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The Effect of Gender, Socio-Economic Status, and Using Mindmaple Lite Software on Learners' Writing Performance

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Abstract

The research was to measure interaction effects for gender, socio-economic status, and using MindMaple lite Software toward writing skills. The investigation used a quasi-experiment design using test as instrument. The subjects were 36 learners at Islamic higher education in Central Kalimantan consisting of 17 males and 19 females; 11 high, 10 middle, and 15 low learners; 17 using MindMaple, and 19 without using MindMaple. A three-way analysis of variance test was applied to perform data analysis. The finding indicated that a different effect occurred for gender (F=8.780; p=0.007); socio economic status (F=4.421; p=0.023), writing strategy using MindMaple (F=36.023; p=0.000) on writing performance. The study indicated an interaction effect occured between gender and socio-economic (F=6.927, p=0.004). Here, females performed better than males; high socio-economic learners did better than the others; learners using MindMaple ware performed better than without using MindMaple. In contrast, the finding found that interaction effect did not occur between gender and writing strategy (F=1.135, p=0.297); socio-economic and writing strategy (F=0.198, p=0.822); gender, socio-economic and writing strategy using MindMaple (F=0.437, p=0.651). The study concluded that gender, socio-economic and writing strategy did not give significant contribution simultaneously on writing performance. It gave new insights on the implementation of MindMaple in L2 writing class.

Keywords: *Gender, Socio-economic status, MindMaple Software, Writing performance.*

INTRODUCTION

The idea of mind map was originated from meaningful learning concept (Ausebel, Noval& Hanesian, 1978). Historically, Mind Mapping was introduced Tony Buzan, in 1960s (Buzan, 2014). Buzan (2007), the founder of mind mapping, states that it is an effective way, since it includes the left and right hemisphere.

In EFL writing classes, teachers are concerned with the process writing. In facts, learners got difficulties in writing essay, since the writing process needs many cognitive and linguistic strategies (Maghsoudi & Haririan, 2013). As learners begin writing, their ideas are not well-disorganized. Although they provide some good ideas, they fail to write well. Firmansyah (2015) states that the main problems in writing are that they have less ability to generate ideas. Second, learners got difficulties in writing paragraphs with the topic. Learners also got difficulties in selecting words or phrases because of inadequate vocabulary. The researchers assumenthat it was caused of teacher's teaching strategies, the model of writing activities in classroom setting, or less chance to practice writing. In contrast, teachers view that writing is difficult to follow (Akinwamide, 2012). Alsamadani (2010, p. 53) confirm that writing is a hard process, since it needs many skills such as formulating statement, writing evidences and developing topics, revising the errors they made and making editing. Besides, writing needs adequate knowledge of grammar, word choice, written convention, and organizing ideas.

Mind mapping is assumed to be the most effective way in classroom writing activities, especially in pre-writing. It is a diagram applied to convey the connection of ideas linked to a main idea (Deshatty & Mokashi, 2013). It is a proper equipment to help learners organize ideas. It aids learners connect ideas (Buzan, 2010). In the other words, Mindmap is a collection of words which circles drawn and lines connecting them to other words (Grant, 2006). Howitt (2009) states that it is

a visual display to generate ideas, and develop concepts.

The development of technology enabled to use mind mapping software, for example, CmapTools (Alberto, et.al, 2004), MindMaple lite (2018), Xmind and Mind Vector (2018); Gwo, et. al., (2013). Mind Maple Lite is software facilitating to make digital mind map. MindMaple enables users to combine all data into one mind map (MindMaple. 2013). This is an example of Mind Mapping using MindMaple lite.

Lite MindMaple Lite has size 14 MB and a simple interface that is easy to use for teachers and students. MindMaple Lite already has standard features that are very inadequate for use in mapping concept. Several investigations were done on Mind Mapping, such as Chan (2004); Jasvir Kaur (2004); Saed and Al-Omari (2014); Naqbi (2011); and Jones et al. (2012) Many other researchers (e.g Ahangari& Behzady, 2011, Lee & Cho, 2010 found that it is helpful for learners.

Despite the facts the existing valuable number of researches investigating mind mapping on the learners' writing performance, there were still limited investigation involving gender and socio-economic status as predictor variables. This investigation is needed to validate the previous findings. Gender difference becomes a variable contributed to this study, since men and women do in fact have differences in structures and function in the brain. Therefore, the research questions: (RQ1) does gender give effect to writing performance? (RQ2) does socio economic status give effect to writing performance? (RQ3) does writing strategy give effect to writing performance? (RQ4) do gender and socio-economic status give effect to writing performance? (RQ5) do gender and writing strategy give effect to writing performance? (RQ6) do socio economic status and writing strategy give effect to writing performance? (RQ7) do gender, socio economic status and writing strategy give effect simultaneously to writing performance?

METHODOLOGY

Research Design

The investigation belonged to a quasi-experiment research using test as research instrument and documentation (Ary, Lucy, Chris, and Asghar, 2010, p.648). The documentation was used to collect the demographical data about gender and socio-economic status. In contrast, the test was used to see the learners' writing performance. The participants were 36 L2 learners, as follows:

Table 1. The Participants

Types of treatment	Socio-economic status						Total
	High		Middle		Low		
	M	F	M	F	M	F	
Mind Maple Software (MMS)	1	7	3	3	1	2	17
Non Mind Maple Software (N-MMS)	1	2	2	2	9	3	19
Sub total	2	9	5	5	10	5	36
Total	11		10		15		36

Data Collection

The data were collected through several stages. First, the pre-test was given the participants in order to know the early writing

ability. Then, the treatment group was treated using MindMaple Software (MMS). The MindMaple Software was given to the experiment class. Meanwhile, the control group was treated using outlining strategy. Finally, participants of both groups were given writing posttest.

Data Analysis

A three-way ANOVA test was applied to analyze data. It was applied to investigate the interaction contribution among variables: gender, types of pre writing strategy and socio-economic status toward learners' writing performance.

There were three categorical variables: gender (male- female), socio-economic status (high, middle, and low), and types of writing strategy (MindMaple Software and Non-MindMaple Software); and one outcome variable: learners' writing score. High socio-economic status refers to learners' parents who earns above 10.000.000 per month. Middle socio-economic status refers to learners' parents who earns between 3.000.000 up to 9.500.000 per month. Low socio-economic status refers to learners' parents who earns below 2.950.000 per month.

RESULT AND DISCUSSION

Asumption test

The test of normality resulted the sig. value (p-value) for 0.690>0.050. Therefore, it was normally distributed. Then, the Levene's Test was (p=0.504 >0.050), indicating the data were not homogenous.

Data Presentation

The learners' writing performance was seen below.

Table 2. The mean score

Gender	Sosio-Economic	Writing Strategy	Mean	Std. Deviation	N
male	high	using mindmaple software	85.0000		1
		without usir mindmaple software	75.0000		1
		Total	80.0000	7.07107	2
	middle	using mindmaple software	80.3333	4.50925	3
		without usir mindmaple software	61.5000	2.12132	2
		Total	72.8000	10.84896	5
	low	using mindmaple software	63.0000	.	1
		without usir mindmaple software	51.2222	8.28821	9
		Total	52.4000	8.65640	10
	Total	using mindmaple software	77.8000	9.09395	5
		without usir mindmaple software	54.9167	10.29968	12
		Total	61.6471	14.46090	17
female	high	using mindmaple software	88.1429	4.52506	7
		without usir mindmaple software	66.0000	5.65685	2
		Total	83.2222	10.70955	9
	middle	using mindmaple software	85.3333	9.50438	3
		without usir mindmaple software	67.0000	7.07107	2

		Total	78.0000	12.58968	5
	low	using mindmaple software	88.0000	2.82843	2
		without usin mindmaple software	70.3333	5.03322	3
		Total	77.4000	10.40673	5
	Total	using mindmaple software	87.4167	5.46823	12
		without usin mindmaple software	68.1429	5.14550	7
		Total	80.3158	10.87838	19
Total	high	using mindmaple software	87.7500	4.33425	8
		without usin mindmaple software	69.0000	6.55744	3
		Total	82.6364	9.92243	11
	middle	using mindmaple software	82.8333	7.19491	6
		without usin mindmaple software	64.2500	5.31507	4
		Total	75.4000	11.41344	10
	low	using mindmaple software	79.6667	14.57166	3
		without usin mindmaple software	56.0000	11.36982	12
		Total	60.7333	15.09715	15
	Total	using mindmaple software	84.5882	7.85063	17
		without usin mindmaple software	59.7895	10.79907	19
		Total	71.5000	15.67801	36

The output indicated that the average score of male high learners using MindMaple Software was 85.00; Middle 83.00; Low 75.00. The mean score of male high learners using Non-MindMaple Software was 75.00; Middle 69.83; Low 75.00. The mean score of male high learners with non- graphic organizer was 65.66; Middle 71.50; Low 58.50. In addition, mean score of female high learners using MindMaple Software was 89.67; Middle 85.67; Low 87.00. The mean score of female high learners using Non-MindMaple lite Software was 78.67; Middle 71.60; Low 68.60. The average performance of female high learners with non- graphic organizer was 63.75; Middle 62.25; Low 50.60.

Findings

To respond the seven questions, the table was seen below.

Table 3. The three-way Annova

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7564.087[a]	11	687.644	15.885	.000
Intercept	124068.9	1	124068.9	2.866	.000
gender	380.071	1	380.071	8.780	.007
Socio-Economic status	382.713	2	191.357	4.421	.023
Writing strategy	1559.385	1	1559.385	36.023	.000
gender*socio econom status	599.737	2	299.869	6.927	.004
gender*writing strategy	49.147	1	49.147	1.135	.297
Economic statu writing strategy	17.116	2	8.558	0.198	.822
gender*socio econom status * writing strateg	37.848	2	18.924	0.437	.651
Error	1038.913	24	43.288		
Total	192644.00	36			
Corrected Total	8603.000	35			

The table indicated that the value of gender was 0.007 (F=8.780) or lower than 0.05; gender gave influence to writing performance. The value of socio-economic status was 0.023 (F=4.421) or smaller than 0.05; socio-economic status gave contribution to writing performance. The value of writing strategy (MMS and N- MMS) was 0.000 (F=36.023) or smaller than 0.05; writing strategy gave effect significantly to writing performance. The value of gender and socio-economic status was 0.004 (F=6.927) or smaller than 0.05; gender and socio-economic status simultaneously gave contribution to the learners' writing performance. The value of gender and writing strategy was 0.297 (F=1.135) or > 0.05; gender and writing strategy simultaneously did not give effect significantly to writing performance. The value of socio-economic status and writing strategy was 0.198 (F=0.822) or higher than 0.05; socio economic status and writing strategy simultaneously did not give contribution to writing performance. The value of gender, socio economic status and writing strategy was 0.437 (F=0.651) or higher than 0.05; gender, socio economic status and writing strategy simultaneously did not give contribution to writing performance.

Gender did not give effect to writing performance.

To response the first research question: "Does gender give effect to writing performance? Table 3 explained the answer. The significance value (Sig.) of gender was 0.007 (F=8.780) or lower than 0.05; gender gave contribution to the learners' writing performance. Here, female was better than male in writing performance. The mean score of male was 69.34 and female was 77.47 as seen below.

Table 4. Male and Female

Gender	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
male	69.343	2.178	64.848	73.837
female	77.468	1.666	74.029	80.908

Socio Economic Status did not give effect to writing performance.

To response the second ones: "Does socio economic status give effect to the learners' writing performance? Table 3 explained the answer. The significance of socio-economic status was 0.023 (F=4.421) or < 0.05; socio-economic status gave contribution to writing performance. In this case, high socio-economic status performed better than middle or low socio-economic status in writing performance. The average score of high socio-economic status learner was 78.54 followed by middle socio-economic status was 73.54; and low socio-economic status was 73.54female was 68.14 as seen below.

Table 5. Socio-Economic Status

Socio-Economic Status	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
high	78.536	2.674	73.017	84.055
middle	73.542	2.123	69.159	77.924
low	68.139	2.294	63.405	72.873

Dealing with this finding, socio economic status got high relationship with learners' performance. Additionally, Caponera and Losito (2016) found that socio economic status was an urgent factor affecting learners' achievement. It was clear that higher socio-economic status tent to lead higher learners' achievement and lower socio-economic status tent to lead lower achievement. Aikens and Barbarin (2008) stated that low socio-economic learners had slower language acquisition. Relevant studies found that socio economic status influenced learners' outcomes (Eamon, 2005, Hochschild,2003).

Writing strategy did not give effect to writing performance.

To response the third ones: "Does writing strategy give effect to writing performance? Table 3 explained the answer. The significance of writing strategy (MMS and N- MMS) was 0.000 (F=36.023) or < 0.05; writing strategy gave contribution to writing performance. In this case, writing strategy using mindmaple software performed better than

writing strategy without using mindmaple software middle in writing performance. The mean score of writing strategy using mindmaple software was 81.64; and writing strategy without using mindmaple software was 65.18, as seen below.

Table 6. Writing Strategy

Writing Strategy	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
using mindmaple software	81.635	1.995	77.518	85.752
without using mindmaple softwar	65.176	1.882	61.292	69.059

Gender and socio-economic status did not give effect to writing performance.

To response the fourth ones: "Do gender and socio-economic status give effect to the learners' writing performance? Table 3 explained the answer. The significance of gender and socio-economic status was 0.004 (F=6.927) <0.05. It meant that gender and socio-economic status simultaneously contributed significantly to the learners' writing performance. In this case, male and female learners with high socio-economic status performed better than male and female learners with middle and low one. The average score of male and female learners with high socio-economic status were 80.00 and 77.07. In contrast, the average score of men and women learners with middle socio-economic status were 70.92 and 76.17, as follows:

Table 7. Gender and SocioEconomic Status

Gender	Economic Status	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
male	high	80.000	4.652	70.398	89.602
	middle	70.917	3.003	64.719	77.115
	low	57.111	3.468	49.954	64.268
female	high	77.071	2.638	71.628	82.515
	middle	76.167	3.003	69.969	82.365
	low	79.167	3.003	72.969	85.365

Gender and writing strategy did not give effect to writing performance.

To response the fifth ones: "Do gender and writing strategy give effect to the learners' writing performance? Table 3 above explained the answer. The significance of gender and writing strategy was 0.297 (F=1.135) >0.05; gender and writing strategy did not contribute to writing performance. In this case, the average score of both male and female using mindmaple software was 76.11 and 87.16. the mean score of both without using mindmaple software was 62.57 and 67.78, as seen below.

Table 8. Gender and writing strategy.

Gender	Writing Strategy	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
male	using mindmaple software	76.111	3.350	69.197	83.025
	without using mindmaple software	62.574	2.784	56.829	68.319
female	using mindmaple software	87.159	2.167	82.687	91.631
	without using mindmaple software	67.778	2.532	62.551	73.004

Socio economic status and writing strategy did not give effect to writing performance.

To response the sixth one: "Do socio economic status and writing strategy give effect to writing performance? Table 3 explained the answer. The significance of socio-economic status and writing strategy was 0.198 (F=0.822) or > 0.05; socio economic status and writing strategy simultaneously did not give influence to writing performance. In this case, the mean score of high socio-economic status learners using mindmaple software was 86.57. The mean score of high socio-economic status learners without using mindmaple software was 70.50. The mean score of middle socio-economic status learners using mindmaple software was 82.83. The mean score of middle socio-economic status learners without using mindmaple software was 64.25. The mean score of low socio-economic status learners using mindmaple software was 70.50. The average score of low socio-economic status learners without using mindmaple software was 60.78, as illustrated in Table 9.

Table 9. Socio economic status and writing strategy

Economic Status	Writing Strategy	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
high	using mindmaple software	86.571	3.517	79.313	93.830
	without using mindmaple software	70.500	4.029	62.185	78.815
middle	using mindmaple software	82.833	2.686	77.290	88.377
	without using mindmaple software	64.250	3.290	57.460	71.040
low	using mindmaple software	75.500	4.029	67.185	83.815
	without using mindmaple software	60.778	2.193	56.251	65.304

Gender, socio economic status and writing strategy did not give effect to writing performance.

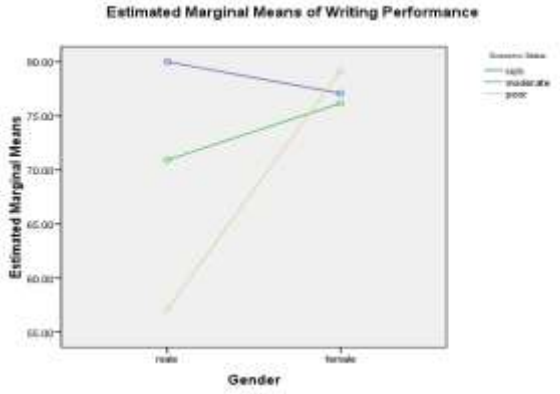
To response the seven ones: "Do gender, socio economic status and writing strategy give effect to writing performance? Table 3 explained the answer. The significance of gender, socio economic status and writing strategy was 0.437 (F=0.651) or > 0.05; they did not give contribution significantly to writing performance. In this case, the mean score of male high socio-economic status learners using mindmaple software was 85.00. The mean score of male high socio-economic status learners without using mindmaple software was 70.00. The mean score of male middle socio economic status learners using mindmaple software was 80.33. The mean score of male middle socio economic status learners without using mindmaple software was 61.50. The mean score of male low socio-economic status learners using mindmaple software was 63.00. The mean score of male low socio-economic status learners without using mindmaple software was

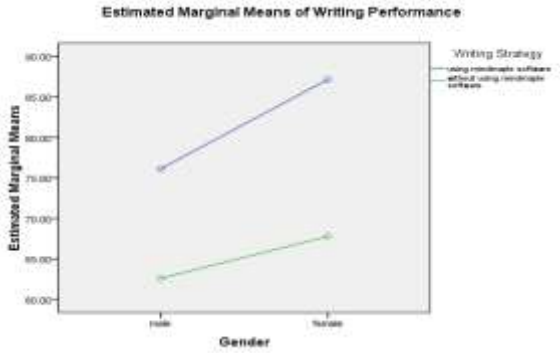
51.22. Meanwhile, the mean score of female high socio-economic status learners using mindmaple software was 88.14. The mean score of female high socio-economic status learners without using mindmaple software was 66.00. The mean score of female middle socio-economic status learners using mindmaple software was 85.33. The mean score of female middle socio-economic status learners without using mindmaple software was 67.00. The mean score of female low socio-economic status learners using mindmaple software was 88.00. The mean score of female low socio economic status learners without using mindmaple software was 70.33, as follows.

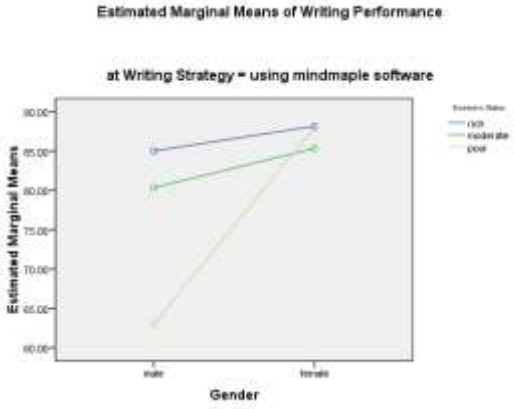
Table 10. Gender, socio-economic status and w

Gender	Socio Economic Status	Writing Strategy	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
male	high	using mindmaple software	85.000	6.579	71.421	98.579
		without using mindmaple software	75.000	6.579	61.421	88.579
	middle	using mindmaple software	80.333	3.799	72.493	88.173
		without using mindmaple software	61.500	4.652	51.898	71.102
	low	using mindmaple software	63.000	6.579	49.421	76.579
		without using mindmaple software	51.222	2.193	46.696	55.749
female	high	using mindmaple software	88.143	2.487	83.010	93.275
		without using mindmaple software	66.000	4.652	56.398	75.602
	middle	using mindmaple software	85.333	3.799	77.493	93.173
		without using mindmaple software	67.000	4.652	57.398	76.602
	low	using mindmaple software	88.000	4.652	78.398	97.602
		without using mindmaple software	70.333	3.799	62.493	78.173

To observe interaction effect among variables was explained in plot diagram, as seen below.







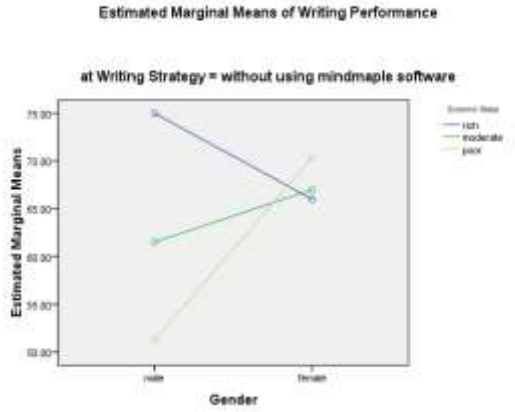


Figure 1. The interaction effect among variables

CONCLUSION

The finding confirmed that separately there was a different effect for gender (F= 8.780; p=0.007); socio economic status (F=4.421; p=0.023), and writing strategy using MindMaple lite Software (F=36.023; p=0.000) on writing performance. The study also showed that an interaction effect occured between gender and socio-economic status (F=6.927, p= 0.004). Here, females performed better than males; high socio-economic status learners did better than the others; learners using MindMaple Software ware performed better than without using MindMaple Software. In contrast, the finding found no interaction effect between gender and writing strategy (F=1.135, p=0.297); socio-economic status and writing strategy (F=0.198, p=0.822); gender, socio-economic status and writing strategy using MindMaple Software (F=0.437, p=0.651). The study concluded that gender, socio-economic status and writing strategy did not contribute simultaneously on writing performance. Dealing with the findings on socio economic status and academic achievement, it was in line with Milne and Plourde (2006). Furthermore, the educational literature confirmed that socio economic status was an academic achievement predictor (Reardon, 2011). The results were supported by relevant studies such as Al-Jarf (2009) revealed that Mind Mapping software contributed to learners' writing performance. The composition produced by learners using Mind Mapping software performed better. Naqbi (2011) confirmed that mind mapping increased learners'

writing product. Then, Darayesh (2003) believed mind mapping strategy could develop learners' writing ability. This study affirmed that mind mapping could perform better writing performance. It was recommended that L2 teachers were encouraged to apply mind mapping in EFL writing class to help learners organize ideas and broaden writing skills. This would motivate learners to generate ideas. Other researchers were recommended to investigate similar research to validate the findings with wider sample size.

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