

COGNITIVE LEARNING STYLES THE IMPACT OF FLIPPED CLASSROOM ON READING COMPREHENSION OF HIGH SCHOOL STUDENTS WITH DIFFERENT

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Abstract: *This study was intended to investigate the impact of flipped classroom on reading comprehension of high school students with different cognitive learning styles. This research was quasi-experimental with a factorial design 2x2 using pre-test and post-test. The population of study was the tenth graders of SMA Negeri 1 Malang. Then, X MIA-8 and X MIA-3 were chosen as samples by using simple random sampling. In collecting the data, reading comprehension test, questionnaire of students' cognitive learning styles, opinionnaire and observation sheets were used as the instruments. After analyzing the data, the major findings are that there is no significant difference between students' reading comprehension taught in the flipped classroom and those taught in the traditional classroom, that field-independent students have better reading comprehension than field-dependent students, and that there is no interaction between classroom types and cognitive learning styles. The results of minor findings show that most students viewed positively on flipped classroom implementation, and that teacher's performance was very good in teaching reading by implementing the flipped classroom. Although the flipped classroom does not significantly impact students' reading comprehension based on statistical computation, it is still good to implement it to enhance English language learning.*

Key Words: *flipped classroom, field-independent and field-dependent learning styles, reading comprehension*

Abstrak: *Penelitian ini bertujuan untuk mengetahui dampak dari flipped classroom terhadap kemampuan membaca siswa sekolah menengah atas dengan gaya belajar kognitif yang berbeda. Penelitian ini adalah penelitian yang menggabungkan penelitian berdasarkan pengalaman dan penilaian dari angket dengan memberi perlakuan 2x2 untuk pre-test dan post-test. Populasi penelitian adalah siswa/i kelas X SMA Negeri 1 Malang. Kemudian, siswa/i kelas X MIA-8 dan siswa/i kelas X MIA-3 dipilih sebagai sampel yang dilakukan secara acak. Dalam pengumpulan data uji kemampuan membaca, angket tentang gaya belajar kognitif siswa, lembar pengungkapan pendapat dan pengamatan digunakan sebagai instrumen penilaian. Setelah menganalisis data, temuan utama adalah bahwa tidak ada perbedaan yang signifikan antara kemampuan membaca siswa yang diajar dengan flipped classroom dan yang diajarkan secara konvensional. Siswa yang memilih untuk belajar secara mandiri memiliki kemampuan membaca lebih baik dari siswa yang memilih untuk tidak dapat belajar mandiri, dan bahwa tidak ada interaksi antara jenis kelas dan gaya belajar kognitif siswa. Hasil temuan minor menunjukkan bahwa sebagian besar siswa dipandang positif dalam melakukan keriuhan kelas, dan kinerja guru adalah sangat berperan dalam mengajar membaca dengan menerapkan flipped classroom. Meskipun metode ini tidak berdampak signifikan pada kemampuan membaca siswa berdasarkan perhitungan statistik, hal itu masih dianggap baik untuk diterapkan guna peningkatkan pembelajaran bahasa Inggris.*

Kata kunci: flipped classroom, gaya belajar mandiri dan tidak mandiri, kemampuan membaca

Introduction

The importance of the ability to read is nonnegotiable in today's modern life. People read various reading materials from books, reports, notes, email messages, newspapers, magazines, advertisements, and so on almost every day. Sulistyono (2012: 20) argues that reading activities are unavoidable; therefore, the teaching of reading skills in English at school is valued as an important thing.

The teaching of reading skill in Indonesia is clearly described in the new released Curriculum 2013 of Senior High School. Every student is required to understand and apply factual, conceptual, and procedural knowledge by having personal experience through observing (tracking, seeing, reading, listening), associating, questioning, summarizing, communicating and creating (Kemendikbud: 2013). So, reading skill is important as one way for students to get personal experience in learning English in Indonesia.

Another new policy in Curriculum 2013 is the optimized use of technology in all subjects taught, including English (Kemendikbud: 2012). In the previous curriculum, ICT is taught as a discrete subject, but in Curriculum 2013, it is taught by integrating it to all other subjects. Therefore, reading in English subject is suggested to be related to ICT use. Hence, reading in Curriculum 2013 might be taught by giving students materials about ICT or having ICT media.

The content of Curriculum 2013 seems promising to produce a better output because Curriculum 2013 contains so valuable thoughts as a breakthrough to have better teaching learning process at school leading to student-oriented innovations (Marsigit, 2013:16). However, time allotment for English subjects itself is decreased. This condition might be an obstacle for teachers to teach reading because they have to be able to teach all reading materials completely and hastily. The problem which might appear is either a teacher can teach all materials without concerning its quality, or a teacher can teach materials well and deeply but never complete it.

Due to its condition, technology used in English language teaching proposed by Curriculum 2013 can be a great idea for both teacher and students to conduct better reading instruction. Syafitri (2014: 9) reveals that many English teachers make use of technology to enhance students' learning because the new curriculum does not provide adequate time for English subject. Shyamlee and Phill (2012: 150) argue that rapid rising and development of information technology in this era has offered a better pattern to explore the new teaching model. Thus, it can be concluded that the use of technology in the second language classroom is highly suggested due to its enormous potential for both language teachers and learners to enhance their teaching and learning, and one of its implementations is through blended learning.

Blended learning is a mix of e-learning technology with conventional teaching methods to get the advantages of both methods. According to Staker (2011: 5), blended learning is any time a student learns at least in part at a supervised brick-and-mortar location away from home and at least in part through online delivery with some element of student

control over time, place, path, and/or pace. The goal of the blended learning is to join the best aspects of both face to face and online instruction. Classroom time can be used to engage the students in advanced interactive experiences. Meanwhile, the online portion of the course can provide the students with multimedia-rich content at anytime and anywhere the student has internet access, from computer labs, or the students' homes. This allows for an increase in scheduling flexibility for students.

Staker and Horn (2012: 2) classify blended learning into four models; they are rotation model, flex model, self-blended model, and enriched-virtual model. Rotation model is further categorized into four more types: station-rotation model, lab-rotation model, flipped-classroom model, and individual-rotation model. Table 1 below describes each model.

Table 1: Models of Blended Learning

No.	Models	Definition
1.	Rotation Model	Rotation-model is a program in which within a given course or subject students rotate on a fixed schedule or at the teacher's discretion between learning modalities, at least one of which is online learning
	a. station-rotation model	a Rotation-model implementation in which within a given course or subject, students rotate <i>on a fixed schedule or at the teacher's discretion</i> among classroom-based learning modalities
	b. lab-rotation model	a Rotation-model implementation in which within a given course or subject, students rotate <i>on a fixed schedule or at the teacher's discretion</i> among locations on the brick-and-mortar campus
	c. flipped-classroom model	a Rotation-model implementation in which within a given course or subject, students rotate <i>on a fixed schedule</i> between face-to-face teacher-guided practice (or projects) on campus during the standard school day and online delivery of content and instruction of the same subject from a remote location (home) after school
	d. individual-rotation model	a Rotation-model implementation in which within a given course or subject, students rotate on an <i>individually customized, fixed schedule</i> among learning modalities, at least one of which is online learning
2.	flex model	content and instruction are delivered primarily by the Internet, students move on an <i>individually customized, fluid schedule</i> among learning modalities, and the teacher-of-record is on-site
3.	self-blended model	students choose to take one or more courses entirely online to supplement their traditional courses and the teacher-of-record is the online teacher
4.	enriched-virtual model	students divide their time between attending a brick-and-mortar campus and learning remotely using online delivery of content and instruction

(Staker and Horn, 2012: 8-15)

This study takes the flipped classroom model as a blended learning model to be implemented. The rationale behind the choosing of the flipped classroom is this model is the most appropriate model to be used in schools in Indonesia. Indonesian schools provide face-to-face learning at schools in fixed schedule and students rotate to online learning which is conducted from home. Station-rotation model, lab-rotation model, individual rotation model, flex model, self-blended model, and enriched virtual model are less practical because its implementations either need big commitment from students' selves or cost too much money.

Lage, Platt, and Treglia (2000: 32) define a flipped classroom as inverting the classroom which means that events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa. Herreid and Schiller (2013: 62) state that in the flipped classroom model, what is normally carried out in class and what is normally carried out as homework are switched or flipped. A guiding principle of the flipped classroom is that work typically conducted as homework is better undertaken in classroom with the guidance of the teacher. Listening to explanation or watching videos is better accomplished at home.

In a flipped classroom, educational technology and learning activity are two key components (Strayer, 2007: 16). These two important things influence the learning environment in fundamental way. Learning environment is affected by a flipped classroom in three broad categories which are relationship which refers to the extent to which students are involved in the classroom, personal growth which refers to how the goals of the classroom motivate student development and learning, and system maintenance and change which refer to the formal structure of the classroom and how this occurs in daily operation of the classroom. Therefore, a reading class using flipped classroom is predicted to have different learning environment from the traditional one which might impact students' reading achievement.

Related to English language teaching, Marshall (2014:6) argues that a flipped classroom connects to second language acquisition theories on comprehensible input theory, interaction theory, and critical thinking skill theory. Krashen (2003:4) asserts that a learner acquires the language only when s/he obtains comprehensible input which is understood by him or her. In a flipped classroom, comprehensible input from multiple sources can be provided more than traditional one done by exposing the students to various materials in students' comprehension level given by teachers or found in internet by themselves. Moreover, meaningful interactions with teacher and peers provide exposure contributing a lot to language skills (Lightbown and Spada, 1999:22). Since materials are delivered at home, activities in the classroom focus more on doing assignment, exercise or project which highly involve interactions among students or between students and teacher in the classroom as students' zone of proximal development. In addition, critical thinking skill is sharpened through flipped classroom because activities in the classroom are cognitively demanding and intellectually challenging. This situation invites students to read more because Krashen (2003:72) states that reading can help a learning become a good thinker. In conclusion, the flipped classroom has a tight relationship to second language acquisition, and its implementation is predicted to give a positive impact to students' reading comprehension.

Based on the explanation above, reading comprehension of students was predicted to be affected by a flipped classroom implementation which was observed in this study. The

flipped classroom has rich learning sources environment providing comprehensible input for students. The input can be in the forms of vocabulary, grammar, spelling, or pronunciation which contributes a lot to students reading skill especially as bottom-up process. Moreover, top-down process in reading can be done in the classroom while students have interactive reading in the classroom while doing assignment, exercise, or projects related to reading. In addition, the students' background knowledge can be activated easier and more equally by having them watch video lectures at home so that they have equal knowledge about materials while working in the classroom. Then, reading strategy taught through video lectures provides bigger opportunity for students to learn and practice it using modeling texts at home by using their own learning styles and speed. Furthermore, the flipped classroom implementation can engage students to be more active in reading class and read more any authentic English online materials. Those are the rationale behind implementing the flipped classroom to reading class.

Previous studies investigating blended learning implementation in English subject matters have been conducted. Aziz (2012) reports that implementation of blended in teaching English tenses in Brawijaya University can increase students' achievement and motivation. Sahdan (2010) and Cahyono (2011) find that blended learning by using facebook can enhance students' writing skills. Majid, Hidayat, and Dani (2013: 464-468) have implemented blended learning in teaching reading section of TOEFL. After four week implementation, their research on the use of Edmodo reveals that students' scores are improved; it eases the teachers to set up learning activities, mediates student-centered learning, promotes learners' autonomy and provides personalized learning.

Nevertheless, studies on the flipped classroom were dominated in content subjects, not English. Djajalaksana, Adelia, and Zenar (2014) conducted research on flipped classroom implementation in Statistics class of Maranatha Christian University Bandung. They found that one semester flipped classroom implementation significantly affected students' achievement. Moreover, Marlowe (2012) conducted research on flipped classroom's effect on students' achievement in science class during second semester. The study reveals that students in flipped classroom get semester grades improvement, but exam grades did not show significant improvement.

In brief, any research on a flipped classroom and reading comprehension has not been conducted before. Although research on blended learning and reading comprehension of TOEFL section has been conducted by Majid, Hidayat, and Dani (2013), the result was not enough to describe the relation of the flipped classroom and reading comprehension. Thus, this present study is valuable to gain further insight into the relationship between the flipped classroom and reading comprehension.

A platform for conducting a flipped classroom was needed as a place in which online learning was carried out. The flipped classroom in this research was implemented through Edmodo. According to SEAMOLEC team (2012: 13-14), Edmodo is a facebook look-alike web-based platform that provides safe and easy way for class to communicate, collaborate, share content, access assignment/homework, score, and announce news. Besides Edmodo, email, facebook, Google, and YouTube are also used to support the flipped classroom in this study.

Besides its advantages, flipped classroom also facilitates personalized learning which leads to students' learning style (Bishop and Verleger, 2013: 6). Keefe (1987: 35) defines

personalized learning as a systematic effort to take account of individual student characteristics and effective instructional practices in organizing the learning environment. Considering that the flipped classroom creates a new kind of learning environment providing personalized learning, it is realized that every student with different learning styles in that classroom would be able to facilitate their learning in their own way and speed through personalized learning. For that reason, learning styles become one of the variables in this study.

Style is defined as consistent and rather enduring tendencies or preferences within an individual (Brown, 2000: 113). According to Keefe (1987: 5), learning style is cognitive, affective, and physiological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment. In theories of second language acquisition, learning style is often claimed as one of the factors affecting language learning. It yields the explanation why some students are more successful than others although they are taught by the same strategies. Therefore, personalized learning is good to apply because learning process can be done based on student's own preference which can be conducted through flipped classroom.

In this study, learning style is focused on cognitive learning style covering field dependence and field independence. Lightbown and Spada (2001: 58) define that both field dependence and field independence refer to whether an individual tends to separate details from general background or to see things more holistically. Based on Altun and Cakan (2006:291), field-independent learning style was divided into four dimensions which were analytic, left-brained, sequential and inductive; meanwhile, field-dependent learning style was divided into global, right-brained, simultaneous, and deductive.

There are some research reports related to field-independent and field-dependent cognitive learning styles. According to Williams and Burden (2000: 91), many studies on it reveal that field-independent students tend to perform better than others in foreign language learning. It is supported by Tinajero and Paromo (1997) and Murphy, Casey, Day, and Young (1997) whose studies reveal that field-independent students performed better than field-dependent ones. However, Bishop and Verleger (2013:6) argue in a flipped classroom, both learning styles are facilitated because they can learn in whatever the conditions they prefer. Because students can learn with their own characteristics and preferable way; therefore, both are predicted to perform equally better in flipped classroom. For that reason, these cognitive learning styles are interesting to observe in relation to flipped classroom implementation.

Referring to the description above, and going beyond theoretical justification, an experimental study seemed to be interesting to be conducted. The flipped classroom in reading instruction was implemented in which its effect was observed by considering students' cognitive learning styles. For that reason, a study entitled "The Impact of Flipped Classroom on Reading Comprehension of High School Students with Different Cognitive Learning Styles" was conducted.

Based on the background of the study above, the general research problem is "Do students with different cognitive learning styles taught in a flipped classroom have better reading comprehension than those taught in a traditional classroom?" Then, the general research problem of this research leads to the three specific research problems which are formulated as follows.

1. Do students taught in a flipped classroom have better reading comprehension than those taught in a traditional classroom?
2. Do students with field-independent cognitive learning styles have better reading comprehension than those with field-dependent cognitive learning styles?
3. Is there any interaction between classroom types and students' cognitive learning styles?

If there was an interaction between classroom types and students' cognitive learning styles, the further relations between the two would be important to see. This leads to the next four research problems of the study as follows.

4. Do field-independent students taught in a flipped classroom have better reading comprehension than field-dependent students taught in that classroom?
5. Do field-independent students taught in a traditional classroom have better reading comprehension than field-dependent students taught in that classroom?
6. Do field-independent students taught in a flipped classroom have better reading comprehension than those taught in a traditional classroom?
7. Do field-dependent students taught in a flipped classroom have better reading comprehension than those taught in a traditional classroom?

Methodology

Quasi experimental research design was applied in this study because organized classes were not allowed to be rearranged, and the schedule planned by the school was not allowed to be disrupted (Charles in Latief, 2012:95). Then, the independent variable in this research contained two factors as levels which were treatment and students' characteristic. The treatment was a flipped classroom and the characteristic was students' cognitive learning styles. The dependent variable of this research was students' reading achievement. Therefore, factorial experiment design was applied because the effect of the treatment was seen across different characteristics and the interaction between variables was examined (McMillan, 1992: 182). Thus, the factorial design used in this study was described as a 2 x 2 design.

This study was conducted in SMA Negeri 1 Malang. The choice of involving SMA Negeri 1 Malang was motivated by the belief that this school was considered to have established quality in the teaching learning process for years. It was expected that this condition could be maintained during the present study. Moreover, this school was also known to have the criteria needed in implementing flipped classroom and accessible for the researcher.

Therefore, the population of the study was the tenth graders of SMA Negeri 1 Malang in academic year 2013/2014. Selecting tenth graders as population of the study was based on researcher's intention to see the impact of flipped classroom on reading comprehension within Curriculum 2013 which integrates English subject and ICT use. Thenceforth, simple random sampling was carried out in this research because the population was too large. The two classes (X MIA-3 and X MIA-8) of population were taken as sample of the study. Therefore, the choice of which class became experimental or control class was decided randomly by doing the lottery. Then, X MIA-3 was chosen as the experimental class and X MIA-8 was assigned as the control class.

The treatment implemented to the subjects of the study was a flipped classroom applied in six meetings (April – May 2014). The flipped classroom was applied in the experimental group and the traditional classroom was applied in the control group. Everything applied in

both classes was attempted to be same, but the flipped classroom got enhancement by having online video lectures at home and doing exercises and project in the class.

Instruments used to measure the variables in this study were reading test, questionnaire of students' cognitive learning styles, opinionnaire and observation sheets. The primary instruments of the study were reading test and cognitive learning styles questionnaire; opinionnaire and observation sheets were secondary instruments. Reading test was used as a pre-test and a post-test. The pre-test was given prior to the treatment used as covariate. Meanwhile, the post-test was given after the treatment to see the effect of flipped class on students' reading comprehension. Then, the questionnaire for students' cognitive learning styles was given to categorize students into field-dependent or field-independent group. Furthermore, opinionnaire was given to know students' perceptions on flipped classroom after the treatment, and observation sheets were used to record teacher's performance in the flipped classroom. All the instruments were developed based on the blue prints, validated by an expert, and tried-out to know their reliability and practicality.

FINDINGS

Major Data

The major data collected from the primary instruments are presented in this section. The results of the pre-test and the post-test can be seen in Table 2.

Table 2: The Result of Pretest and Posttest

Class	Experimental				Control			
	Mean	SD	Min	Ma x	Mean	SD	Min	Max
Pre-test	70.625	6.318	60	82.5	72.734	6.671	57.5	85
Post-test	81.016	8.028	62.5	92.5	82.344	7.349	57.5	92.5
Students Number	32				32			

Table 2 shows that among the 32 students in each class, the mean score in the pre-test of the experimental class was 70.625 with 81.016 as its post-test mean score. In addition, the mean score of the pre-test of the control class was 72.734 with 82.344 as its post-test mean score. The mean scores imply that the control class had higher one since the beginning of the study. However, although the control class still had higher mean scores in both pre-test and post-test than experimental class did, the experimental class had a slightly higher increase than the control class did.

Then, since this research used variance analysis computations, there are assumptions needing to be fulfilled which are normality, homogeneity, and linearity of the data. In terms of the normality of data, after computing by using Kolmogorov-Smirnov, significance values of normality were .023 in experimental class and .000 in control class. Those values show that $p < .05$ which mean that the data were not distributed normally and normality assumption was not fulfilled. In addition, in terms of homogeneity of data, after employing Levene formula, significant value of homogeneity was .109 based on mean ($p > .05$). The value indicates that the data were homogenous, and the assumption of homogeneity of the data was fulfilled. Then, in terms of linearity of data, through ANOVA table, the significance value of linearity between the experimental and control classes was

.842 and deviation from linearity was .894. Those values show that $p > .05$. Thus, the data were claimed as linear ones and the linearity assumption was fulfilled.

After analyzing the fulfillment statistical assumption, it can be concluded that the data obtained from reading comprehension test were homogenous, linear, but not normal. It implies that non-parametric formula should be used; however, there is no non-parametric formula which uses covariate in its computation. Therefore, in this computation, ANCOVA was still used, but the interpretation of the data has to be very carefully. Lodico, Spaulding, Voegtle (2006:256) argue that some violation of statistical assumptions is acceptable as long as the subject were independent of one another. This means that even if all of these assumptions are not met, parametric tests may still be used.

The result of data computation by using ANCOVA in this research can be seen in Table 3.

Table 3: Tests of Between-Subjects Effects (ANCOVA)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Learning Styles	854.432	1	854.432	26.871	.000
Class	.305	1	.305	.010	.922
Pretest	531.768	1	531.768	16.724	.000

Based on Table 3, for class, the significance values from ANCOVA computation was .922. The value indicates that $p > .05$ which means that there is not enough evidence to reject H_0 . So, H_0 was accepted that means there is no significant difference between the experimental class and the control class.

Then, the significant value of learning styles was .000 in ANCOVA computation. The value was lower than .05 which means that there is enough evidence to reject H_0 . Thus, there is a significant difference between reading comprehension of students with field-independent learning styles and those with field-independent learning styles.

Besides those computations, ANOVA computation was also needed to see whether or not there is an interaction between the classroom types and cognitive learning styles. Table 4 shows the result of ANOVA computation to see the interaction.

Table 4: Tests of Between-Subjects Effects (ANOVA)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Learning style	1210.104	1	1210.104	30.323	.000
Class	24.574	1	24.574	.616	.436
Learning style * Class	45.185	1	45.185	1.132	.292

Based on Table 4, it can be seen that significance value of interaction between classroom types and cognitive learning styles was .292. The value indicates that $p > .05$ which means that there is not enough evidence to reject H_0 . Thus, it can be concluded that there is no interaction between classroom types and cognitive learning styles.

After testing the three research hypotheses above, there were four hypotheses remaining. However, because there is no interaction between classroom types and cognitive learning styles, the remaining four hypotheses were not able to be tested. Thus, the hypothesis testing was stopped after the third one.

In a nutshell, the hypotheses tested in this part lead to answers of the three main research problems in this study as follows.

1. There is no significant difference between reading comprehension of high school students taught in a flipped classroom and that of students taught in traditional classroom.
2. Students with field-independent cognitive learning style have better reading comprehension than those with field-dependent cognitive learning style.
3. There is no interaction between flipped classroom and students' cognitive learning style.

Minor Data

The minor data in this research were results obtained from opinionnaire and observation sheets. The opinionnaire was intended to see the students' responses toward the flipped classroom implementation. In this the opinionnaire, there were ten positive perception statements toward flipped classroom. The results of attitude questionnaire are displayed in Table 5.

Table 5: The Results of Opinionnaire

No	Statement	SD		D		U		A		SA	
		f	%	f	%	f	%	f	%	f	%
1.	Being convenient to have reading class in a flipped classroom	-	-	3	9.4	6	18.7	2	62.5	3	9.4
2.	Being able to personalize learning style in a flipped classroom	-	-	-	-	5	15.6	2	75	3	9.4
3.	Being exposed to various extended reading materials in a flipped classroom	-	-	-	-	1	31.3	1	53.1	5	12.6
4.	Being helped by the teacher in doing assignment or project in a flipped classroom	-	-	1	3.1	5	15.6	2	62.5	6	18.75
5.	Being not bored with active learning activities in a flipped classroom	-	-	1	3.1	1	40.6	1	50	2	6.2
6.	Being engaged with learning activities in a flipped classroom	-	-	4	12.5	1	40.6	1	40.6	2	6.2
7.	Being able to optimize learning time in a flipped classroom	-	-	4	12.5	1	43.7	1	40.6	1	3.1

strategy	teaching strategy effectively											0	
5. Efficiency of teaching and learning activities	Using time efficiently	-	-	-	-	1	1	4	6	1	17	7	7
6. Effectiveness of assessment	Selecting appropriate instrument to do assessment	-	-	-	-	-	-	-	-	6	10	0	
	Conducting accurate assessment	-	-	-	-	-	-	1	1	5	83	7	

Based on Table 6, teacher's performance in implementing flipped classroom obtained from observation sheet. In brief, 68% of instructions were very well conducted, 39% of them were quite well conducted, and 3% of them were on average in its implementation. The data showed that teacher's performance while implementing flipped classroom was good enough to ensure that flipped classroom was properly conducted in experimental class.

Discussion

Interpretation of the Findings

Based on findings, it implies that a flipped classroom is as good as a traditional classroom because there is no significant difference between the flipped classroom and the traditional one. Related to the cognitive learning styles, the findings can be interpreted that whatever the classroom type was implemented, the students with field-independent learning styles have better reading comprehension than those with field-dependent learning styles. Moreover, minor findings implies that although flipped classroom did not significantly influence students' scores improvement based on statistical computation, the flipped classroom is still good to implement because it still brings visual improvement for students.

Comparing the Findings to the Theories and Previous Studies

The findings of this study were contribution to existing theories and enrichment of previous study. Therefore, they are supposed to be compared to theories and previous study. Through the comparison, both the differences and the similarities of them were examined.

As explained before, a flipped classroom was related to second language acquisition theories. Marshall (2014:6) argues that the flipped classroom connects to second language acquisition theories on comprehensible input theory, interaction theory, and critical thinking skill theory. Flipped classroom facilitates the students by exposing them to multiple and comprehensible sources existing around them as they have high frequencies in contact with technology. Then, the flipped classroom provides students with meaningful interaction with teacher and peers while doing assignments or projects contributing a lot to language skills as Vigotsky called as zone of proximal development. In addition, critical

thinking skill is sharpened through flipped classroom because activities in the classroom are cognitively demanding and intellectually challenging.

From those theories, the finding of this study was predicted that flipped classroom has a significant impact to students' reading comprehension. The reason why the scores were not significantly different might be the short time in implementing it. Comprehensible input, meaningful interaction, and sharpened critical thinking are things that should be given as long as students learn English in their life which might be longer than the period of this research.

Furthermore, previous studies on flipped classroom were dominated in content subjects, not English. Therefore, the finding of this study was compared to flipped classroom implemented in other subjects. This study reveals that flipped classroom does not significantly impact students' reading comprehension compared from traditional classroom; however, most students have positive responses to it. The finding was in line with Marlowe's (2012) study. This similarities show that flipped classroom has the similar effect on students in English class and other subjects. However, the finding of this study was different with Djajalaksana, Adelia, and Zenar's (2014) findings that a flipped classroom can improve students' achievement. This difference might be caused by the length of period of the flipped classroom implementation. The flipped classroom in this research was implemented only in six meetings; meanwhile, the one in Djajalaksana, Adelia, and Zenar's (2014) study was conducted in one semester (around 16 meetings). This difference in period of implementation might produce the different result in the present study.

Related to cognitive learning styles, the finding of this study is that students with field-independent learning styles have better reading comprehension than those with field-dependent learning styles. This result is in line with Williams and Burden (2000: 91) who state that many studies on it reveal field independence tends to do better than others in foreign language learning. However, this is contrary to Bishop and Verleger's (2013: 6) prediction, in a flipped classroom, both learning styles are predicted to be facilitated because they can learn in whatever the condition they prefer. The difference of the result was probably caused by the short period of treatment implementation, so the personalized learning did not significantly affect the students' way of learning.

Factors Possibly Causing the Ineffectiveness

The main result of the study is that students in flipped classroom do not have better reading comprehension than those in traditional classroom. The predicted impact of flipped classroom on students' reading comprehension was unfulfilled because there is not enough evidence to reject H_0 . The H_0 acceptance in this study might be caused by some possible factors.

The first factor was inadequate time for establishing a flipped classroom. Because this kind of classroom was a new thing for them, most of students needed time to adapt. Having a traditional classroom for more than nine years, students were used to the traditional one, so six meetings were suspected not enough to facilitate their transition and have them undergo the real flipped classroom.

The second one was that students in a traditional classroom still made use of internet and did any interaction there with their friends while doing homework at home. This was

unable to be controlled because situation at home was unavailable for the researcher to control. This uncontrolled situation might affect that the control group is not 100% traditional classroom and interfere the result of the study.

Time of post-test administration was the third factor of ineffectiveness. Post-test in experimental group was administered on the last hours of the day (12.15-13.45). This situation probably influences students' concentration while doing the post-test due to feeling tired, sleepy or hungry. On the other hand, the post-test in control group was conducted in the first hours of the day (06.45-08.15). At time, the students were supposed to be so fresh and full-energized that they could focus on doing the post-test. This situation may interfere the data collection in this study.

Conclusions and Suggestions

Conclusions

This study is an attempt to examine the impact of a flipped classroom on reading comprehension of high school students with different cognitive learning styles. Based on the findings, it can be concluded that there is no statistical significant difference between the reading comprehension of high school students taught in the flipped classroom and that of students taught in the traditional classroom, that students with field-independent cognitive learning style have better reading comprehension than those with field-dependent cognitive learning style, and that there is no interaction between classroom types and students' cognitive learning style. Moreover, minor findings of the study reveal that most students have good attitude toward flipped classroom and that teacher's performance while implementing flipped classroom was good so enough that it implies that instructions can be well conducted by having flipped classroom.

Suggestions

Based on the findings of this research, there were some suggestions related to a flipped classroom implementation and cognitive learning styles. Firstly, English teachers are suggested to implement the flipped classroom because it was so fruitful to have video lectures at home prior to class so that students can learn materials by their own way and speed, and choose suggested supplementary knowledge by themselves, and to have active learning interaction in the classroom. Moreover, the teachers are suggested to spare some time to help field-dependent students so that they can have equal competence with those with field-independent cognitive learning styles.

Second one is that institutions i.e. high schools and higher education are suggested to allow the teachers working there to implement flipped classroom and provide technological learning facility for both teachers and students. Then, curriculum developers are also recommended to develop more appropriate curriculum by considering having blended learning or flipped classroom in English subject and being more aware of students' different learning styles.

The last one is suggestion for future researchers. The similar research still needs to be re-experimented by controlling all the situations which were failed to be controlled in this research. Moreover, further research is highly suggested to do in longer periods at least one semester (around 16 meetings). In addition, there is also possibility to see the impact of the flipped classroom and different cognitive learning styles on other language skills (listening,

speaking or writing) in eleventh or twelfth grades of high schools or in the higher education.

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