



Research Article

Determining the Effect of Flipped Classroom Model (FCM) towards EFL Students' Reading Comprehension Achievement and Perspectives

Welly Ardiansyah ¹, Risnawati ², Zakaria ³, Wasitoh Meirani ⁴

1.2.3.4. Department of English, State Polytechnic of Sriwijaya, Palembang, Indonesia

* Corresponding author: Risnawati; Email: risnawatisenawapolsri@gmail.com

ARTICLE INFO	ABSTRACT
<p>Submission History</p> <p>Received: 2023-04-02 Accepted: 2023-06-02</p>	<p>The aim of conducting this study is to investigate flipped classroom model effects on students' achievement in reading comprehension and perspectives. The methodology used was quantitative with quasi-experimental <i>nonequivalent control group design</i>. They were divided into two groups based on purposive sampling, each with 25 students. A multiple-choice reading comprehension test with forty items and a questionnaire with thirty items made up the research tools. The questionnaires' reliability and validity were evaluated with the Pearson Correlation test. The Cronbach's Alpha with the significance level 5% at (0.308) was 0.882. The data were examined using the paired sample t-test. A Likert Scale was used to analyze students' perspectives towards flipped classroom model. The results of the study showed that (1) there was a significant difference in reading comprehension achievement between students who were taught with flipped classroom model compared to that of those who were not (16.00000 > 6.50000), and (2) the results of students' questionnaire indicated that based on the Cohen's <i>d</i> effect size calculation the relationship between the variables was 1.5059 (1.00>), and the effect size was strong (1.00>) range meaning that students have a positive perception of the teaching of reading comprehension by using Flipped classroom model. Therefore, it is recommended that English lecturers may use flipped classroom model in their respective schools and use resources for enhancing students' reading comprehension achievement.</p>
<p>Keywords</p> <p>Flipped-classroom Reading skill Students' perception</p>	

Introduction

In today's digital era, many researchers have claimed that applying technology in reading classes provides many advantages. These benefits include motivating students, increasing interactivity, providing authentic material, providing learners with autonomy, and providing automatic feedback. One model of technology-

based learning is the flipped classroom (Masadeh, 2021).

Recent research shows that the flipped classroom model is beneficial for student engagement and learning outcomes in a higher education context. According to studies, students value the flipped classroom model's peer-peer and student-lecturer interaction as well as the

chance to apply the material. Students learn more effectively in flipped classrooms, where they complete most of their work in class but also have time to complete homework outside of class. This makes them very satisfied with the way how their education is going.

By creating integrated reading materials and a digital program, this research aims to promote effective teaching and learning of reading while responding to the adoption of the traditional reading paradigm in Indonesian EFL settings. Empirical studies have found that ESL teachers often use traditional teaching methods, which concentrate on individual reading, correct pronunciation, and answering questions. This type of instruction is given a fraction of the time in each meeting, which neglects the importance of integrated English skills. Ridiculously, in one meeting of a teaching hour, one student will be chosen to read a reading text in turn. The teacher may correct the student's reading errors one by one. Many students do not get the chance to practice reading in class, so comprehension tests and discussions are used to gauge understanding afterward. This may prevent some students from learning how to read quickly and fluently and from understanding what they are reading. This study sought to determine whether flipped learning enhances students' reading comprehension and how the students themselves feel about using a flipped classroom in their reading class.

Literature Review

Flipped Classroom Model and Traditional Classroom

Flipped classroom model could be classified as an inverted classroom. Students in the flipped classroom watch lectures filmed out of a class, providing more time for active learning and practice. In the flipped classroom, teachers give students videos as homework to introduce a topic rather than giving lectures.

In the past, video lectures were created to provide students who were living far away from school with the same information as those who were in class. Teachers realized that not only were

videos helpful to students who were absent, but also those who were present during the lecture (Riyanti & Raharjo, 2020; Yu & Gao, 2022). Online classes, according to Irza (2021) and Al-Jarf (2022), increase students' engagement in the classroom, enable motivation towards and in-depth comprehension of the learning materials, and allow students to advance learn the lesson content before coming to class. Which in turn makes students get engaged in collaborative work, moderated and monitored regularly by teachers.

In a traditional classroom, teachers often give lectures that are the same length for everyone. But with video lectures, students can choose to speed up or slow down them to match your own pace. According to Dewi et al.(2021), videos allow lectures to be broken into smaller parts so that the information can be absorbed more easily.

The teacher in a flipped classroom firstly introduces their students the learning materials, and then the students learn and comprehend them outside of the classroom (Yusuf & Taiye, 2021). In this way, the students learn by doing, as they explore and analyze what they are learning. In contrast, traditional learning methods involve only receiving information passively, according to Dalbani et al.(2022), the integrating technology into digital teaching materials enables students to complete assignments more effectively and efficiently, as well as to become more engaged in their classes. They have access to online learning materials via WhatsApp, Google Classroom, and other apps.

Online-based tools help teachers and students share and learn information and ideas more easily. This allows teachers to spend time preparing lessons before class, and then use formative evaluation to determine whether students are understanding and have understood the material being taught (Antonio, 2022; Anugrah et al., 2021). It is more focused on helping students learn in a way that is more personal and focused on their needs (Abu-Shanab & Anagreh, 2020).

This teaching method helps students develop a deeper understanding of what they are learning (Han, 2022; Mujtaba Asad et al., 2022). This teaching method will enable students to perform

better on teacher-assigned tasks (Riyanti & Raharjo, 2020).

Student Engagement

There are three pillars of student engagement; behavioral, emotional, and cognitive (Hasanov et al., 2021; Ginting, 2021). Persistent behavior, focus, attention, and in-class questioning are all components of positive behavioral engagement. Students who exhibit positive behavioral engagement adhere to the rules and expectations of the classroom well, avoiding conflicts (Afendi et al., 2020). How interested and engaged students are in their classes and schools are categorized emotional engagement (Acosta-Gonzaga & Ruiz-Ledesma, 2022). Students who are involved are proud of their academic successes and have a strong sense of ties to their school (De Neve et al., 2023). The term "cognitive engagement" describes how invested students are in comprehending challenging concepts. High cognitively engaged students will make a conscious effort to learn as much as they can in a motivated way (Wang et al., 2022).

Flipped Classroom in Teaching Reading Skill

Students benefited from the flipped classroom model in numerous ways. EFL teachers who use this information can maintain their high teaching standards. Chavangklang and Suppatsereee (2020) found that the reading comprehension of a group of Thai English majors improved after they had been taught using a flipped classroom model. In addition to the above research, Denham et al.(2022) conducted a study to see if flipped learning is effective, they divided the class into two groups, and each learned the same material in a different way. While one group studied the material in the conventional manner, the other group adopted a flipped learning approach. It was determined that the flipped learning group had a higher average performance than the traditional learning group. This discrepancy resulted from the way the group using flipped learning presented the material.

Methodology

Place and Time of the Study

The study was carried out during the academic year 2022–2023 (August 2022–January 2023). It happened at the Sriwijaya State Polytechnic. It was situated at 30128 Kota Palembang, Sumatera Selatan, Jalan. Srijaya Negara, Bukit Lama, Kecamatan Ilir Barat.

Method and Design of the Study

The study uses a quasi-experimental design that focuses on non-equivalent control groups. Quantitative research designs are often used to look at the impact of variables on each other. Additionally, the experimental research design is aimed at exploring the strength of relationships between variables.

This study looked at how a “Flipped Classroom Strategy” affects students’ reading comprehension. Quasi-experimental research, which relies on carefully controlled settings, is a good design choice when trying to avoid sources of invalidity (Maciejewski, 2020). When using quasi-experimental designs, the researchers can control the treatment but cannot choose the subject of the experiment at random (Gopalan et al., 2020). It resembles experimental research, but does not actually true experimental research. Group treatment and its consequences are the main themes of the quasi-experimental design. Therefore, information will be collected before and after the intervention to know the improvement of English reading comprehension on both groups.

Student reading comprehension was the dependent variable of interest in this study, and flipped classroom model was the independent variable. Experimental and control groups participated in pre-tests and post-tests. Researchers used traditional teaching methods in the control class, but used a flipped teaching strategy in the experimental class. To determine which group improved the most in reading, researchers gave each class a pre- and post-test and compared the results.

Population and Sample

The target population is made up of individuals or objects that satisfy the researcher's chosen set of interest-related criteria (Memon et al., 2020). The population of this study included all fifth semester English Department students at State Polytechnic of Sriwijaya during the academic year 2022-2023. There were four classes, each with 25 students (5BA, 5BB, 5BC, and 5BD). Experimental and control groups were formed by two selected classes of researchers.

One of the most crucial elements that affects a study's accuracy is sampling. It allows researchers to include a much smaller population of interest in their studies (Stratton, 2021). The selection of samples used a purposive sampling technique, which was based on prior knowledge or personal judgments (Thomas, 2022). Besides, the researchers used the information and suggestion from the teachers to choose classes to study. The researchers were suggested by the lecturers to choose classes 5BC and 5BD, which had a lot of room for improvement in English reading comprehension.

Data Collection

In this study, students' scores from pre-tests and post-tests were used as data and questionnaires. A number of instruments were needed and several procedures had to be followed in order to collect data for the study.

Table 1

Scales for Levels of Item Appropriateness

Level of Item Appropriateness		
No	Scales	Categorization
1.	≥5 at very appropriate	A very appropriate item
2.	≥5 at appropriate and very appropriate	An appropriate item
3.	≥5 moderate	A moderate item
4.	≥5 at inappropriate	An inappropriate item
5.	≥5 at very inappropriate	A very inappropriate item

Table 2

Scales for Levels of Item Difficulty

Level of Item Difficulty		
No	Scales	Categorization
1.	≥5 at very difficult	A very difficult item
2.	≥5 at difficult and very difficult	A difficult item
3.	≥5 moderate	A moderate item
4.	≥5 at easy	An easy item
5.	≥5 at very easy	A very easy item

Instruments and Data Gathering Technique

The study used tests and questionnaires as the main instruments. The test includes 40 items in multiple choice and the questionnaire includes 30 closed items regarding students' views on the Flipped Classroom Strategy.

1. Test

The entire test consisted of forty multiple-choice items. As a result of using content validity, the researchers distributed a set of questionnaires to 11 English experts prior to piloting the reading comprehension test. They were asked to rate the difficulty and adequacy of each component of the reading comprehension test. Shown in table 1 and 2 the scales used to categorize the eleven experts' opinions on the appropriateness and difficulty of the items.

The first test was administered to both the experimental and control groups before the experiment to assess students' progress in reading comprehension over the previous lesson. A second test was given to both the experimental and control groups at the end of the experiment to determine what students had already accomplished in terms of the intended learning outcome of the researchers' planned instruction.

The following tables show the scales used to categorize the eleven respondents' assessments of the appropriateness and difficulty of test items.

2. Questionnaire

The questionnaire consisted of 30 questions and was written in English. At the end of the experiment, questionnaires were distributed.

Validity and Reliability Test and Questionnaire

1. Validity Test

The most significant indicator of test quality is validity (Yusoff, 2019). Content validity is the most important for most certification and licensing programs implying that the information contained in a certification or license program is correct and pertinent to the topics covered. To determine content validity, the test items are typically reviewed by a team of subject matter experts (Guillot-Valdés et al., 2022).

$$\text{Difficulty Index} = \frac{\text{the number of students who answer correctly}}{\text{the number of students who took the test}}$$

Table 3

Difficulty Index Criteria

Difficulty Index	Category
DI ≥ 0.36	Excellent
DI b/w 0.25-0.35	Good
DI b/w 0.21-0.24	Acceptable
DI ≤ 0.2	Poor

According to the test results, 5 of the 40 items were good, 28 were excellent, and 7 were considered acceptable. Therefore, the items are not necessary to change or revise.

Table 4

Reliability Statistics

Cronbach's Alpha	Part 1	Value	.129
		N of Items	40
	Part 2	Value	.310
		N of Items	40
Total N of Items			80
Correlation Between Forms			.558
Spearman-Brown Coefficient	Equal Length		.716
	Unequal Length		.716
Guttman Split-Half Coefficient			.702

To confirm the validity of the 40 items of the reading comprehension test, eleven English experts were asked to rate them according to their difficulty and appropriateness (see Table 1 and 2). The researchers administered the forty-item reading comprehension test to the fifth semester students at Polytechnic Sekayu in order to evaluate each item's validity before analyzing the results. Item analysis, according to Kumar et al. (2021), refers to three different types of data; difficulty of item, discrimination index of item, and effectiveness of distractor.

The researchers used the following formula to calculate the index of difficulty and the discrimination index of item (Fauzie et al., 2021):

2. Reliability of the Test

Reliability is about ensuring that the measuring instruments are stable and consistent over time (Realyvásquez-Vargas et al., 2022; Sürücü & Maslakçı, 2020). The split-half method was employed by the researchers to guarantee the test's reliability. The higher correlation, the greater the reliability will be (Pronk et al., 2022; Steinke & Kopp, 2020).

The researchers discovered that the test's reliability coefficient was 0.716. This is sufficient for research purposes, and as a general rule, reliability should be at least 0.70 and preferably higher.

The Spearman Brown formula must be used once the correlation has been established.

$$r_{full} = \frac{2(r_{half})}{1+r_{half}}$$

$$r_{full} = \frac{2(0.716)}{1+0.716}$$

$$r_{full} = \frac{1.432}{1.716}$$

$$= 0.834$$

Table 5

A Sample 6-Point Likert Scale for Items Requiring Agreement or Disagreement

1	2	3	4	5
Strongly disagree	Disagree	Undecided	Agree	Strongly agree

Table 6

A Rule of Thumb for Describing Internal Consistency by Using Cronbach Alpha

Cronbach Alpha	Internal Consistency
>0.90	Very highly reliable
0.80-0.90	Highly reliable
0.70-0.79	Reliable
0.60-0.69	Minimally reliable
<0.60	Unacceptably low reliable

Research Procedures

To collect the data, some procedures the researchers conducted were (1) applying descriptive statistics to know the total sample size (N), the minimum and maximum scores, the mean scores, and the standard deviation, (2) performing prerequisite analyses to know for homogeneity and normality, (3) giving the experimental group and the control group the pre-test to know the students' initial reading comprehension achievement in before conducting the treatment, (4) giving treatment to the experimental group with the flipped

3. Validity and Reliability of Questionnaire

A Pearson Correlation Test was used to validate the questionnaires and assess their reliability (see Table 5). The Cronbach's Alpha was 0.882, and the significance level was 5% at (0.308). The reliability level was high because $0.882 > 0.80$. Table 6 exemplifies the Cronbach Alpha's internal consistency score:

classroom model and to the control group with the traditional classroom, (5) giving post-test to both groups so that the researchers were able to determine whether applying the flipped classroom strategy to reading comprehension improved students' English reading comprehension. The researchers then scored both the pre-test and the post-test. It was done so that the value provided could be considered valid, and (6) distributing questionnaire in the form of a google form and then sent all of the questions to a group of participants using WhatsApp. Finally, researchers transferred the data to IBM SPSS 25.

Research Findings and Discussion

Preliminary Analyses

Just before to using the *t*-test to calculate the result data, preliminary analysis had been carried out. The test looked at descriptive statistics, normality, and homogeneity. The analyses revealed that the research samples were homogeneous and the data had a normally distributed distribution.

a. Descriptive Statistics

Table 7*Descriptive statistics of the pre-test and the post-test results*

Session Test	Group	N	Minimum	Maximum	Mean	Std. Deviation
Pre-test	Experiment	25	50.00	70.00	60.9000	4.83477
	Control	25	50.00	70.00	60.2000	5.20016
Post-test	Experiment	25	62.50	87.50	76.9000	6.30311
	Control	25	52.50	80.00	66.7000	7.24281
Valid N (listwise)		25				

Table 7 shows the number of students in the experimental and control groups for the pre-test and post-test, as well as the minimum and maximum scores, mean score, and standard deviations. The experimental group's 25 students completed the pre-test. The average score was 60.90, with a standard deviation of 4.83, and the low and high scores were 50.00 and 70, respectively. The pre-test had 25 students from the control group, and the mean score was 60.20 with a standard deviation of 5.20. The lowest and highest scores were 50.00 and 70. With a mean score of 76.90 and standard deviations of 6.30, the post-test results for the experimental group of 25 students ranged from the lowest score of 62.50 to the highest score of 87.50. 25 students who made up the control group received post-test results that ranged from the lowest score of 52.50

to the highest score of 80.00, with a mean score and standard deviation of 66.70 and 7.24, respectively.

b. Normality Test

The Shapiro-Wilk test was employed by the researchers to compute the normality test. The provision of data can be said distributed normally if the data has a significant value more than 5% ($\alpha > 0,05$). As shown in Table 8, the significant Shapiro-Wilk levels (Sig.) for experimental and control groups are 0.596, 0.475, 0.264, and 0.432, respectively. H_0 is accepted since the significant level (Sig.) is more than 0.05 (Sig. > 0.05). Based on the facts, it is conceivable to draw the conclusion that they are normally distributed.

Table 8*Tests of normality*

Class	Kolmogorov-Smirnov ^a			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.	
Students' Score	Pre-test (Experimental)	.134	25	.200 [*]	.968	25	.596
	Pre-test (Control)	.165	25	.079	.963	25	.475
	Post-test (Experimental)	.142	25	.200 [*]	.951	25	.264
	Post-test (Control)	.116	25	.200 [*]	.961	25	.432

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

In addition to utilizing Shapiro-Wilk to verify normality, a histogram is used to depict the distribution of a univariate data set (Koutsoyiannis, 2022). When constructing a histogram of the sample data, it is expected to see the bell-shaped curve, called normal curves (Khatun, 2021; Tsagris & Pandis, 2021). The bell-shaped curve is also called Gaussian or "bell shape" curve distribution (Ren, 2019).

Based on the histogram of the pre-test of control group, there are 25 students' test scores along with the normal distribution's corresponding probability density function. It is also clearly seen from the histogram of the post-test of control group data that the distribution of student test scores largely complies with the traits of a normal probability distribution. Additional analysis reveals that the majority of student scores fall between 50 and 70. Students who gained

score 50.00 were 4,3%, those who gained score 52.50 were 12,0%, those who gained score 55 were 8.0%, those who gained score 57.50 were 8.0%, those who gained score 60 were 24.00%, those who gained score 62.50 were 20.0%, those who gained score 65.00 were 12.00%, and those who gained score 67.50 were 8.0%. In conclusion, pre-test data distribution for the control group is categorized as normal based on statistical analysis with IBM SPSS 25. The histogram of the post-test of control group essentially follows the normal probability density curve. As can be seen from the histogram above, 20% of students achieved the most common score on the reading comprehension post-test, which is 72.50. The second-most common scores are 60.00 and 65.00, each of which was attained by 16% of students. The third most common scores were 62.50 and 70.00, both of which were achieved by 12 students. The next-most frequent scores were 62.50 and 70.00, each attained by 12 students. The fourth most typical scores were 52.50 and 77.50, each attained by 8% of the students. The fifth most typical scores, attained by 4% of students, were 67.50 and 80.00. The bell-shaped, symmetric histogram that results from the data set's normal distribution is what gives rise to the term "bell curve," which is used to describe a normal distribution.

Data of pre-test histogram for the experimental group indicate that the distribution

of student test scores largely complies with the traits of a normal probability distribution. A deeper analysis reveals that the majority of students' scores fall between 50.00 and 67.50.

According to post-test histogram of the experimental group, 20% of students in the experimental class got scores 75.00. Then, 16% of students received scores of 72.50 and 77.50 for every score. Scores of 70.00, 82.50, and 87.50 were earned by 12% of the class. The final 4% of students received scores of 62.50, 80.00, and 85.00 respectively. These frequency distributions demonstrate how the mean score distributions ranged from low to high levels of reading strategy use.

c. Homogeneity Test

Based on the findings in Table 9, the significant level (Sig.) is 0.364. It implies that it greater than $\alpha = 0.05$, in which case H_0 is rejected. The results demonstrate that there is no difference between the experimental and control groups in the variance of the reading comprehension achievement data of the students. Data variance homogeneity is sometimes used as a prerequisite before the paired samples t-test is used. Additionally, the fictitious test was conducted after the data was deemed to be homogenous and normal. The hypothetical test was employed to demonstrate whether the research's goal had been met.

Table 9

Test of homogeneity of variance

		Levene Statistic	df1	df2	Sig.
Students' Score	Based on Mean	.840	1	48	.364
	Based on Median	.663	1	48	.419
	Based on Median and with adjusted df	.663	1	47.982	.419
	Based on trimmed mean	.838	1	48	.364

Results and Discussion

The researchers employed the paired sample t-test on IBM SPSS Statistics 25 after completing the normally test and homogeneity test assumptions. The paired samples t-test can be used to compare the means of two (and only two)

related (paired) units on a continuous outcome with a normal distribution.

Data were generated using Cohen's *d* formula after the paired sample t-test result to establish whether the technique's effect size is strong or not. The word "effect size" describes a statistic, such as the mean difference, regression

coefficient, Cohen's d , or correlation coefficient, that estimates the magnitude of an effect. Standardized mean difference measurements serve as the foundation for the d family (Cohen's

d) (Ren, 2019). The exact effect size when comparing two means is known as Cohen's d . It has the following formula:

$$d = \frac{(\text{mean of group A} - \text{mean of group B})}{\text{Pooled Standard Deviation}}$$

$$\text{Pooled Standard Deviation: } \frac{(\text{std deviation of group 1} + \text{std deviation of group 2})}{2}$$

Table 10

Common effect size for values of d

Values of d	Label
0.20	Small
0.50	Medium
0.80	Large
1.10	Very large
1.40+	Extremely large

Different measures are employed to calculate effect size depending on the type of comparisons being studied. The studies that look at measures of association between variables and those that look at effect sizes between groups can be divided into two main study categories using the indices. Effect sizes provide information about how meaningful the relationships between variables or differences between groups are. A large effect size indicates that the research result is of practical importance, and a small effect size indicates that the practical application is limited.

Table 11

Paired samples test of control group

		Pre-test Control - Post-test Control
Paired	Mean	-6.50000
Differences	Std. Deviation	8.98494
	Std. Error Mean	1.79699
95% Confidence Interval of the Difference		
		Lower -10.20880
		Upper -2.79120
t		-3.617
df		24
Sig. (2-tailed)		.001

2. The Students' Paired Samples Test of Experimental Group

Reading comprehension test results for the Experimental Group showed a statistically significant improvement from pre-test mean

Cohen's d is an appropriate effect size measurement when comparing the means of two groups. When t-test results are reported, Cohen's d may also be included. According to Cohen, an effect size with a Cohen's d of 0.200 should be regarded as "small," one with a d of 0.500 as "medium," and one with a d of 0.800 as "large." As a result, even if there is a statistically significant difference, it is regarded as trivial if it does not differ by more than 0.200 standard deviations between two groups' means (Sullivan & Feinn, 2012).

1. The Students' Paired Samples Test of Control Group

Reading comprehension in the control group showed a statistically significant increase from pretest (M=60.2000, SD=5.20016) to posttest (M=66.7000, SD=7.24281, $t=3.617$, $p \leq 0.005$) (two tailed) but the average increase was only 6.50000.

(M=60.9000, SD=4.83477) to post-test mean (M=76.9000, SD=6.30311), $t=9.335$, $p \leq 0.005$ (two tailed). The average gain was 16.00000. It backs up the claim that the intervention improves students' reading comprehension skills significantly.

Table 12*Paired samples test of experiment group*

		Pre-test Experiment - Post-test Experiment	
Paired Differences	Mean	-16.00000	
	Std. Deviation	8.56957	
	Std. Error Mean	1.71391	
	95% Confidence Interval of the Difference	Lower	-19.53734
		Upper	-12.46266
t		-9.335	
df		24	
Sig. (2-tailed)		.000	

However, consideration should be given to the value of the eta square when assessing the efficacy of either intervention or conventional methods.

4.3 The Effect Size of Flipped Classroom

The practical significance of the independent variable is calculated using the effect size. There

will be a significant effect size if the treatment is effective. Additionally, the difference between the group means and their deviation are typically used to calculate an effect size. To put it another way, the researchers used the post-test group statistics from IBM SPSS 25 to calculate the effect size. The following table shows it.

Table 13*Group statistics of post-test*

	Group	Mean	N	Std. Deviation	Std. Error Mean
Post-test	Experiment	76.9000	25	6.30311	1.26062
	Control	66.70	25	7.243	1.449

In terms of post-test mean scores, the table demonstrated that the experimental class performed better than the control group. Then, using Cohen's *d* analysis, the magnitude of the effect was evaluated using the Pooled Standard Deviation. It was found that the effect size was 1.5059.

When the outcome was adjusted to meet the Cohen's *d* criteria for effect size measurement, table 11 showed the effect size was in the strong effect range (1.00>). In conclusion, putting the

flipped classroom strategy into practice significantly impacted students' reading comprehension skill.

4.4 Students' Perception of the Flipped Classroom Teaching Model

The second research question sought to ascertain the students' opinions of the flipped classroom teaching approach used to hone their reading comprehension abilities (see Table 14).

Table 14*The mean scores of students' perceptions of the flipped classroom teaching model*

Rank	Items of Questionnaire	Mean	SD
1.	I am gaining a lot of knowledge by watching videos and taking notes.	4.68	0.48
2.	Using the flipped classroom model has helped me prepare for my test more effectively.	4.60	0.49
3.	Watching the video lessons on the website is informative and provide helpful tips.	4.92	0.28

Rank	Items of Questionnaire	Mean	SD
4.	I take the time to watch the videos carefully	4,80	0.41
5.	Learning with the flipped classroom model made more interesting and memorable.	4.84	0.33
6.	I paused or repeated some parts of the video to help me understand. This will help me learn more effectively.	4.68	0.48
7.	A flipped classroom encourages students to exercise both critical and creative thinking.	4.80	0.41
8.	By studying foundational content beforehand, I am able to better understand the material I will be learning in class.	4.68	0.48
9.	Having a flipped classroom makes me be able to ask more questions in class.	4.76	0.44
10.	I find it fascinating to observe how teaching and learning take place in a flipped classroom because it inspires me to learn more.	4.76	0.44
11.	Students are expected to participate and engage more.	4.56	0.50
12.	It can be beneficial to use a flipped classroom for teaching.	4.76	0.44
13.	Flipped classroom can enhance topic exploration.	4.64	0.48
14.	As a result of watching the video content, I felt more equipped to finish in-class assignments.	4.80	0.41
15.	Flipped classroom allows lecturers to keep students engaged, as they are constantly interacting with the material.	4.96	0.20
16.	My time to practice concepts of the course is much less during the flipped classroom.	4.92	0.20
17.	Learning the fundamentals of a subject matter is easier by flipping the classroom.	4.96	0.20
18.	Flipped classroom encourages problem solving in class.	4.88	0.28
19.	Flipped classroom is a way to learn more about a subject quickly and easily. This is because we will be doing most of the learning in class, but also getting help from the teacher online.	4.76	0.44
20.	Flipped classroom is effective at promoting collaborative learning.	4.64	0.48
21.	Flipping a classroom can help to boost interest in class.	4.76	0.44
22.	Flipping a classroom allowed me to pace my learning.	4.64	0.56
23.	Flipped classrooms allow me to share my ideas with other students in a variety of ways.	4.40	0.76
24.	The flipped classroom model outperforms the traditional method.	4.72	0.46
25.	Flipped helps to foster a more engaged and active learning environment.	4.40	0.76
26.	I prefer to learn in a flipped classroom setting because it matches my natural learning style.	4.40	0.71
27.	I believe that learning in a flipped classroom environment has helped me achieve better grades in school.	4.76	0.44
28.	Flipped courses did not stop me from interacting with my lecturers. I was able to talk to them on a regular basis, just like I would have if the course had been traditional.	4.40	0.71
29.	Flipped classroom methods have helped me improve my understanding of course content, and I believe they would be beneficial for others as well.	4.56	0.65
30.	I have become less reliant on the lecturers as I have been using a flipped classroom approach.	4.48	0.51
	Perceptions of flipped classroom	4,69	0,14

Table 14 shows that items 3,15, 16, and 17 “Watching the video lessons on the website is informative and provide helpful tips”, “Flipped classroom allows lecturers to keep students engaged, as they are constantly interacting with the material”, “My time to practice concepts of the course is much less during the flipped classroom” and “Learning the fundamentals of a subject matter is easier by flipping the classroom”. Due to the students' engagement with the

material, this method enables lecturers to maintain their attention. Regarding the level of agreement, items 3, 15, 16, and 17 have high means and standard deviations ($M = 4.92$, $SD = .28$; $M = 4.96$, $SD = .20$; $M = 4.92$, $SD = .20$; $M = 4.96$, $SD = .20$ respectively). The perceptions of the flipped classroom as a whole are generally positive, as shown by the table ($M = 3.74$, $SD = .608$). The answers to the first question showed that the experimental group's students thought

favorably of the flipped classroom. This indicates that the flipped classroom is viewed as a worthwhile educational experience that engages students and may also accommodate their needs and learning preferences.

The results of this study are consistent with earlier studies (Lee, 2020; Lizcano et al., 2020; Rachmat et al., 2021). According to the results, it is clear that students prefer to learn using new technologies and multimedia. The researchers are able to draw the conclusion that, when compared to traditional learning, multimedia components like videos have a significant impact on students' learning. The results demonstrate that, in order to hold students' attention and ultimately advance their learning of reading comprehension, engaging the learning process through video becomes a necessity.

More compelling data also showed that during the teaching and learning process, they perceived more engaged to learn and memorize the materials which encouraged them to solve problems in the class (4.88). As an implication, they felt more prepared to complete course tasks in class (4.80) where they believed that could achieve better grades in school (4.76).

Conclusion and Recommendations

Conclusion

The research found that the traditional and flipped classroom teaching models had effects on students' reading comprehension achievement and mean. In terms of achievement and gain, the experiment class that used the flipped classroom teaching model performed better than the control group. According to the statistical analysis of the paired sample t-test, the achievement mean score for reading comprehension for the control group was 6.50000, while it was 16.00000 for the experiment group. This result is consistent with the alternative hypothesis (H_1), which states that the intervention improved students' reading comprehension. This indicates that the flipped classroom model had a significant impact on students' reading comprehension. The effect size for reading comprehension in the flipped

classroom is 1.5059, indicating a large and significant effect by Cohen's criteria.

Concerning the questionnaire that was distributed and examined, every student concurs with every question. By talking, sharing, and working together to find answers to some questions, they were more actively engaged in the learning process. Furthermore, the video explanation given to the experimental class then makes it easy for them to visualize information by reading the text thoroughly and watching the video. They made a connection between what they learned from reading the text and what they saw in the video. As a result, they are better prepared to participate in the learning and discussion section.

Recommendations

To potential researchers, this study suggests a number of measures. To begin, future researchers must employ a mixed-method approach to investigate the fundamental benefits of FL by developing a stringent approach or technique, despite the difficulty of randomization in school settings. Researchers should also reduce bias by appointing external examiners to evaluate and score test papers. Furthermore, in order to minimize sampling error and report more accurate results, future researchers are expected to use larger sample sizes. Last but not least, since students may benefit from it, future research should be very careful when using videos in flipped classrooms, as this can be an important tool. Lecturers should make sure that the videos can be easily understood by all students or respondents.

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