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Writing Strategy, Learning Style Preference and Gender Difference on EFL Learners' Writing Argumentative Essay: Do they really make a difference?

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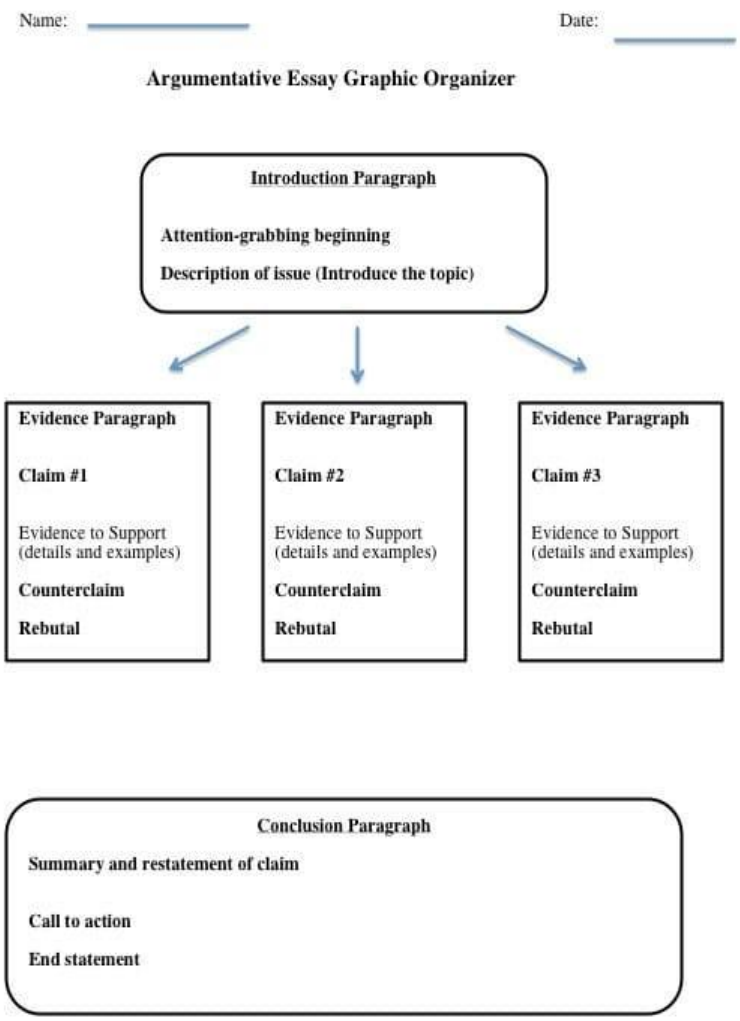
Abstract: The investigation investigates the interaction effect amongst types of writing strategy (x1), learning styles (x2), and gender (x3) on writing accuracy (y) at Islamic University Students. The investigation applied a posttest quasi-experiment design using a 2x3x2 analysis of variance. The 70 participants consisted of three groups based on types of writing strategy (x1): free writing (n= 34) versus graphic organizers (n=36); types of learning styles (x2) : visual (n=22) versus auditory (n=26) versus kinesthetic (n=22); and gender (x3): male (32), female (38). A three way Anova test was applied in the investigation. The study revealed that an interaction effect occurred amongst writing strategy, learning styles and gender difference on average of writing accuracy at F (2, 69) =3.342, p=0.042, eta 0.103. Then, the interaction effect also occured between writing strategy and learning styles at F (2, 69) =7.403, p=0.001; and between learning styles and gender at F (2, 69) =6.562, p=0.003. On the contrary, the interaction effect did not occur between writing strategy and gender at F (1, 69) =1.790, p=0.186. Additionally, the simple main effect analysis confirmed that was a statistically significance effect of writing strategy at F (1, 69) = 9.697, p=0.003; learning style preference at F (2, 69) = 62.921, p=0.000; and gender at F (1, 69) = 14.811, p=0.000. Here, GOs were better than free writing; visual learners outperformed better than auditory and kinesthetic; and female had higher achievement than male on the learners' writing accuracy.

Key words: *writing strategy, gender, learning style, writing accuracy*

Introduction

Composing argument essay is regarded to be the most difficult skills to learn (Suhartoyo et.al. 2015; Bychkovska & Lee, 2017; Pablo & Lasaten, 2018; Rubiaee et al. 2020; Zarrabi & Bozorgian, 2020; Liunokas, 2020). It is a complex matter that needs generating ideas and reviewing texts (Teng et al., 2022), since writing such essay needs critical thinking skills (Vögelinet al., 2019; Teng & Zhang, 2020). Allen et al. (2019) state that argument essay is a complex process. Argument essay is the most essential genres learnt at higher education. It covers, claim, counterclaim, refutation and conclusion (Boykin et al., 2019; Setyowati, Sukmawan, El-Sulukiyyah, 2020). In higher academic setting, argumentative skills are useful instruments for learners to argue their stance. Therefore, it is clear that the skill to write argument essay is strongly needed for college students. However, in facts, learners still get a lot of difficulties in composing argument essay. Some scholars have been investigating the learners' difficulties in composing argument essay such as Kao & Reynolds, 2017; Shahriari and Shadloo, 2019; Nindya & Widiati 2020; Beckett & Kobayashi, 2020; Ozfidan & Mitchell, 2020. They confirm that learners still get difficulties in writing argument essay in many aspects. Moreover, Dang, et.al. (2020) confirmed that learners met problems in linguistic competence and less critical thinking. In the same vein, Toba, Noor, & Sanu (2019, p. 69) revealed that

the most frequently difficulty faced by EFL learners is the feeling of anxiety. Referring to the teaching experience, the writer face the similar problems in argumentative class. Learners face a number of problems in writing argument essay including anxiety feeling when doing the writing test. For example, they cannot organize ideas well, develop ideas into sentences, make a claim and refute the counterclaim. Some learners' writing accuracy remains unsuccessful in organizing thoughts, developing ideas, constructing correct sentences, writing thesis statement and making conclusion. Additionally, they are frequently unaware of the writing difficulties they face. As a result their writing accuracy remains poor. The prior investigations (French & Kennedy, 2016; Zakrajsek, 2018; Styati & Latief, 2018) recommended that L2 writing teaching should give more attention on thinking processes. To cope such difficulties in writing, writing strategy has been offered as powerful technique (Creswell, 2000). It is, therefore, there is an urgently need for language teachers to elaborate strategy of writing. It is the procedure performed by learners to plan, write, revise and edit the text (Penuelaz, 2012, p.83). Some scholars suggest to use writing strategy in L2 writing (Mastan, Maarof, & Embi, 2017; Raoofi, et.al.2017; Dewi, Nurkamto, & Drajati, 2019; Cer, 2019; Bailey, 2019). Other scholars such as (Arifin, 2017; Rahmawati, Fauziati, & Marmanto, 2019; Zhang, Chen, & Yu, 2019; Khongput, 2020) believe that writing strategy is very important to differenciate between skilled and less-skilled writers. This premise calls for further investigation on the similar topic. Therefore, the study proposes graphic organizers (GOs) a potential strategy to cope the difficulties in L2 argumentative writing class. A GO is a visual display demonstrating connection amongst ideas. The basic idea of GOs comes from the schemata theory. The relevant studies on graphic organizers (GOs) in argumentative writing class have been conducting by some scholars such as (Pratama et al., 2017; Anggraini, 2017; Vitanofa & Anwar, 2017; Anggraeni & Pentury, 2018; Maharani, et.al. 2018; Lasaka et al., 2018; Rahmat, 2020; Hafidz, 2021). In general, they believe that GOs help learners in a process of selecting, organizing, and developing ideas in writing process. They find that learners increase their motivation to work with a variety of strategy (Vitanofa & Anwar, 2017; Maharani, et.al. 2018). It is, therefore, the study attempts to explore GOs in L2 writing argument essay. The model of argumentative graphic organizers is as follows.



Another factor that contributes to successful learning is learning style. Learning style is the way to learn and process knowledge. Fleming (2001) states that it is a learner's way of gathering knowledge. Learners may use one of the following: visual auditory and kinesthetic one (Kinsella, 2003). Some scholars have been investigating on learning style in L2 writing such as (Tyas & Safitri, 2017; Kayalar & Kayalar, 2017; Rahayu, Riyana, & Silvana, 2017; Şener & Çokçalışkan, 2018; Siregar, 2018). This study applies VAK model of learning style. In this case, Reid (1995) states that learning style is classified into 3 parts: cognitive, sensory and personality learning styles. The first model deals with processing ideas. Then, the second model deals with perceptual learning style. Averagewhile, the third model deals with interaction to others. The study focuses on the three models of perceptual learning style: visual (see), auditory (hear) and kinesthetic (move) learners (VAK). Learning style plays a vital role in learners' life. When they have awarenes with it, they can choose the best way to learn in learning process. Visual learners may prefer visual tool such as watching video or reading texts.

Averagewhile, auditory students like to learn by verbal instruction. They prefer discussing something or learn in a group work. Thus, observations, examinations and reviews are their favorite approaches. Averagewhile, kinesthetic one tend to learn something by doing and direct involvement. As learners know their learning style preference, they can select the best method for learning. As a result, they can learn faster and easier. This will help learners to become a quick learner. Therefore, it is important that learners get information about their style of learning preference. This also helps teachers control the process of learning. The previous investigations found a strong positive relationship between learners' learning style and writing achievement (Zoghi, 2017; Kusumawarti, Subiyantoro, & Rukayah, 2018; Rezeki, Sagala, & Damanik, 2018; Siregar, 2018; Alnujaidi, 2018).

The potential variable assumed to affect the successful writing is gender difference (Coskun, 2014; Feery, 2008). Nowadays, gender difference has been widely discussed in L2 writing. Some potential of differences in gender are being explored including many aspects such as motivation, interest, length of sentences, critical thinking, writing skills, and self-efficacy. It is, therefore, today's teaching writing needs an understanding of gender in writing classroom setting. Gender refers to the roles in society as performed by male and female (Anyanwu, 2015). Earlier investigation on gender difference was performed by Lakoff (1975). He found that males and females differed in language use. More specific focus of the present investigation, gender is assumed to influence writing accuracy (e.g., Jafari & Ansari, 2012; Sajadi & Maghsoudi, 2016). In the context of EFL/ESL, males are regarded to have lower competence than females (Cornett, 2014). Another investigation performed by Ng (2010) confirms that males do more grammatical errors than females. The effect of gender in L2 writing has also been investigated by some other scholars, such as (Fearrington et al., 2014; Scheiber, et.al, 2015; Adams et al., 2015; Limpo & Alves, 2017; Pargulski & Reynolds, 2017; Castro & Limpo, 2018; Zhang et al., 2019). They believed that girls gained better achievement in writing. Referring to the finding above, the investigation involving gender difference is conducted to provide a strong foundation in l2 writing context. By involving gender difference, this investigation attempts to elaborate the effect of gender in L2 writing using two different writing strategies. The finding of this investigation is expected to explore the possible differences in L2 writing between males and females.

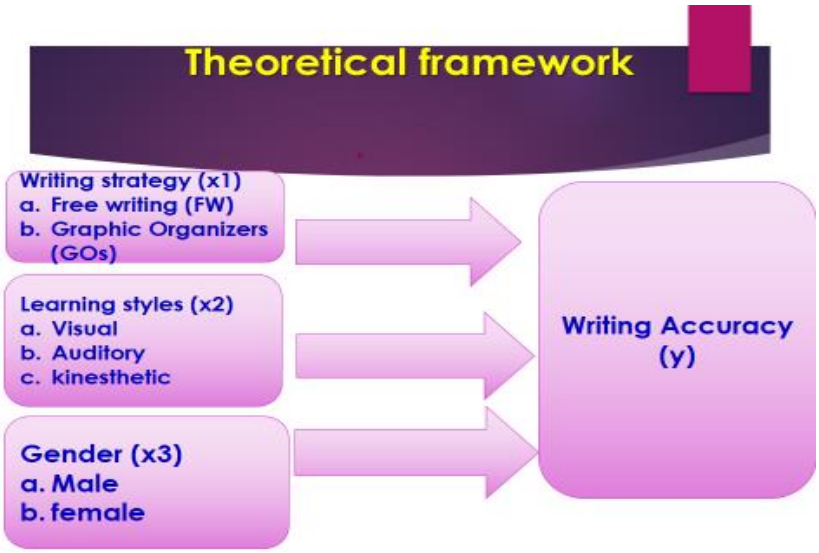
Despite the facts that there many worthful investigations on the use of writing strategy, especially GOs, however, less attention has been given to the significance of GOs, learning style preference, and gender simultaneously in writing. Therefore, to fill the gap, the investigation is performed. The purpose is to elaborate the effect of writing strategy, learning style, and gender difference simultaneously in writing argumentative essay. The seventh research questions are: (a) is there any statistical significance difference in average on writing accuracy yield by writing strategy? (b) is there any statistical significance difference in average on writing accuracy yield by learning styles? (c) is there any statistical significance difference in average on writing accuracy yield by gender? (d) is there any interaction effect between writing strategy and learning styles on average of writing accuracy? (e) is there any interaction effect between writing strategy and gender on average of writing accuracy? (f) is there any interaction effect between styles of learning and gender on average of writing accuracy? (g) is there any interaction effect amongst writing strategy, learning styles, and gender on average of writing accuracy?

Method

The design of the investigation used a quasi-experiment using a 2x3x2 analysis of variance with participant's gender: male versus female (x1), learning styles: visual versus auditory versus kinesthetic (x2); and types of writing strategy: free writing versus graphic organizers (x3): as between-participants factors. The study involved 70 EFL participants consisting of

three groups based on types of writing strategy (x1): free writing (n= 34) versus graphic organizers (n=36); types of learning styles (x2) : visual (n=22) versus auditory (n=26) versus kinesthetic (n=22); and gender (x3): male (32), female (38).based on gender (x1): male (n=34) versus female (n=36), learning styles (x2): visual (n=23) auditory (n=24) kinesthetic (n=23); types of writing strategy (x3): types of writing strategy: free writing (n= 33), graphic organizers (n=37). The three categorical independent variables were writing strategy (x1) and learning styles (x2) and gender (x3). Averagewhile the outcome variable was argumentative writing accuracy (y). The theoretical thinking was as follows.

Figure 2. Theoretical framework



A 2x3x2 interaction was applied to analysis data. It was a way of analysing the three-way interaction between variables and simple main-effects. In the present study, it was applied to determine if the interaction amongst writing strategy (x1) learning styles (x2) and gender (x3) differed significantly on the learners' argumentative writing accuracy (y). Here, writing strategy, learning styles and gender were factors that affected how well learners' writing accuracy. The participants was as follows.

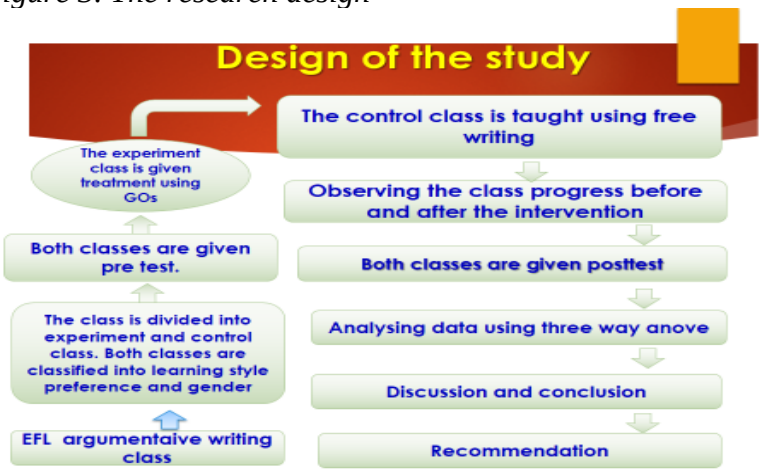
Table 1. The Participants

Writing strategy	**Learning styles**						**total**
	visual		**auditory**		**kinesthetic**		
	male	female	male	female	male	female	
Free writing	5	3	5	3	8	10	34
Graphic organizers	6	8	6	12	2	2	36
Total	11	11	11	15	10	12	70

Design of the study

This investigation applied two groups pre-posttest experiment design. The pre-posttest design was performed to collect data on the learners' writing accuracy, as seen below.

Figure 3. The research design



The figure explained the procedure to collect data. There were three categorical predictor variables involved: writing strategy (x1), learning styles (x2), gender (x3) and learners' argumentative writing accuracy (y) as the outcome variable. The test and questionnaire were administered to gather data. At the first procedure, the subjects were classified into experiment (n= 36) and control groups (n= 36). Additionally, both groups were also classified based on learning style preference: visual (n= 22), auditory (n= 26) and kinesthetic (n= 22); and gender: male (n=32), female (n= 38). Here, a questionnaire of VAK model was used to identify the learners' learning style preference. Then, the intervention was provided for two months. The experiment group was given intervention using GOs in pre writing strategy. In contrast, control group was given using free writing teachnique. During the lesson, each group was taught the same learning materials about the features of argument essay. They were directed to apply three stages in writing. Stage 1 was planning. In planning stage, both classes received the features of argumentative essay. In this case, each learner chose the selected topic. Stage 2 was drafting. In this stage, they composed the first draft. Each class was taught using different intervention. The experiment class was given intervention using GOs. Then, the control group was given using free writing teachnique. Stage 3 was editing and publishing. In this stage, each learner should revise and edit his/her composition. Finally they composed their argumentative essay and handled to the lecturer. Then, individually, each learner was assigned to do the posttest (meeting fifteen. Both groups were asked to compose an argument essay of five paragraphs. The learners' composition was scored by Oshima and Hogue' model (2006, p.316).

Significance Test

The 2x3x2 three way analysis of variance averaget that there were three categorical independent variables invloved in the study. There were a total of 12 conditions, 2x3x2 = 12.The three-way interaction examined for main effects, and interaction effects amongst all combinations of two factors and three factor on an outcome variable. In the present study, a significance level of 0.050 worked well. It indicated a 5% risk of concluding that a difference existed. The differences amongst the averages were considered to give effect significantly, if the p value is lower than 0.050. This averaget that the levels in the corresponding factor differed significantly and conversely. In this investigation, the three factors contributing the learners' writing accuracy were factor A (writing strategy), factor B (learning styles), and factor C (gender), factor two i (AB), (AC), and (BC); and factor three (ABC). Therefore, the design model was:

Design model

$$Y_{ijk} = \mu + \alpha + \beta + \gamma + \alpha\beta + \alpha\gamma + \beta\gamma + \alpha\beta\gamma + \varepsilon$$

Y_{ij}	:	the 1st observation in cell (i,j),
μ	:	the overall (grand) mean
$\alpha\ \beta\ \gamma$	:	are the main effects of factors A (writing strategy), factor B (learning styles), and factor C (gender)
$\alpha\beta\ \alpha\gamma\ \beta\gamma$	:	are the two way (first order) interaction effect between AB, AC, and BC
$\alpha\beta\gamma$	:	is the three-way (second order) interaction amongst writing strategy (x1), learning styles (x2) gender (x3)
ε_{ijkl}	:	are independent random variables

The null hypothesis was that there is no statistical significance difference in average on writing accuracy yield by (a) writing strategy; (b) learning styles; (c) gender; and there is no interaction effect between (c) writing strategy and learning styles (e) writing strategy and gender; (f) learning styles and gender; (g) amongst writing strategy, learning styles, and gender simultaneously on average of writing accuracy.

Analysis

Answering the questions of research; a three way interaction of ANOVA was conducted to analyze the interaction effect amongst writing strategy, learning styles, and gender on writing accuracy. The analysis also measured whether there was an effect partially of each writing strategy, learning styles, and gender.

The assumption test

The test assumption applied in the study were normality test and homogeneity test. The sig value of Kolmogorov-Smirnov was 0. 695> 0.050 showing that the data were normally distributed. Averagewhile, the output Levene's Test indicated that the sig. Value of writing accuracy based on average was 0.109> 0.05 indicating the data were not violated the homogeneity.

Result

Data Presentation

The average score for each variable was shown below.

Table 2. Average score

Writing strategy	Learning styles	gender	Average	Std. Deviation	N
Free writing (FW)	Visual	male	64.8000	10.42593	5
		Female	90.6667	4.04145	3
		total	74.5000	15.68439	8
	Auditory	male	64.8000	4.20714	5
		Female	65.3333	15.27525	3
		total	65.0000	8.76682	8
	Kinesthetic	male	50.3750	5.90248	8

		Female	54.1000	6.57352	10
		total	52.4444	6.39137	18
	total	male	58.3889	9.92406	18
		Female	63.0625	16.31551	16
		Total	60.5882	13.31692	34
Graphic Organizers (GOs)	Visual	male	76.1667	5.07609	6
		Female	84.2500	7.64853	8
		total	80.7857	7.65786	14
	Auditory	male	78.6667	6.80196	6
		Female	83.6667	4.67748	12
		total	82.0000	5.80061	18
	Kinesthetic	male	51.0000	1.41421	2
		Female	52.5000	10.60660	2
		total	51.7500	6.23832	4
	total	male	73.6429	11.01473	14
		Female	81.0455	11.03448	22
		Total	78.1667	11.46797	36
Total	Visual	male	71.0000	9.57079	11
		Female	86.0000	7.29383	11
		total	78.5000	11.30845	22
	Auditory	male	72.3636	9.09145	11
		Female	80.0000	10.39918	15
		total	76.7692	10.41271	26
	Kinesthetic	male	50.5000	5.23344	10
		Female	53.8333	6.78010	12
		total	52.3182	6.22121	22
	total	male	65.0625	12.80609	32
		Female	73.4737	16.06194	38
		Total	69.6286	15.16018	70

This table showed the average score for each combination of groups of the outcome variables. It described that the average score for free writing group of male visual learners was 64.80 and female was 90.66; of male auditory learners was 64.80 and female was 65.33; of male kinesthetic learners was 50.38 and female was 54.10. Averagewhile, the average score for graphic organizer group of male visual learners was 76.17 and female was 84.25; of male auditory learners was 78.67 and female was 83.67; of male kinesthetic learners was 51.00 and female was 52.50. This showed that the average score of graphic organizers was bigger than the average score of writing score

a. *There was no statistical significance difference in average on writing accuracy yield by writing strategy.*

The main effect of writing strategy was shown below.

Table 3. Tests of Between-Subjects Effects

Sources	Type III Sum of Squares	df	Average square	F value	P value	Partial Eta Squared
Corrected Model	13095.801a	11	1190.527	24.995	0.000	0.826
Intercept	235195.237	1	235195.237	4.938E3	0.000	0.988
writing strategy	461.870	1	461.870	9.697	0.003	0.143
learning styles	5993.811	2	2996.906	62.921	0.000	0.685
gender	705.471	1	705.471	14.811	0.000	0.203
Writing strategy * learning styles	705.197	2	352.598	7.403	0.001	0.203
Writing strategy * gender	85.251	1	85.251	1.790	0.186	0.030
learning styles * gender	625.129	2	312.564	6.562	0.003	0.185
Writing strategy * learning styles * gender	318.373	2	159.186	3.342	0.042	0.103
error	2762.542	68	47.630			
total	355228.000	70				

Corrected Total	15858.343	69

a. R Squared = ,826 (Adjusted R Squared = ,793)

The table above showed that the average square (MS) of writing strategy was 461.870, F (1, 69) = 9.697, p=0.003, eta 0.143. As α was smaller than 0.05, this averaget that the different writing strategy gave facilitative effect on writing accuracy. It averaget that writing strategy differed significantly in writing argumentative essay. It was evidenced that the average score for free writing (M= 65.01) was lower than graphic organizers (M= 71.04), as described below.

Table 4. Writing strategy

			95% Confidence Interval	
Writing strategy	Average	Std. Error	Lower Bound	Upper Bound
Free Writing (FW)	65.013	1.307	62.396	67.629
Graphic Organizers (GOs)	71.042	1.428	68.183	73.900

It was evidenced that there was statistical significance difference in writing accuracy yield by writing strategy. The average score of FW was 65.01. Averagewhile, the average score for GOs was 71.04. As a result, it was evidenced that the average score for graphic organizers (M= 71.04) was higher than that the average score for free writing (M= 65.01).

b. There was no statistical significance difference in average on writing accuracy yield by learning style preference.

The main effect of learning style preference was shown in Table 3. The average square (MS) of learning style preference was 2996.906, F (2, 69) = 62.921, p=0.000, eta 0.685. As α was smaller than 0.05, this averaget that the different learning style preference gave facilitative effect on writing accuracy. It showed that learning style preference differed significantly in writing argumentative essay. It was evidenced that the average score for visual was 78.97; auditory was 73.11, and kinesthetic was 51. 99, as described below.

Table 5. *learning style preference*

			95% Confidence Interval	
Learning styles	**Average**	**Std. Error**	**Lower Bound**	**Upper Bound**
Visual	78.971	1.567	75.834	82.108
Auditory	73.117	1.527	70.060	76.173
Kinesthetic	51.994	1.910	48.171	55.816

This indicated that the visual learners achieved better than auditory and kinesthetic learners. The post hoc tests of multiple comparison table below described the average difference amongst the three types of learning styles.

Table 6. Multiple Comparisons

Tukey HSD

I) learning styles	**(J) learning styles**	**Average Difference (I-J)**	**Std. Error**	**Sig.**	**95% Confidence Interval**	
					Lower Bound	**Upper Bound**
Visual	Auditory	1.7308	1.99923	0.664	-3.0780	6.5395
	Kinesthetic	26.1818*	2.08087	0.000	21.1767	31.1870
Auditory	Visual	-1.7308	1.99923	0.664	-6.5395	3.0780
	Kinesthetic	24.4510*	1.99923	0.000	19.6423	29.2598
Kinesthetic	Visual	-26.1818*	2.08087	0.000	-31.1870	-21.1767
	Auditory	-24.4510*	1.99923	0.000	-29.2598	-19.6423

The output indicated pairwise differences between (1) visual and auditory; (2) visual and kinesthetic; (3) auditory and kinesthetic. It showed that the average differences amongst three types of learning styles. The average difference (MD) between visual and auditory learners was 1.73 (SE 1. 99, p= 0.664) indicating not significant between visual and auditory. It averaget that both types of learning styles were equal. Then, the MD between visual and kinesthetic learners was 26.18 (SE 2.08, p= 0.000), indicating a significance difference between visual and kinesthetic learners. Here, visual was higher than kinesthetic learners. Next, the MD between auditory and kinesthetic learners was 24.45 (SE 1. 99, p= 0.000) showing there was a significance difference between auditory and kinaesthetic learners. To conclude, there was a significance difference between visual and kinaesthetic learners; and between auditory and kinaesthetic learners, but there was no significance difference between visual and auditory learners. Therefore, there was no statistical significance difference on writing accuracy yield by learning style preference was rejected. This was shown below.

Table 7. The Subset
Tukey HSD

learning styles	N	Subset	
		1	2
Kinesthetic	22	52.3182	
Auditory	26		76.7692
Visual	22		78.5000
Sig.		1.000	0.671

c. *There was no statistical significance difference in average on writing accuracy yield by gender difference.*

The main effect of learning style preference was shown in Table 3. It evidenced that the average square (MS) of gender difference was 705.471, F (1, 69) = 14.811, p=0.000, eta 0.203. As α was smaller than 0.05, this averaget that the gender difference gave facilitative effect on writing accuracy. It averaget that gender difference differed significantly in writing argumentative essay. It was evidenced that the average score for male was 64.30; and female was 71.75, as described below.

Table 8. Gender

Gender difference	Average	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Male	64.301	1.341	61.618	66.985
Female	71.753	1.397	68.956	74.549

It was evidenced that there was statistical significance difference on writing accuracy yield by gender difference. The null hypothesis was rejected.

d. *There was no interaction effect between writing strategy and learning styles on average of writing accuracy.*

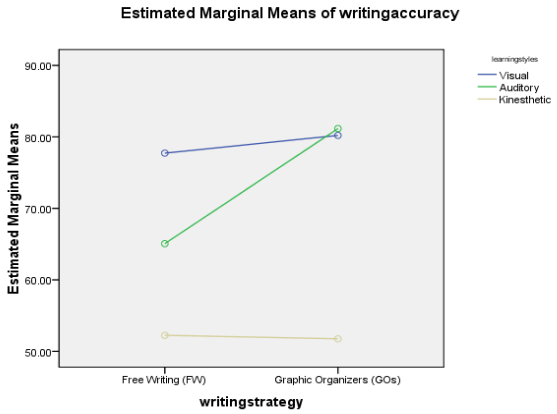
The second interaction effect between writing strategy and learning styles preference on average of writing accuracy was shown in Table 3. The average square (MS) of interaction effect between writing strategy and learning styles preference was 352.598, F (2, 69) =7.403, p=0.001, eta 0.203. As α was lower than 0.05, it averaget there was an interaction effect between writing strategy and learning styles preference in writing argumentative essay. It indicated that both writing strategy and learning styles preference simultaneously gave facilitative effect to writing accuracy, as described below.

Table 9. writing strategy * learning styles

Writing strategy	learning styles	Average	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Free Writing (FW)	Visual	77.733	2.520	72.689	82.778
	Auditory	65.067	2.520	60.022	70.111
	Kinesthetic	52.238	1.637	48.961	55.514
Graphic Organizers (GOs)	Visual	80.208	1.864	76.478	83.939
	Auditory	81.167	1.725	77.713	84.620
	Kinesthetic	51.750	3.451	44.843	58.657

The table showed that the average score of free writing group for visual was 77.73, auditory was 65.07, and kinesthetic was 52,24. Averagewhile, the average score of graphic organizer group for visual was 80.21, auditory was 81.17, and kinesthetic was 51.75. This indicated that GOs of all types of learners' learning style got higher achievement than free writing group of all types of learners' learning style. The interaction effect between both variables was seen below.

Figure 4. The interaction effect between writing strategy and learning styles



This indicated that an interaction effect occurred between writing strategy and learning styles on average of writing accuracy. Thereefore, the fourth null hypothesis was rejected.

e. *There was no interaction effect between writing strategy and gender difference on average of writing accuracy.*

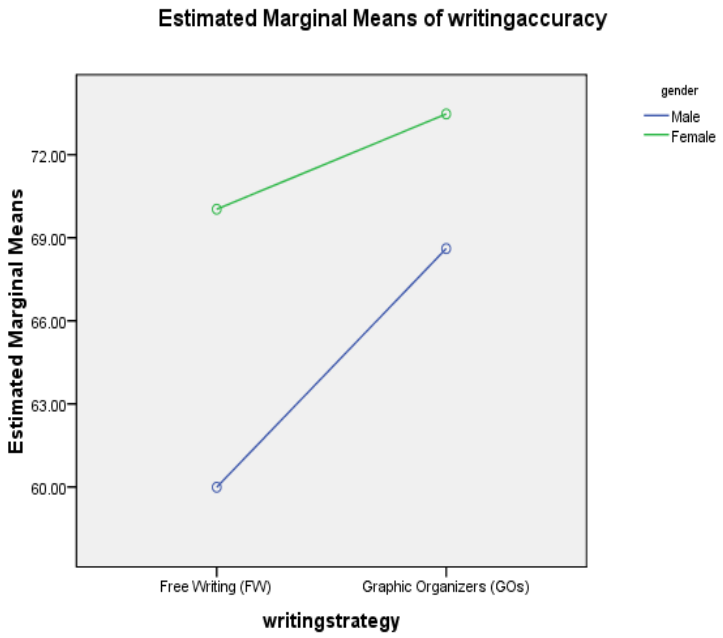
The second interaction effect between writing strategy and gender difference on average of writing accuracy was shown in Table 3. The average square (MS) of interaction effect between writing strategy and gender difference was 85.251, F (1, 69) =1.790, p=0.186, eta 0.030. As α was higher than 0.05, this averaget there was no interaction effect between writing strategy and gender difference in writing argumentative essay. It averaget that both writing strategy and gender difference simultaneously did not gave effect to writing accuracy, as described below.

Table 10. writing strategy * Gender

Writing strategy	Gender	Average	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Free Writing (FW)	Male	59.992	1.667	56.655	63.328
	Female	70.033	2.014	66.001	74.065
Graphic Organizers (GOs)	Male	68.611	2.100	64.407	72.815
	Female	73.472	1.936	69.597	77.348

The table showed that the average score of free writing group for boys was 59.99, and girls was 70.03. Meanwhile, the average score of graphic organizer group for male was 68.61, and female was 73.42. The interaction effect between both variables was seen below.

Figure 5. The interaction effect between writing strategy and gender



This figure showed that there was no interaction effect on average of writing accuracy between writing strategy and gender. Therefore, the fifth null hypothesis was acccepted.

f. There was no interaction effect between learning styles and gender difference on average of writing accuracy.

The second interaction effect between learning styles and gender difference on average of writing accuracy was shown in Table 3. The average square (MS) of interaction effect between learning styles and gender difference was 312.564, F (2, 69) =6.562, p=0.003, eta 0.185. As α was smaller than 0.05, it showed there was an interaction effect between learning styles and gender difference in writing argumentative essay. It showed that both learning styles and gender difference simultaneously gave facilitative effect to writing accuracy, as described below.

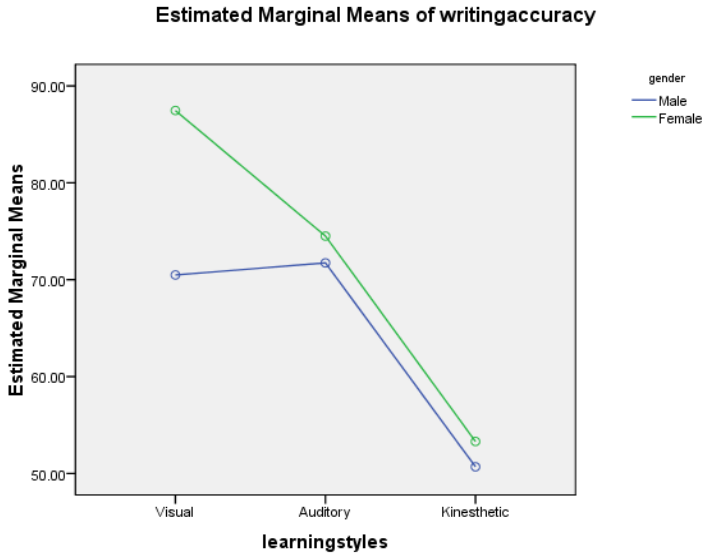
Table 11. learning styles * Gender

learning styles	Gender	Average	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Visual	Male	70.483	2.090	66.301	74.666
	Female	87.458	2.336	82.782	92.135
Auditory	Male	71.733	2.090	67.551	75.916
	Female	74.500	2.227	70.041	78.959
Kinesthetic	Male	50.688	2.728	45.227	56.148
	Female	53.300	2.673	47.950	58.650

The table showed that the average score of visual for male was 70.48, and female was 87.46. Meanwhile, the average score of auditory for male was 71.73, and female was 74.50. Then, the

average score of kinesthetic for male was 50.69, and female was 53.30. The interaction effect between both variables was seen below.

Figure 6. The interaction effect between learning styles and gender difference



This indicated an interaction effect between learning styles and gender occurred difference on average of writing accuracy. Therefore, the sixth null hypothesis was rejected.

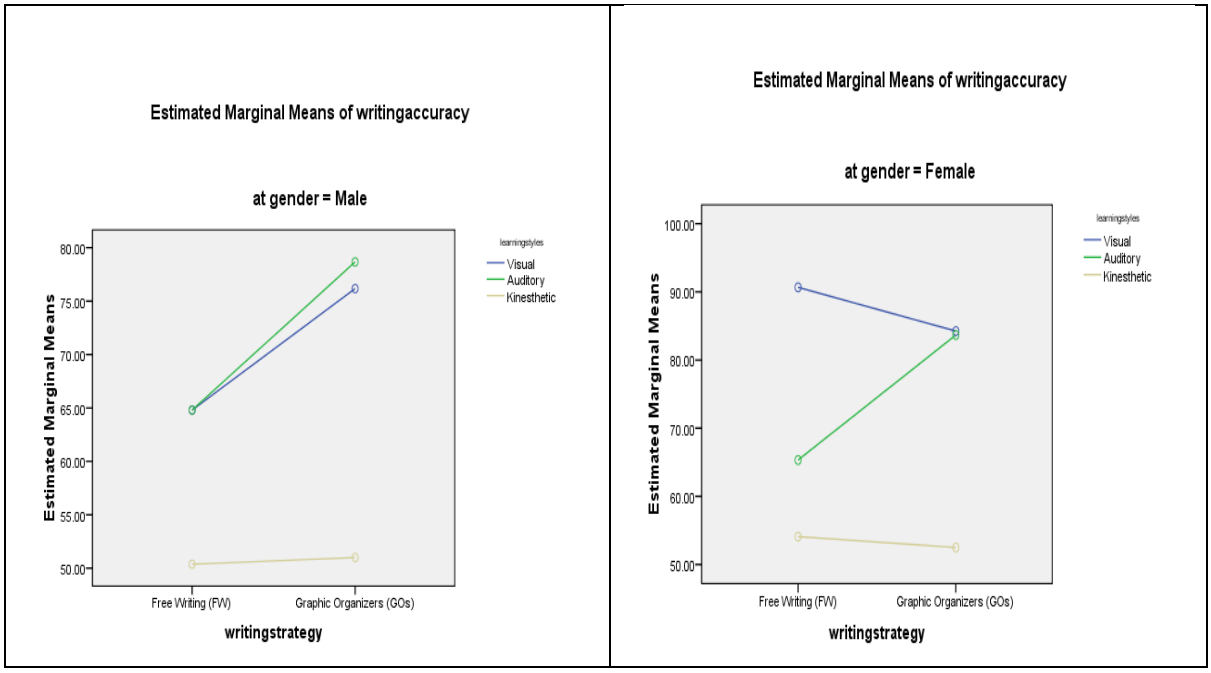
g. There was no interaction effect amongst writing strategy, learning styles and gender difference on average of writing accuracy.

The third interaction effect amongst writing strategy, learning styles and gender difference on average of writing accuracy was shown in Table 3. The average square (MS) of interaction effect amongst all variables was 159.186, F (2, 69) =3.342, p=0.042, eta 0.103. As α was smaller than 0.05, it showed there was an interaction effect amongst writing strategy, learning styles and gender difference in writing argumentative essay. It averaget that all predictor variables simultaneously gave facilitative effect to writing accuracy, as described below.

Table 12. writingstrategy * learningstyles * gender

Writing strategy	Learning styles	gender	Average	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
Free writing (FW)	Visual	male	64.8000	3.086	58.622	70.978
		Female	90.6667	3.985	82.691	98.643
	Auditory	male	64.8000	3.086	58.622	70.978
		Female	65.3333	3.985	57.357	73.309
	Kinesthetic	male	50.3750	2.440	45.491	55.259
		Female	54.1000	2.182	49.731	58.469
Graphic Organizers (GOs)	Visual	male	76.1667	2.818	70.527	81.807
		Female	84.2500	2.440	79.366	89.134
	Auditory	male	78.6667	2.818	73.027	84.307
		Female	83.6667	1.992	79.679	87.655
	Kinesthetic	male	51.0000	4.880	41.231	60.769
		Female	52.5000	4.880	42.731	62.269

The table showed the average score for free writing group of male visual learners was 64.80 and female was 90.67; of male auditory learners was 64.80 and female was 65.33; of male kinesthetic learners learners was 50.38 and female was 54.10. In contrast, the average score for graphic organizer group of male visual learners was 76.17 and female was 84.25; of male auditory learners was 78.67 and female was 83.67; of male kinesthetic learners learners was 51.00 and female was 52.50. This showed that the average score of graphic organisers was bigger than the average score of writing score at whole. The interaction effect amongst three variables was seen below.



This indicated that there was an interaction effect amongst writing strategy, learning styles and gender difference on average of writing accuracy.

Summary

To sum up, the table of three way interaction summarized the whole analysis of interaction effect amongst writing strategy, learning styles and gender difference on average of writing accuracy, and the simple main effect of each variable, as seen below.

Table 10. The summary of three way interaction.

Sources	variables	df	Average square	F value	P value	Sig. Test	Conclusion
Main effect (a)	writing strategy	1	461.870	9.697	0.003	<.0.050	significance
Main effect (b)	learning styles	2	2996.906	62.921	0.000	<.0.050	significance
Main effect (c)	gender	1	705.471	14.811	0.000	<.0.050	significance
Interaction effect (a, b)	Writing strategy * learning styles	2	352.598	7.403	0.001	<.0.050	significance
Interaction effect (a, c)	Writing strategy * gender	1	85.251	1.790	0.186	> 0.050	Not significance
Interaction effect (b, c)	learning styles * gender	2	312.564	6.562	0.003	<.0.050	significance
Interaction effect (a, b, c)	Writing strategy * learning styles* gender	2	159.186	3.342	0.042	<.0.050	significance
error		68	47.630			<.0.050	significance
total		70					

The three way interaction was used to see the interaction effect amongst writing strategy, learning styles and gender difference on average of writing accuracy; the interaction effect between writing strategy and learning styles; writing strategy and gender; and learning styles and gender and the main effect of types of writing strategy (x1) and learning style preference (x2) and gender (x3) on learners' writing accuracy (y). The analysis revealed that there was an interaction effect amongst writing strategy, learning styles and gender difference on average of writing accuracy at F (2, 69) =3.342, p=0.042, eta 0.103. Then, the two interaction occured between writing strategy and learning styles at F (2, 69) =7.403, p=0.001; and between learning styles and gender at F (2, 69) =6.562, p=0.003. However, there was no interaction between writing strategy and gender at F (1, 69) =1.790, p=0.186. Additionally, the simple main effect analysis confirmed that was a statistically significance effect of writing strategy at F (1, 69) = 9.697, p=0.003; learning style preference at F (2, 69) = 62.921, p=0.000; and gender at F (1, 69) = 14.811, p=0.000. Here, GOs were better than free writing; visual learners outperformed better than auditory and kinesthetic; and female had higher achievement than male on the learners' writing accuracy.

Discussion

The finding reveals that there is an interaction effect amongst writing strategy, learning styles and gender difference on average of writing accuracy at F (2, 69) =3.342, p=0.042, eta 0.103. It averages that writing strategy, learning styles and gender difference give facilitative effect simultaneously on learners' writing accuracy. Then, the interaction effect also occurs between writing strategy and learning styles at F (2, 69) =7.403, p=0.001; and between learning styles and gender at F (2, 69) =6.562, p=0.003. However, there is no interaction between writing strategy and gender at F (1, 69) =1.790, p=0.186. Additionally, the simple main effect analysis reveals that there is a statistically significance effect of writing strategy at F (1, 69) = 9.697, p=0.003; learning style preference at F (2, 69) = 62.921, p=0.000; and gender at F (1, 69) = 14.811, p=0.000. Here, GOs are better than free writing; visual learners outperforms better than auditory and kinesthetic; and females have higher achievement than males on the learners' writing accuracy.

Dealing with the finding that writing strategy, (here, GOs) gives effect on writing accuracy, the study was supported by Ponce& Mayer, 2014; Torres, 2015; Anggrainy et al., 2016; Pratama et al., 2017; Anggraini, 2017; Lasaka et al., 2018; Hafidz, 2021. They find that GOs are powerful tool to teach writing. In additional, the finding reveals that the members of GOs class can interact and sharing their ideas. This finding is accordance with Obeiah and Bataineh (2015); Shabani (2016); Majid & Stapa (2017); Shi, (2017); López et al. (2017). Additionally, in GOs class, learners learn with various activities during the class, such as searching related texts on argument essay, making argumentative organizers, and composing argument essay based on the graphic organizers they made. This finding is consistent with Robinson (2015) stating that GOs encourage learners successfully to achieve information. Learners are to enrich English words well. The other finding is also supported by Rahmat, (2020) stating that GOs help learners in the process of writing. Learners can write better writing quality. This finding is also consistent with Mustafa & Samad, (2015); Khatib & Meihami, (2015); Khalaji (2016); Jumariati & Sulistyo (2017) (Vitanofa & Anwar (2017). To conclude, GOs are effective in argumentative writing class. They assist learners to generate ideas, and provide better organization. By using GOs, learners recognize their ideas and know how to develop into better organization such as making claim, supporting evidences with facts and illustration, refuting counterclaim and making a conclusion. The implementation of GOs in L2 writing class also creates social community in the classroom setting. They can share ideas amongst others. As the result has positive impact, it is recommended that GOs are applied in writing argumentative class, included as part in curriculum design. The further reseachers are suggested to conduct

similar investigation with various model of GOs. It is advisable to perform further investigation by recruiting a bigger sample size and involving many other variables such as motivation, self-efficacy, parent-economic status, culture difference in EFL contexts.

Dealing with the finding that learning style preference, (here, visual learners) gives effect on writing accuracy, the study was in accordance with Rambe & Zainuddin, 2014; Zoghi, 2017; Tyas & Safitri, 2017; Kayalar & Kayalar, 2017; Rahayu, Riyana, & Silvana, 2017; Şener & Çokçalışkan, 2018; Kusumawarti, Subiyantoro, & Rukayah, 2018; Rezeki, Sagala, & Damanik, 2018; Siregar, 2018; Alnujaidi, 2018. Therefore, it is recommended that teachers should introduce and classify learners about their learning styles preference. By knowing learning styles preference for each individual, teachers can provide precisely the teaching style addressed to learners. It also provides information to learners about the difference preference of each individual's learning style. It also helps control the process of learning. On the contrary, by knowing early their learning styles, learners can select appropriate method to learn a new knowledge.

Dealing with the finding that gender difference gives effect on writing accuracy, in this case, girls are better than boys. Female learners gain higher achievement than male learners. The finding is in accordance with (Cornett, 2014). Another investigation performed by Ng (2010) reveals that males do more grammatical errors than females. Then, Reynolds et al. (2015) stated that females significantly outperform better than males. The finding is also persistent with some other scholars, such as (Fearrington et al., 2014; Scheiber, et.al, 2015; Adams et al., 2015; Limpo & Alves, 2017; Pargulski & Reynolds, 2017; Castro & Limpo, 2018; Zhang et al., 2019). They found that females gain better achievement. The highest implication of the current study is that there is a gender difference in writing accuracy. As a result, the study recommends that writing teachers reduce the gender gap by strengthening writing instruction for male students. Here, language instructors need to increase males' writing performance by giving them extra writing class and providing more tasks on writing. The result of this investigation is very important since some teachers do not consider the gender difference in writing instruction. It is, therefore, language instructors should give more attention to the gender gap in L2 writing class. Additionally, language instructors should provide more conducive and constructive feedback to male learners to enhance their writing skills. Here, teachers need to throw far away an image that writing act is a female act in L2 writing class (Ong, 2015). There are some recommendations to arouse male's motivation to write better. Another technique to strengthen writing skills is reading. Learners need a lot of readings to enhance writing better, since reading utilizes good example of for writing texts. It is, therefore, teachers need to provide learners with a variety of reading texts serving a good example for writing activity. It is advisable that the teachers provide chance the learners to read not only inside but also outside the class. The study also recommends that the future researchers perform bigger sample size in order to generalize the result.

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