Effect of Flipped Classroom Model on Indonesian EFL Students' Writing Achievement across Cognitive Styles

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Abstract

Recently, there have been a lot of studies examining the effect of the application of flipped classroom model. However, most of the studies focused on students' achievement without much regard on cognitive styles. This study was aimed to investigate the effect of flipped classroom model on Indonesian EFL students' writing achievement across cognitive styles (i.e., field dependent and field independent). It involved 58 university students from two intact classes which were divided into experimental and control groups. Both groups were given a pre-test and a post-test to know their writing achievement before and after treatment. The results of the study revealed that the mean score of the students from the experimental group was significantly higher than that of the students from the control group ($p < 0.016$). This study also uncovered the significantly different interaction of students from each cognitive style.

Keywords: cognitive styles, EFL students, flipped classroom, writing achievement

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A. Introduction

Emerging and steadily growing as the proceeds of rapid development of advanced technology, flipped classroom is now taking popularity due to its suitability with the merits of the 21st century education. The concept of learning in this century shifts from listening to teachers passively into actively applying knowledge (Mireille, 2014) by integrating technological tools as teachers are now facing technologically literate learners (Afrilyasanti, Cahyono, & Astuti, 2017). It is obvious that flipped classroom accords with the previously-mentioned characteristics as it allows students to learn new materials by reading passages, watching lecture videos, and doing online quizzes through the use of computers and mobile devices prior the classroom session. Subsequent to this, classroom session is functioned to actively implement the reviewed materials in the form of problem solving and practical work activities (Nwosisi, Ferreira, & Rosenberg, 2015).

There has been an increasing number of teachers who teach writing by incorporating flipped classroom model. This phenomenon triggers researchers to conduct studies for uncovering the effectiveness of this classroom model particularly on writing subject. Several studies on this topic have been conducted in various contexts and seen from different perspectives (Mireille, 2014; Leis, Cooke, & Tohei, 2015; Afrilyasanti, Cahyono, & Astuti, 2016; Ahmed, 2016; Abdelrahman, Dewitt, Alias, & Rahman, 2017; Bouchefra, 2017; Ekmekci, 2017). In Indonesia, in particular, a study to examine the effectiveness of flipped classroom model to teach writing has been carried out by Afrilyasanti et al. (2016). Involving secondary school students, their study revealed that the students who participated in a flipped classroom writing instruction achieved higher writing scores than those who were taught writing by using traditional teaching. However, dissimilar results may be procured when a study takes place in another education context, such as in university level. With this in mind, we intended to conduct a study to scrutinize the effect of flipped classroom to teach writing for Indonesian university students.

While a large number of studies disclosed the effectiveness of flipped classroom model on students' writing achievement, little is known on how field dependent (FI) and field independent (FD) students react towards the flipping. When cognitive styles are linked to an educational context, such as writing instructions in flipped classroom model whereby psychological factors are incorporated, they will probably affect students' writing achievement. Therefore, examining the writing achievement of students with FD and FI cognitive styles who learn writing in a flipped classroom model becomes an urgent necessity.

B. Literature Review
1. Flipped Classroom Model

As the trait of traditional teaching, students were first given exposure towards learning materials in the classroom. Then, they were asked to substantiate their new knowledge at home. This way of teaching is not fully applicable for students of the present times (Brunsell & Horejsi, 2013) as it has some drawbacks. The drawbacks of the traditional teaching were that it, among others, forces students to merely listen to a lecture and record information by the use of notes (Kuzu, 2007; Danker, 2017), uses inadequate

classroom time for knowledge application (Yan & Song, 2013), and makes students work with homework without somebody to ask for a help (Mireille, 2014). Accordingly, many teachers have shifted to the application of flipped classroom model.

Flipped classroom as a relatively new teaching model is gaining elevated attention from teachers worldwide since it offers a breakthrough to reverse the situation in the traditional teaching to diminish the shortcomings. In flipped classroom, new learning materials are no longer delivered during classroom time, but prior classroom session as students' homework (Clark, 2014). In this fashion, teachers can save classroom time since they merely need to review what the students have learned at home without necessarily re-explaining the whole things (Sohrabi & Iraj, 2016). The rest of classroom time, as a result, is used to apply the knowledge under the personal guidance given by the teacher. Thereupon, flipped classroom alters the initial traditional classroom activities which are passive and classical into active and personal (Li, 2013; Gradner & Willey, 2013).

Not only reversing teaching and learning activities, students' cognitive levels employed in flipped classroom are also inverted. While classroom time in traditional teaching is used mostly for passive learning activities which employ students' lower order thinking skills (LOTS), flipped classroom allocates more portion on active learning activities which involve students' higher order thinking skills (HOTS) (Williams, 2013). As the consequence, teachers in flipped classroom have to give more attention for guiding their students in practical works as the activities which require the use of lower order thinking skills have been done before classroom time when the students independently cover the learning materials. On the contrary, teachers in traditional teaching often give the hardest part of learning for students (applying the materials they got in school) as homework in which their guidance is unavailable. The comparison of cognitive level involved in both classroom models can be seen in Figure 1.

Traditional Model   **Flipped Classroom Model**
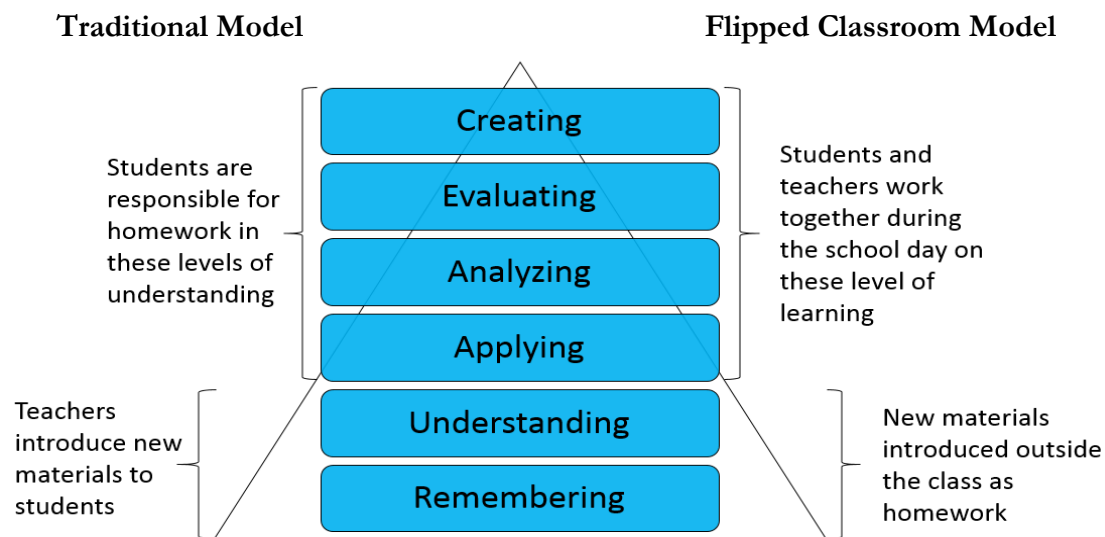

Figure: 1 Students' Cognitive Levels Employed in Flipped Classroom Model (Williams, 2013)

Specifically in a flipped classroom writing instruction, numerous past studies provide convincing evidences to claim that this classroom model is better than traditional teaching. Online learning activities done prior classroom session are beneficial for equipping students with pre-requisite knowledge as their assets before constructing a writing (Mireille, 2014; Ahmed, 2016), assisting struggling students in diminishing dominant writing errors (Bouchefra, 2017), and facilitating students to learn materials in their own learning pace (Leis et al., 2015; El-Bassuony, 2016). Besides, the classroom session of flipped classroom also serve plentiful benefits, namely: providing teacher and students with efficient classroom time (Cole & Kritzer, 2017), facilitating teachers to provide one-on-one tutoring (Leis et al., 2015; Ekmekci, 2017), and elevating the engagement quality during the writing session (Ahmed, 2016; Abdelrahman et al., 2017; Ekmekci, 2017).

2. Flipped Classroom Model and Students' Cognitive Style

The cognitive styles – FD and FI – group people according to the ways they process information and socialize to others (Witkin, Moore, Goodenough, & Cox, 2008). In relation to information processing, FI students will likely perform well in analytical activities since they are able to resolve intricate problems, recollect past information, separate relevant from irrelevant information, and restructure less structured information (Richardson, 1977). FD students, contrariwise, incline to have difficulties in breaking information into isolated parts so that they prefer to have a more direct learning instruction (Kahtz & Kling, 2007). Whilst for socialization, FI students are self-reliance which make them lack of awareness for social stimulus and more individualistic (Waber, 1977). In contrast, FD students have an aptitude for interpersonal relationships so that they prefer to join group work activities (Rayner & Richard, 1997). Due to the aforementioned diverse traits, students in each cognitive style may prefer dissimilar teaching treatments and respond differently towards each type of treatment.

Although several researchers have witnessed the inferiority of FD students from FI students in writing ability (Afghar & Nilforooshan, 2007; Shojaei & Kapfo, 2015), they merely collected data from writing classes which employ traditional teaching. In the present study, we aimed to give significant endowments to the available research findings by expanding the research coverage in a flipped classroom model. Administering such kind of study becomes highly necessary as the two types of teaching differ in term of classroom activities, modes of interaction between teacher and students, and students' self-study activities.

Build upon the research gaps elaborated in the above chapters, the research questions are constructed as follows:
1. Do the students who are taught writing using flipped classroom model get better writing achievement than those who are in traditional classroom?
2. Is there any difference in the writing achievement of students with FD and FI cognitive styles after joining a flipped classroom writing instruction?

3. Is there any interaction in the writing achievement and cognitive style of students taught using flipped classroom model and traditional teaching?

C. Research Methodology

A factorial quasi-experimental research design was chosen for this study as it allows us to manipulate and control the independent variable (type of teaching model to teach writing) and check its impact on the dependent variable (students' writing achievement) in a research setting whereby the participants cannot be randomly assigned due to the nature of educational environments (Latief, 2016). As a consequence, two intact classes were assigned by considering the scores from writing pre-test. The researchers, subsequently, determine one class as the experimental group who was taught writing using flipped classroom model and one class as the control group who was taught writing using traditional teaching. Besides, this design was chosen since it allows us to gauge the impact of the independent variable across different sub groups (Latief, 2016). Students in both groups were categorized on the basis of their cognitive styles which were FD and FI.

This study involved 58 Indonesian university students. They were second semester English Language Teaching (ELT) students taking Argumentative Essay Writing course. Group Embedded Figure Test (GEFT) to determine the types of students' cognitive styles was administered before the treatment. The results of GEFT are served in Table 1.

Table: 1 The Results of Group Embedded Figure Test

Group	Field Dependent		Field Independent	
Experimental Group	**N**	**%**	**N**	**%**
	16	55,2%	13	44,8%
Control Group	**N**	**%**	**N**	**%**
	15	51,8%	14	48,2%

Teaching writing using flipped classroom and traditional teaching were given in four sessions. Each meeting lasted for 90 minutes. The instructional activities and the estimated time used in the activities for the two groups are shown in Table 2.

Table: 2 The Instructional Activities for the Two Group

Outside Classroom			
Traditional Classroom		**Flipped Classroom**	
Students working on their homework to complete their writing from the previous meeting.		Students access an online learning platform to cover learning materials (e- book, lecture videos, and online assignment) on argumentative essay for the upcoming meeting	
Inside Classroom			
Traditional Classroom		**Flipped Classroom**	
Activity	**Time**	**Activity**	**Time**
Students receive warming up activity	5 min	Students receive warming up activity	5 min

Students discuss their homework from the previous meeting lead by the teacher	20 min	Students' results from online learning are clarified and reinforced by the teacher	10 min
Students receive new materials delivered by the teacher in the classroom	35 min	Students construct writing along with the guidance from the teacher and doing pair feedback when the writing has been completed	70 min
Students construct writing along with the guidance from the teacher	25 min	Students receive information dealing with the next online learning activity and parting.	5 min
Students receive homework to finish the writing construction at home and parting	5 min		

After the treatment has been completed, both groups were given writing post-test to measure the impact of the treatment.

D. Findings
1. Writing Achievement of the Students Who Learned Writing by Using Flipped Classroom and Traditional Teaching

Independent t-test was employed to compare pre-test and post-test scores of the experimental and the control groups of students to answer the first research question. Table 3 presents the results of the calculation.

Table: 3 The Result of Independent t-Test to Compare the Pre-test and Post-test Scores of the Experimental and Control Groups

Score	Group	Mean	SD	t-count	p- value	Remark
Pre-test	Experimental	55.05	6.947	0.402	0.689	Not Significant
	Control	55.81	7.402			
Post-test	Experimental	70.62	8.606	2.475	0.016	Significant
	Control	64.82	9.210			

The mean difference between the two groups before the treatment was not statistically significant. It was proven by the p-value of pre-test analysis which was more than 0.05 (0.689). On the contrary, the comparison of the post-test scores was significantly different (p > 0.05). This evidence clearly verified that flipped classroom model facilitates better learning improvement than traditional teaching

2. Writing Achievement of the Students Who Were Taught by Using Flipped Classroom across Cognitive Styles

Independent t-test for pre-test and Analysis of Covariance (ANCOVA) for post-test were employed to address the second research question. Table 4 and 5 serve the results of the calculation.

Table: 4 The Result of Independent t-Test for Pre-Test for the Experimental Group across Cognitive Styles

Group	Cognitive Style	Mean	SD	t- count	p- value	Remark
	FD	50.40	4.286			
Exp.				5.981	0.000	Significant
	FI	60.76	5.048			

From the result of independent t-test for pre-test, it is known that the writing mean difference of the students with FD and FI was significantly different ($p < 0.05$). With this result, the ideal condition for experimental study to have two mutual groups was not fulfilled. As a consequence, ANCOVA was utilized to incorporate the pre-existing mean difference of the two groups into analysis.

Table: 5 The Result of ANCOVA for Post-test for the Experimental Group across Cognitive Styles

Group	Cognitive Style	Mean	SD	Partial eta squared	p- value	Remark
	FD	68.11	0.447			
Exp.				0.648	0.000	Significant
	FI	73.69	0.517			

According to the result of ANCOVA, p-value for post-test is lower than 0.05 (0.000) which proves the statistically significant difference of the mean scores between the two groups. The students with field independent cognitive style got higher mean score that was 73.69 whilst field dependent students got 68.11. It implies that field independent students learned writing better with flipped classroom model compared to field dependent students.

3. Writing Achievement of the Students with FD and FI Cognitive Styles Taught by Using Flipped Classroom Model and Traditional Teaching

In addressing the third research question to know the significance level of the interaction between the cognitive styles and the treatment towards students' writing scores, ANOVA and Turkey HSD post hoc test were employed.

Table: 6 The Result of ANOVA on the Interaction between Cognitive Styles and the Treatment towards Students' Scores in Post-test

Score	p-value	Remark
Experimental FD		
Experimental FI	0.000	Significant
Control FD		
Control FI		

Table 6 shows the significant interaction between cognitive styles and students' scores in the post-test. The analysis was continued to Turkey HSD post hoc to obtain more comprehensive statistical information.

Table: 7 The Comparison of Students' Post-test Mean Scores across Cognitive Styles

Group (A)	Group (B)	Mean difference (Group A - B)	Sig
EXP FD	EXP FI	-14.67	0.000
	CONT FD	6.20	0.006
	CONT FI	-8.35	0.000
EXP FI	EXP FD	14.76	0.000
	CONT FD	20.96	0.000
	CONT FI	6.41	0.008
CONT FD	EXP FD	6.20	0.006
	EXP FI	-20.96	0.000
	CONT FI	-14.55	0.000
CONT FI	EXP FD	8.35	0.000
	EXP FI	-6.41	0.008
	CONT FD	14.55	0.000

Turkey HSD post hoc result confirms that the students' responded to the treatment differently depending on the types of their cognitive style. Due to this result, it is necessary to figure out the contribution of each cognitive style by comparing the mean difference from the post-test scores of the students from both groups with similar cognitive style.

Table: 8 The Result of Independent t-Test for Pre-test and Post-test between FD Students from the Experimental and Control Groups

Cognitive Style	Score	Group	Mean	SD	t-count	p-value	Remark
FD	Pretest	Exp.	50.40	4.286	0.268	0.790	Not Significant
		Control	50.83	4.573			
	Posttest	Exp.	64.00	4.636	3.757	0.001	Significant
		Control	57,80	4.542			

As seen in Table 8, the mean difference on students' post-test was significantly different. This result proves that students with field dependent learn better by using flipped classroom model.

Table: 9 The Result of Independent t-Test for Pre-test and Post-test between FI students from the Experimental and Control Groups

Cognitive Style	Score	Group	Mean	SD	t-count	p- value	Remark
FI	Pretest	Exp.	60.76	4.769	0,174	0.863	Not Significant
		Control	61.14	4.123			
	Posttest	Exp.	78.76	3.945	3,063	0.005	Significant
		Control	72.35	6.514			

In line with the result attained from the analysis, the mean difference of the students with FI cognitive style in the post-test was significantly different. It clearly confirms that the students with FI cognitive style learn better by using flipped classroom model than those with FD cognitive style.

E. Discussion

The results of data analysis signified that the treatment affected positively the students' writing achievement. Further examinations of the results are discussed orderly based on the research questions.

1. Writing Achievement of the Students Who Learned Writing by Using Flipped Classroom and Traditional Teaching

Statistically significant mean difference on students' scores in the post-test proved that flipped classroom model gave significant impact on students' writing achievement. This outcome was consistent and enriched the results attained from the previous studies conducted by Mireille (2014), Leis et al. (2015), Afrilyasanti et al. (2016), Ahmed (2016), Abdelrahman et al., (2017), Bouchefra (2017), and Ekmekci (2017). The factors that contributed to this finding are elaborated in the following sections:

1 a. The Contributions of the Online Learning Activities

Grounded on the results of writing post-test, classroom observation, and online written interview, online learning activities in flipped classroom model is effective to gear students with the pre-requisite materials that assisted them to be more ready to construct writing. It was due to the flexibility to access the learning materials using students' preference learning time, strategy, and manner.

Numerous responses were gathered when the students were questioned dealing with their preferred learning time and strategy to administer their online learning. It vindicated that serving the materials prior classroom session utilizing an online learning platform, facilitated students to use personalized learning manner which worked best for them. As a result, they could reach their maximum learning potential which was in line

with their improvement in the writing production. This finding was supportive with the results attained by previous studies (Leis et al., 2015; Ekmekci, 2017).

Complementing the foregoing benefits, covering the online learning materials at prior class session was beneficial in assisting the students to understand vague concepts in their own learning speed which was also evidenced in the previous study (Bouchefra, 2017). Several learning materials were complicated so that students needed extra time to grasp them. Using flipped classroom, students had the luxury to reassess the online learning materials to tackle the troublesome areas. As a result, students became more ready to produce their writing in the classroom as they have reduced their confusion on the conceptual knowledge.

Referring to the recommendation given by (Bouchefra, 2017), an online learning platform which compatible with students' mobile devices was utilized to administer flipped classroom in this study. This decision was taken considering the fact that most students at the present times are inseparable from these high-end stuffs. With this in mind, it was not surprising to find all students did the online learning activity which was reflected by the high percentage of the submitted online learning assignments due to the ease to access the platform from the palm of their hand.

An unsatisfactory result, however, was procured from the online learning discussion where not all students participate fully in this activity. It seemed that the students merely used the online learning platform to fulfill their personal objectives to complete the online assignments. According to the observation, only several students continuously commented on the issue raised by the teacher in the online learning platform. It gave a consideration that to promote an active online learning discussion, online learning assignments which involve more students' collaboration are suggested. In this manner, students can be more encouraged to share ideas and help others to clear confusion through online discussion.

1b. The Contributions of the Classroom Session Activities

As the students in the experimental group have had their independent study prior class session, the teacher merely needed to review, clear students' doubts on unsolved problems, and clarify misconceptions done by the students in their online learning assignments. The teacher, subsequently, used the spare classroom time to guide the students to do writing exercise on argumentative essay which could be completed within the classroom hour. On the contrary, the teacher in the control group started the activity by discussing students' homework from the previous meeting and lecturing new contents. The two activities consumed almost half of classroom time so that the students had limited time to do writing exercise. As the consequence, the exercise was completed at home as students' homework. This evidence proved that flipped classroom model provided more efficient classroom time compared to traditional teaching as revealed in the prior studies (Graham, 2013; Cole & Kritzer, 2017).

The efficient classroom time in flipped classroom model gave a domino effect which stimulated the occurrence of some others benefits. The spare classroom time in flipped classroom model allowed the teacher to provide individualized coaching for every

students in the classroom which was supportive with the results attained by the previous studies (Zhang, Wang, & Zhang, 2012; Bergmann & Sams, 2014; Nwosisi et al., 2015). In the experimental group, only 15 up to 20 minutes of classroom time were used to review the results of students' online learning whilst the rest of classroom time (80 up to 85 minutes) was used to guide the students to compose paragraphs of an argumentative essay.

The teacher found that the allocated time for finishing the writing exercise was adequate. Furthermore, the teacher still had available time to conduct peer feedback and give personal feedback to every students to improve the quality of their essay. Thereupon, students' confusion during writing construction was decreased through direct assistance given by the teacher in the classroom. Moreover, the above time allocation ratio gave a clear confirmation for previous studies (Brame, 2013; Williams, 2013) that flipped classroom model emphasized more on students' higher order thinking skills by applying the knowledge during the class time, rather than remembering and understanding the concept of the knowledge.

2. Writing Achievement of the Students Who Were Taught Writing by Using Flipped Classroom across Cognitive Style

Cognitive styles have been regarded as one of the essential factors among personal attributes that can influence students' learning processes and learning achievement (Waber, 1977; Murphy, Doucette, Kelleher, & Young, 1997). Accordingly, this study investigated whether or not the cognitive styles of FD and FI could affect Indonesian EFL students' writing achievement in flipped classroom model. The results of ANCOVA analysis presented in Table 3.4 showed that FI students got higher writing achievement improvement after given the treatment compared to students with FD cognitive style. It was proven by the p-value of the analysis which was less than 0.05 (0.000). The contributing factors to this finding are presented in the subsequent sections.

2a. Students' Online Learning Activities Prior Classroom Session

FD students have difficulties in perceiving learning materials from a less structured tuition. They entail more explicit instructions, detailed descriptions, and external guidance than FI students to cover the learning materials (Witkin et al., 2008). Particularly in flipped classroom instruction, FD students were unable to counterbalance FI students in the online learning as the activities demanded students' creativity and autonomy to use proper learning strategies to grasp the learning materials maximally. This was due to the small opportunity possessed by the teacher to monitor and guide each individual during the online learning.

Students with FI cognitive style gained advantages in this learning situation as they were more active and autonomous in exploring the learning materials by defining their own strategies for learning. They had the aptitude to paraphrase textual information to transform the original language of the learning materials into a more personalized language that could be better understood. Further, students with this cognitive style could effectively restructure information from various types of online learning resources. They

identified detailed information from reading passages, power point presentations, and lecture videos and subsequently join them together to reorganize information for better comprehension. Thus, FI students could grasp the online learning materials better than their counterpart.

Students with FD cognitive style, on the contrary, had difficulties in using proper learning strategies to cover the online learning materials. They were weak in paraphrasing skill so as they kept the information in its original form which was less personal for them. Besides, they were unable to effectively restructure information from the available learning resources. They had a strain to blend the information from reading passages, power point presentations, and lecture videos so that they covered the information disjointedly. FD students, in addition, made a slower learning progress as they worked with a slower learning pace. They needed extra time to repeat reviewing the materials for several times to purge their doubts. Although they had the chance to repeat covering the learning materials, the results of their online assignments showed that they were still inferior compared to FI students due to their debility to use appropriate learning strategies. To conclude, online learning activities in flipped classroom model which required students' autonomy and creativity (Gannod, Burge, & Helmick, 2008; Laman, Brannon, & Mena, 2012) were more beneficial for FI students.

2b. Students' Activities in Classroom Session

Unlike the online learning activities which offered more benefits for FI students, classroom session activities in flipped classroom model were beneficial for both cognitive styles. They had the same opportunity to clear confusions on the troublesome areas at the beginning of the classroom session through classroom discussion lead by the teacher. In clearing students' confusions, precedence was given to the problems faced by FD students to decrease the gap from their independent study as FI students came to the classroom with less problem. In this way, both cognitive styles became more ready to compose an argumentative essay in the subsequent classroom session activity.

FI students are personal oriented whilst FD students are social oriented (Ellis, 2015). Because of their diverse trait, each cognitive style requires different learning activities which could be accommodated in flipped classroom model. As flipped classroom model provided a spare classroom time for knowledge application (Dickenson, 2015; Prodoehl, 2015; Çevikbaş & Argün, 2017), the teacher had the opportunity to provide the preferred learning situation for both cognitive styles. FI students who were more personal oriented could perform their best in the individual writing tasks, similarly, FD students who were more social oriented could take benefits from the group discussion.

3. The Interaction of Students' Writing Achievement and their Cognitive Styles

The third research question was constructed as "Is there any interaction in the writing achievement and cognitive style of students taught using flipped classroom model and traditional teaching?" This question was answered by using statistical data analysis presented in Table 3.9 and 3.11 which revealed that both field dependent and field

independent students learned writing better using flipped classroom model rather than using traditional teaching. The explanations for this finding are presented in the following sections.

3a. Writing Achievement of Field Dependent Students Taught by Using Flipped Classroom Model and Traditional Teaching

FD students who joined flipped classroom writing instruction got higher writing achievement than FD students who learn writing by using traditional teaching. It signified that the necessities of FD students could be more accommodated in flipped classroom model as they could make a better preparation for writing construction. Their inferiority of FI students in the way they process information forced them to study in a slower learning pace. The presence of the online learning platform obscured their weakness as FD students could repeat covering the online learning materials. FD students in the traditional teaching did not get the same convenience as the learning materials were presented and explained in the classroom. Therefore, they had a difficulty to adjust their learning speed to balance the students with FI cognitive style. Besides, flipped classroom model facilitated FD students with spare classroom time which was used for practical work under the guidance from the teacher as well as group discussions conducted among peers. Obviously, it assisted FD students as they learned better in the learning situation which allowed them to work in group to receive positive influences from their surroundings. Conversely, the FD students in the traditional teaching did not have mutual opportunity to procure adequate guidance from the teacher and positive influences from their surroundings due to time limitation during classroom session. Moreover, classroom time limitation forced them to compose paragraphs of argumentative essay at home as their homework alone without somebody to ask for as help.

3b. Writing Achievement of Field Independent Students Taught by Using Flipped Classroom Model and Traditional Teaching

FI students from the experimental group who learned writing in flipped classroom model outperformed FI students who learned writing using traditional teaching. This finding gave a clear evidence that flipped classroom model offered more benefits for FI students compared to traditional teaching. In flipped classroom model, students were introduced to an online learning platform to access various online learning materials in a convenient way. This convenience could facilitate FI students to actively cover the learning materials with ease. Moreover, the online learning platform provided the students with various forms of learning materials (reading passages, power point presentations, and lecture videos) from a wide range of learning sources (YouTube, SlideShare, and educational websites). It gave a chance for FI students to enhance their grasp of the learning materials as they could restructure richer information obtained from various learning sources.

F. Conclusions

This study confirms that flipped classroom model gave a significant impact on the writing achievement of the students. Further, it is also discovered that the students responded to the treatment dissimilarly depending on their cognitive styles. Field independent students made higher writing achievement than their counterpart due to their better preparation from their independent study and their ability to use proper strategies for learning. This study also notices the alteration of interaction level from not significant before treatment into significant after treatment. When an effort to figure out the contribution of each cognitive style was employed, it is exposed that both field dependent and field independent students learned writing better using flipped classroom model than using traditional teaching.

Reflecting upon the aforesaid results, it is strongly suggested for teachers to shift from using traditional teaching into using flipped classroom to teach writing. Within an effort to apply flipped classroom more effectively, teachers need to consider the following suggestions. First, teachers must carefully selected the activities and the learning materials for online and in class sessions. It is suggested to include online learning assignments that require students' collaboration so that it stimulates an active online discussion for sharing understanding and helping others. Second, teachers need to consider students' cognitive styles as FD and FI students responded differently to this classroom model. Teachers must find the appropriate strategies to facilitate the necessities of both cognitive styles in online and in class sessions. Schools are also suggested to give considerable supports to provide proper facilities to administer flipped classroom with advanced technological tools and swift internet connection in school areas. Finally, future researchers are suggested to develop learning activities for online learning session that accommodate the needs of field dependent learning style. It is also suggested for them to conduct an identical study with different group of students in different learning context as it may yield different results.

BIBLIOGRAPHY

Abdelrahman, L. A. M., Dewitt, D., Alias, N., & Rahman, M. N. A. (2017). Flipped learning for ESL writing in a Sudanese school. *Turkish Online Journal of Educational Technology*.

Afghari, A., & Nilforooshan, N. (2007). The effect of field dependence independence as a source of variation in EFL learners' writing performance. *IJLS*, *1*(2), 103–118.

Afrilyasanti, R., Cahyono, B. Y., & Astuti, U. P. (2016). Effect of flipped classroom model on Indonesian EFL students' writing ability across and individual differences in learning. *International Journal of English Language and Linguistics Research*. https://doi.org/10.1111/1365-2664.12754

Afrilyasanti, R, Cahyono, B. Y., & Astuti, U. P. (2017). Indonesian EFL Students' Perceptions on the Implementation of Flipped Classroom Model. *Journal of Language Teaching and Research*. https://doi.org/10.17507/jltr.0803.05

Ahmed, A.S. (2016). The Effect of a Flipping Classroom on Writing Skill in English as a Foreign Language and Students' Attitude Towards Flipping. *US-China Foreign Language*. https://doi.org/10.17265/1539-8080/2016.02.003

Bergmann, J., & Sams, A. (2014). Flip your classroom: reach every student in every class every day. *Teaching Theology & Religion*. https://doi.org/10.1111/teth.12165

Bouchefra, M. (2017). The Use of the Flipped Classroom in EFL Writing Classroom. Retrieved September 12, 2018, from academia edu website: https://www.academia.edu/33489814/The_Use_of_the_Flipped_Classroom_in_EFL_Writing_Class

Brunsell, E., & Horejsi, M. (2013). Flipping Your Classroom in One "Take." *The Science Teacher.*

Çevikbaş, M., & Argün, Z. (2017). An Innovative Learning Model in Digital Age: Flipped Classroom. *Journal of Education and Training Studies*. https://doi.org/10.11114/jets.v5i11.2322

Clark, K. R. (2014). Examining the effects of the flipped model of instruction on student engagement and performance in the secondary mathematics classroom: An action research study. *Dissertation Abstracts International Section A: Humanities and Social Sciences*. https://doi.org/3592584

Cole, J. E., & Kritzer, J. B. (2017). Strategies for Success: Teaching an Online Course. *Rural Special Education Quarterly*. https://doi.org/10.1177/875687050902800406

Brame, C. (2013). Flipping the classroom. Vanderbilt University Center for Teaching. Retrieved September 22, 2018, from cft.vanderbilt.edu website: https://cft.vanderbilt.edu/guides-sub-pages/flipping-the-classroom/

Danker, B. (2017). Using Flipped Classroom Approach to Explore Deep Learning in Large Classrooms. *IAFOR Journal of Education*. https://doi.org/10.22492/ije.3.1.10

Dickenson, P. (2015). Flipping the Classroom in a Teacher Education Course. In *Curriculum Design and Classroom Management*. https://doi.org/10.4018/978-1-4666-8246-7.ch056

Ekmekci, E. (2017). The flipped writing classroom in Turkish EFL context: A comparative study on a new model. *Turkish Online Journal of Distance Education*.

El-Bassuony, M. (2016). The effectiveness of flipped learning in developing English grammatical performance of underachieving language learners at the secondary stage. *International Journal of English Language Teaching*. *4*(8), 76–101

Ellis, R. (2015). *Understanding Second Language Acquisition*. Oxford: Oxford University Press.

Gannod, G. C., Burge, J. E., & Helmick, M. T. (2008). *Using the inverted classroom to teach software engineering*. https://doi.org/10.1145/1368088.1368198

Gradner, A., & Willey, K. (2013). Flipping your classroom without flipping out. Retrieved from academia edu website: https://www.academia.edu/5153284/Flipping_your_classroom_without_flipping_out

Graham, J. B. (2013). *Student perceptions of the Flipped Classroom* (University of British Columbia). https://doi.org/10.14288/1.0073641

Kahtz, A. W., & Kling, G. J. (2007). Field-dependent and Field-independent

Conceptualisations of Various Instructional Methods with an Emphasis on CAI: a qualitative analysis. *Educational Psychology*. https://doi.org/10.1080/0144341990190403

Kuzu, A. (2007). Views of pre-service teachers on blog use for instruction and social interaction. *Turkish Online Journal of Distance Education*.

Laman, J., Brannon, M. L., & Mena, I. (2012). Classroom Flip in a Senior-Level Engineering Course and Comparison to Previous Version. *American Society for Engineering Education*.

Latief, M. A. (2016). *Research methods on language learning an introduction* (2nd ed.). Malang, East Java: State University of Malang Press.

Leis, A., Cooke, S., & Tohei, A. (2015). The Effects of Flipped Classrooms on English Composition Writing in an EFL Environment. *International Journal of Computer-Assisted Language Learning and Teaching*. https://doi.org/10.4018/ijcallt.2015100103

Li, L. L. (2013). The application of flipping classroom modelin English language teaching flipped classroom model in English teaching. *The Youth Writers*, *20*, 116–127.

Mireille, F. (2014). *The impact of using flipped classroom instruction on the writing performance of the twelfth grade female in Emirati students in the applied technology high school (ATHS)* (The British University of Dubai). Retrieved from http://bspace.buid.ac.ae/handle/1234/676

Murphy, H. J., Doucette, P. A., Kelleher, W. E., & Young, J. D. (1997). The Group Embedded Figures Test: Undergraduate Business Concentration and Analytical Skills. *Journal of Education for Business*. https://doi.org/10.1080/08832329709601613

Nwosisi, C., Ferreira, A., … Walsh, K. (2015). A Study of the Flipped Classroom and Its Effectiveness in Flipping Thirty Percent of the Course Content. *International Journal of Information and Education Technology*. https://doi.org/10.7763/ijiet.2016.v6.712

Prodoehl, D. E. (2015). Flipping first-year English: Strengthening teacher-student conferencing through online modules. In *Implementation and Critical Assessment of the Flipped Classroom Experience*. https://doi.org/10.4018/978-1-4666-7464-6.ch001

Rayner, S., & Richard, R. (1997). Towards a categorization of cognitive styles and learning styles. *Education Psychology*.

Richardson, A. (1977). Verbalizer-visualizer: A cognitive style dimension. *Journal of Mental Imagery*.

Shojaei, F., & Kapfo, K. (2015). A study of cognitive styles effect on ESL students' general writing ability. *International Journal of Research*, *2*(9), 94–99.

Sohrabi, B., & Iraj, H. (2016). Implementing flipped classroom using digital media: A comparison of two demographically different groups perceptions. *Computers in Human Behavior*. https://doi.org/10.1016/j.chb.2016.02.056

Waber, D. P. (1977). Biological substrates of field dependence: Implications of the sex difference. *Psychological Bulletin*. https://doi.org/10.1037/0033-2909.84.6.1076

Williams, B. (2013). How I flipped my classroom. *NNNC Conference*.

Witkin, H. A., Moore, C. A., Goodenough, D., & Cox, P. W. (2008). Field-Dependent and Field-Independent Cognitive Styles and Their Educational Implications. *Review of Educational Research*. https://doi.org/10.3102/00346543047001001

Yan, S., & Song, R. (2013). Virtual classroom and traditional classroom. *2013 Conference on Education Technology and Management Science (ICETMS 2013)*, 114–116. https://doi.org/https://doi.org/10.2991/icetms.2013.16

Zhang, J. L., Wang, Y., & Zhang, B. H. (2012). The research into the flipped classroom teaching mode. *The Journal of Distance Education*, *6*(2), 46–51.