended message using the language verbally (Garder, 1993 as cited in Karim, Kourosh & Anderson, 2012). This kind of intelligence is highly developed among writers, journalists, poets, orators and comedians (Ahmad Muhamed, 2012).

Visual-Spatial Intelligence: the ability to learn visually and organize ideas spatially as in seeing concepts in action in order to understand them (Mckenzie, 2009). It is stated by Ahmad Muhamed (2012) that this intelligence allows human to predict future results and the ability is clearly shown among engineers, architects, artists, sculptures, sailors, photographers, diagram planners, and strategic people.

Mental Model and its Relation on Learners' Skills in Language Learning

A theory on Mental Model proposed by Johnson-Laird (1983) claimed that humans tend to construct models in understanding their surroundings through reasoning. This covers the ability to explain the relations such as cause-effect and problem-solution. On the other hand, learners who can understand a reading comprehension text tend to have better performance in learning language as compared to those who do not. Brunton, Cleary, Doyle, O'Mahony and Trant (2006) stated that learners who are 'aware of their most productive mode of learning meet with greater success in both education and the workforce than those people who attempt to learn and work through a mode with which they are incompatible'. Thus, it is crucial for the Business Management students to be self-aware in order to facilitate them to discover the Multiple Intelligence strengths to be used in learning as well as marketing strategies involving business in the working world.

REVIEWS OF THE RELATED LITERATURE

In a study carried out by Ahmad Muhamed (2012) entitled *Brain Based Learning and its Relationship with Multiple Intelligences*, 300 students who study the course of psychology have been

selected randomly as respondents. The study that aimed to explore learning that is attributed to the brain and its relationship with Multiple Intelligence has revealed that there is an equal relation with a function between Musical Intelligence with the right hemisphere and Logical-Mathematical intelligence with the left hemisphere. The findings also suggested that there is an equal relation between both Bodily-kinesthetic and Verbal-Linguistic Intelligence with the left hemisphere and Visual-spatial Intelligence with the right hemisphere. Hence, it is important to reveal the dominant intelligence for Business Management students to determine the attribution of it to the brain that might be significant to strategize their language learning as well as involving in entrepreneurship in the future.

Apart from that, Shearer (2006) in a study entitled *Reading Skill and Multiple Intelligences: An Investigation into the MI Profiles of High School Students with Varying Levels of Reading Skill* discovered a significant difference in four Multiple Intelligence scales namely linguistic, logical-mathematical, interpersonal and intrapersonal intelligence. The study involved 215 9th grade students from a suburban U.S high school in which the respondents were given the Ohio State Achievement Tests and Multiple Intelligences Developmental Assessment Scales. The findings suggested that the high reading group is found to be more individual achievement oriented and the moderate group has strengths in more socially focused realms and the low readers are more pragmatic, practical and action oriented. The findings have made it crucial for the students in Business Studies to know their achievements in reading skills in order to make use of their strengths and overcome their weaknesses that will lead them to be successful entrepreneurs.

On the other hand, Yi-an (2010) conducted *Multiple Intelligences and Foreign Language Learning- A Case Study in Taiwan* involving 2545 Taiwanese EFL college students consisted of 975 male and 1570 female respondents. The respondents were all from six different departments namely nursing, physical therapy, optometry, information management, foreign languages and dental laboratory. The data which have been analyzed using descriptive and inferential statistics with SPSS revealed that Multiple Intelligence is related to students' learning behavior and affect their English performance to some extent. Indeed, in terms of reading performance, the findings disclosed three intelligences related to students' English scores which are, Verbal-Linguistic Intelligence, Musical Intelligence and Visual-Spatial Intelligence. Therefore, this paper which involved another group of students from Business Management Faculty aimed to reveal the relation of Multiple Intelligence score and the Business Management students' performance in reading skill that would be beneficial for them as future businesspersons.

AIM OF THE STUDY

This research will focus on the connection of Multiple Intelligence scores and Business Management students' attainment in reading skills as well as to find out to how the prominent type of Multiple Intelligence obtained by them would influence their result on two different texts. The Null Hypotheses predicted that there is no relationship between reading scores of Business Management students and their performance on different types of texts in reading and the whole paper. The Null Hypothesis also suggested Business students' prominent type of Multiple Intelligence does not significantly predict their performance on different texts in MUET reading component.

METHODOLOGY

Participants

This study involved 30 Diploma students in semester 2 from Faculty of Business Management Studies studying in UiTM Alor Gajah Melaka. During the first year of diploma, it is compulsory for the students to attend English class and get exposed to linear and non-linear texts in reading lessons. Indeed, the second semester is especially for a course known as ELC151 or Integrated Language Skills II which integrate the reading comprehension skills of the same format as MUET. Thus, linear and non-linear texts are taught in class and the terms are well-known by the students.

Instrumentations

A Multiple Intelligence questionnaire and MUET Model Papers which consist of 45 Multiple-Choice Questions were used as instruments for this study. The MUET Reading Comprehension test was chosen because it consists the two different formats of reading texts which are linear and non-linear that require different reading skills of the students. Besides that, a questionnaire adopted from businessballs.com (2012) on Multiple Intelligent was also administered to the participants in this study as the seven Multiple Intelligence proposed by Gardner (1983) were associated in the questionnaires with 35 items in Likert format ranged from 1 (Mostly Disagree) to 4 (Mostly Agree). Other types of reading texts can also be used for the study if it consists both linear and non-linear texts due to the distinctive formats that lead the students to apply different skills in responding to the texts.

Statistical Analysis

Based on a study by Wang (2012), a non-parametric measure of two variables is mostly obtained by using Pearson's correlation coefficient. Therefore, the scores for the first two research questions were calculated using Bivariate Pearson-correlation in SPSS 16.0 as both aimed to recognize the correlation between intelligence preferences and the Business Management students' scores on two different texts in MUET Reading Comprehension test. On the other hand, the third question aimed to find the best predictor of Business Management students' performance on different texts in MUET reading skill. Thus, Multiple Linear Regression Stepwise Analysis was ran to test out which intelligence type scored by the participants is the best predictor which influenced the students' scores in both linear and non-linear texts respectively.

FINDINGS AND DISCUSSIONS

The findings for this research are categorized into three parts which will include the result of all three research questions.

(a) What is the relationship between types of intelligence and learners' performance on reading comprehension skill?

In investigating the first research question, a correlation analysis of each intelligence and MUET reading total score was performed as presented in Table 1.

Table 1: Correlation Analysis of Multiple Intelligence and MUET Reading Total Score

		Total Scores
Verbal-Linguistic Intelligence	Pearson Correlation	-.147
	Sig. (2-tailed)	.437
	N	30
Logical-Mathematical Intelligence	Pearson Correlation	.158
	Sig. (2-tailed)	.404
	N	30
Music-Rhythmic Intelligence	Pearson Correlation	-.071
	Sig. (2-tailed)	.710
	N	30
Bodily-Kinesthetic Intelligence	Pearson Correlation	-.323
	Sig. (2-tailed)	.082
	N	30
Visual-Spatial Intelligence	Pearson Correlation	-.510[**]
	Sig. (2-tailed)	.004
	N	30
Interpersonal Intelligence	Pearson Correlation	-.097
	Sig. (2-tailed)	.609
	N	30
Intrapersonal Intelligence	Pearson Correlation	-.492[**]
	Sig. (2-tailed)	.006
	N	30

The result reveals only Logical-Mathematical Intelligence has a positive relationship with the total score of MUET Reading Component. This leads the tendency for a higher achievement in reading skill if the level of Logical-Mathematical intelligence is higher among Business Management students. Conversely, the other intelligences have negative correlation with the performance of the students in reading comprehension skills. In addition, the findings show that Visual-spatial and Intrapersonal intelligence are statistically significant with the performance of Business Management students in MUET reading skill. Therefore, the first research question is supported, and the first null hypothesis is rejected.

It is stated by Javanmard (2012) that Logical-Mathematical Intelligence refers to the ability to use number effectively and to reason well. In referring to the study conducted by Ahmad Muhamed (2012), Logical-Mathematical Intelligence has a relation with the left hemisphere of the brain while Visual-spatial Intelligence with the right hemisphere. The findings of this paper that show positive relationship of Logical-Mathematical Intelligence with the total score in reading determine that even though students in Business Studies frequently deal with numbers, they tend to 'use left hemisphere of the brain because they deal with a lot of study skills where language is located' in the reading comprehension test (Ahmad Muhamed, 2012). The result also differs with Yi-an's (2010) study that revealed in terms of reading performance, three intelligences that are related to students' English scores are, Verbal-Linguistic Intelligence, Musical Intelligence and Visual-Spatial Intelligence.

(b) What is the relationship between types of intelligence and learners' performance on different texts in MUET reading component?

To investigate this question, a correlation analysis of the Multiple Intelligence and both types of reading texts was performed and presented in Table 2.

Table 2: Correlation Analysis of Multiple Intelligences and Each Test Score

		MUET Linear Text Business Students' Score	MUET Non-Linear Text Business Students' Score
Verbal-Linguistic Intelligence	Pearson Correlation	-.134	-.187
	Sig. (2-tailed)	.481	.322
	N	30	30
Logical-Mathematical Intelligence	Pearson Correlation	.300	-.136
	Sig. (2-tailed)	.108	.473
	N	30	30
Music-Rhythmic Intelligence	Pearson Correlation	-.088	-.073
	Sig. (2-tailed)	.643	.703
	N	30	30
Bodily-Kinesthetic Intelligence	Pearson Correlation	-.411[*]	-.090
	Sig. (2-tailed)	.024	.635
	N	30	30
Visual-Spatial Intelligence	Pearson Correlation	-.355	-.640[**]
	Sig. (2-tailed)	.054	.000
	N	30	30
Interpersonal Intelligence	Pearson Correlation	-.061	-.118
	Sig. (2-tailed)	.748	.534
	N	30	30
Intrapersonal Intelligence	Pearson Correlation	-.412[*]	-.455[*]
	Sig. (2-tailed)	.024	.011
	N	30	30

As the table shows, almost all intelligences have low negative correlation with the performance of Business Management students on different reading texts. It can be seen on the achievement of the students in linear text of MUET reading component, only Logical-Mathematical Intelligence shows positive correlation. Church (2001) has defined linear as a traditional text type that has a topic sentence at the beginning of a paragraph which is followed by several supporting sentences that serves as further elaboration to the topic sentence (as cited in Rahman, 2010). The positive relationship of Business Management students' attainment in linear text with Logical-Mathematical Intelligence is quite surprising and diverted to the estimation of Verbal-Linguistics as the one with positive relationship with linear text in reading.

Indeed, in terms of the students' performance in non-linear text of MUET reading component, none of the intelligence correlates positively with the non-linear text score. However, Visual-spatial Intelligence appeared to be statistically significant with the score of Business Management students in non-linear text.

Thus, it is still considered that Table 2 supports the second research question and rejects the second null hypothesis.

(c) To what extent Business Management Students' prominent type of Intelligence significantly predicts their performance on different texts of reading comprehension tests?
In order to find the more related intelligence to MUET reading total score as well as performance on different types of reading texts, a Stepwise Multiple Regression Analysis was performed. Overall, a low degree of correlation showed between Multiple Intelligence and MUET reading score with 43.5%.

Table 3: Model Summary of Multiple Regression Analysis
(Dependent variable: Total Score of MUET Reading Component)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.660[a]	.435	.255	8.61042

A Stepwise Multiple Regression analyses were ran for both texts as dependent variables to find the most related intelligence of the Business Management students which influenced their results in linear and non-linear texts respectively. Table 4, 5 and 6 indicate the results.

Table 4: Multiple Regression Analysis of Related Variables in MUET Reading Performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	92.832	9.113		10.187	.000
	Visual-Spatial Intelligence	-2.082	.663	-.510	-3.140	.004
a. Dependent Variable: Total Score of MUET Reading Test of Business Students						

Multiple Regression coefficient reported in Table 4 imply that Visual-Spatial Intelligence account more for changes in reading skills in which, for one standard deviation of change in Visual-Spatial Intelligence, there will be -0.51 of a standard deviation change in the performance of Business Management students in reading comprehension skill. The result also shows that Visual-Spatial Intelligence is statistically significant with the total score in reading with 0.04. So, the third research question is supported, and the third Null-hypothesis is rejected.

Table 5: Multiple Regression Analysis of Related Variables in Linear Text Performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	84.342	10.027		8.411	.000
	Intrapersonal Intelligence	-1.646	.689	-.412	-2.390	.024
a. Dependent Variable: MUET Linear Text Business Students' Score						

Multiple Regression Analysis was run with the outcome in Table 5 to find out the most related intelligence on the performance of Business Management students in reading linear text. The most related intelligence with the students' performance on linear text is Intrapersonal Intelligence in which there will be -0.41 standard deviation change in linear text score if a change of 1 standard deviation in Intrapersonal Intelligence occurs.

Table 6: Multiple Regression Analysis of related variables in Non-Linear Text Performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	117.524	10.228		11.490	.000
	Visual-Spatial Intelligence	-3.283	.744	-.640	-4.412	.000
a. Dependent Variable: MUET Non-Linear Text Business Students' Score						

In addition, Table 6 implies that Visual-spatial Intelligence is the most related predictor of Business Management students' performance on the skill in reading non-linear text. Based on this table, if there is 1 standard deviation change in this intelligence, non-linear text score will be changed to standard deviation of -0.64.

CONCLUSION

Overall, the findings revealed that Visual-Spatial intelligence is the most related predictor of Business Management students' performance in reading comprehension test as well as in the non-linear text format while the Intrapersonal Intelligence serves as the best predictor for linear text. In addition, it is stated by Safranj and Zivlak (2018), students with Visual-Spatial intelligence tend to visualize space and objects in their mind as well as able to comprehend mental model. Thus, the fact that Visual-Spatial Intelligence mainly serves as the predictor of Business Management students' performance in reading is valuable for them to make use of the strength in doing business which requires them to get involved in the planning and developing process in related to their business and thus anticipating the outcomes of each decision to be made in the future.

In addition, on the relationship of Multiple Intelligence with the students' achievement in reading, it is a surprise to discover that only Logical-Mathematical Intelligence has positive relationship with the performance of the Business Management students indicated by their total score for MUET reading component as well as their score in the linear text section. A study done by Arum et al. (2018) stated that learners with well-developed logical-mathematical intelligence will be able to observe and recognize the patterns and relationships which play a huge role in problem-solving activities. The skills are indeed important in doing business.

All educators should recognize the students' prominent type of intelligence in order to facilitate them in learning language for optimum learning experience as well as to design suitable materials for the students to encourage them getting involved in the learning process. On the other hand, the findings of this study can also be argued in which, besides Multiple Intelligence, there might be other factors that contributed to the performance of the students in reading comprehension test as in their learning styles employed in analyzing information. Therefore, further studies should integrate Multiple Intelligence of students in different domains with their learning styles and strategies.

REFERENCES

Ahmad Muhamed Al Ghraibeh. (2012). Brain based learning and its relation with multiple intelligences. International Journal of Psychological Studies, 4(1), 103-113.

Arum, D. P. et al. (2018). Students' logical-mathematical intelligence profile. JIOP Conf. Series: Journal of Physics (pp. 1-8). IOP Publishing Ltd.

Brunton, E., Cleary, J., Doyle, J., O'Mahony, L., & Trant, I. (2006). Successful transition to third level education: First year induction week research. Retrieved on October 5, 2013 from http://www.itt.ie/Information For /Staff/ Teaching and Learning Unit/Journal 20062007/Title, 15322, en.html.

Javanmard, Y. (2012). On the relationship between multiple intelligences and their performance on vocabulary tests among Iranian EFL learners. Global Journal of Human Social Science, 61-73.

Johnson-Laird, P. N. (1983). Mental models: Towards a cognitive science of language, inference, and consciousness. United States: Library of Congress Cataloging in Publication Data.

Karim, A., Kourosh, A., & Anderson, N. (2012). The relationship between multiple intelligences and reading proficiency of Iranian EFL students. World Applied Sciences Journal, 19(10), 1475-1483.

Magisterska, P. (2001). Application of computer assisted language learning in the development of reading comprehension skills. Retrieved on October 4, 2013 from http://wa.amu.edu.pl/wa/files/ifa/papers/kledecka/kledecka-mgr.pdf

Mckenzie, W. (2009). Walking the walk: Multiple intelligences in educator professional development. Massachusetts Computer Using Educators. Retrieved on October 4, 2013 from http://surfaquarium.com/Walk_the_Walk.pdf

Rahman, S. A. (2010). The effects of linear and non-linear texts on students' performance in reading. Skudai: Universiti Teknologi Malaysia.

Safranj, J., & Zivlak, J. (2018). Spatial-visual intelligence in teaching students of engineering. Research in Pedagogy, 8(1), 71-83.

Shearer, C. B. (2006). Reading skill and multiple intelligences: An investigation into the MI profiles of high school students with varying levels of reading skill. Multiple Intelligences Research and Consulting, Inc. Kent, Ohio: Kent State University. Retrieved from http://insingerinsightskids.comWang, J. (2012). On the relationship between Pearson Correlation Coefficient and Kendall's Tau under Bivariate Homogeneous Shock Model. International Scholarly Research Notices, 1-7.

Yi-an, H. (2010). Multiple intelligences and foreign language learning-A case study in Taiwan. WHAMPOA- An Interdiscplinary Journal, 1-30.