# Flipped Classrooms in the Digital Age: A WhatsApp-Based Approach to Improving Reading Comprehension Across Genders

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Abstract

Reading comprehension is one of the most important in learning English.This study aimed to find out improving students' reading comprehension using Flipped Classroom through WhatsApp. The sample in this research is 8th grade students from two classes at SMPN 10 Cimahi in grade eight. This research using quantitative approach and using experimental method. The student's (female and male) reading comprehension ability show improvement. It show from the mean score for n-gain in male 0.4280 and from female is 0.5613 it means the initial ability after using Flipped Classroom through Whatsapp male and female in students' reading comprehension is increase. In, addition, There is difference in students' reading comprehension improvement between female and male students after being taught using flipped classroom through WhatsApp, it shows from the result of independent sample T-test is 0,001 > 0,005. The result from the questionnaire is 93.33% responded positively. In summary, it can be conclude that the Flipped Classroom through WhatsApp can help the students in reading comprehension.

***Keywords:*** *Reading Comprehension, Flipped Classroom, WhatsApp, Collaborative Learning, Experimental Study*.

## INTRODUCTION

Reading comprehension is the process of constructing meaning and making sense of written text by relating what it is written on the page and the reader background knowledge Nunan (2003). People with better reading comprehension skills also obtain greater opportunities to brighter career promotion (Wei, Cromwell, & McClarty, 2016; Bhatia & Brenner, (2012). So, learners should be helped to develop the knowledge for succeeding their reading.

Difficulty in reading are due to several factors, lack in interpretation of the English texts, lack of vocabularies, weak in grammatical skill, and the application of strategies that are less suitable for teaching students (Behroozizad and Bakhtiyarzadeh, 2012). Maulizan (2015) said that one of the problems in the reading comprehension found among the Indonesia students is that the students do not master vocabulary, they probably do not understand the meaning of the words in sentences so that what they read can not be understood by themselves. Students in Indonesia still face many barriers culturally in order to gain good reading comprehension skills (Suryanto, 2017).

The success of teaching Reading in the EFL country as Indonesia is the dominant factor that must be considered by English teachers. The teacher helps the students comprehend the English text well by managing the strategies in teaching reading, so they can get a good

understanding in reading English text (Kwania, 2016). Teacher still need to improve their teaching by making some improvement in designing more interesting materials (Muhammad, Muslem, & Sari, 2017). Flipped classroom is one of alternative strategies to teach reading (Kachka, 2012). It is actually shifting the way teachers provide instruction by inverting traditional teaching methods to engage students in the process of learning. Berret (2012, p.1) that flipped teaching provides students with opportunities to develop higher order thinking under teacher guidance and with peer support. It is supported by the results of study conducted by Nouri (2016, p.1) found that a large majority of the students had a positive attitude towards flipped classroom to perceptions of increased motivation, engagement, increased learning, and effective learning.

In the study of Arifani (2019), conducted in Gresik Indonesia, the result showed that the Flipped Classroom through WhatsApp gave a positive effect on a English as a Foreign Language student. As inverted or flipped models have become increasingly prevalent in the instructional literature and more widely implemented by practitioners over the past several years (Moranski & Kim, 2016), the need to investigate the effects of Flipped Classrooms on language learning is crucially important. "In the flipped classroom, the teacher's role changes from lecturer and deliver of content to learning coach, guiding through a series of engaging and experimental-learning activities. The focus is on learning process than teaching process and the approach has been found to increase overall interaction among students and between students and teacher ", (Philips & Trainor, 2014, p:1). Flipped classroom allows the students to get more time in understand the material deeply rather than listening teacher explanation.

Technology has transformed the field of higher education which has great impact on the field of EFL teaching. More than 60% of the smartphone users are around 13 – 23 years old, which can be considered students or learners (TeachingAsia.com). Studying effectively and with the right type of technology is one of the best ways to ensure that students succeed in class (Belardi, 2013). Apparently, online interaction had inspired students' interest towards learning English language as during the interaction they read and write to give their posts and comments (Mansor, 2016). Subsequently, social media is one of them. Social media makes possible collaboration between learners and teachers on a given task or project or a joint objective, pooling resources and gathering the expertise of a group of people working towards a common objective (Bexheti, 2014).

Social media comprises of activities that involve socializing and networking online through words, pictures and videos. So many social media that are being use by people such as WhatsApp, Facebook, Twitter, Path, Pinterest. These platforms provides users a lot of activities for interaction among people, where everybody can share, exchange, comment, discuss and create information and knowledge in a collaborative way. For those reasons, social media has been popular to be used by people for recent years.

WhatsApp is used to facilitate and create an avenue for learning and communication as well, as it is the most common Application to the students, and they always have (Hamad, 2017). WhatsApp was a very effective application in developing students' motivation to improve their reading comprehension (Ahmed, 2019). Using WhatsApp can enhances students' learning and enthusiasm, helps them to develop English skills Maria (2016). Studied the use of WhatsApp in English language among students in Spain and reported a rise in motivation and a greater enthusiasm for reading in a foreign language (Plana et al.,2013).

Considering for that, the writer was motivated to conduct a research by using the flipped model through WhatsApp in teaching reading comprehension.

Research questions

1. What are the student's (female and male) reading comprehension ability ?

2. Is there difference in students' reading comprehension improvement between female and male students after being taught using flipped classroom through WhatsApp?
3. What are the students' response toward flipped classroom through WhatsApp?

## LITERATURE REVIEW

Reading is not only to get information but to understand and comprehend some points from the text. Reading comprehension as a Sophisicad cognitive process which varies in multiple approaches depending on motivation, goals, activities, and language strategies of the EFL learners (Grabe & Stoller, 2003). Subsequently, exploiting authentic materials in the educational contexts can be an excellent choice to enhance reading comprehension capabilities of EFL learners. Researches said "teaching is guiding and facilitating learning, enabling the learner to learn, setting the conditional for learning. In short, teaching is a process of helping and guiding students to learn and develop their knowledge" (Brown, 2001:16).
Teaching reading is not only giving a text to the students but also building their consciousness of reading skill. Based on Harmer (2001).

Flipped classroom is an innovative teaching strategy that reverses traditional teaching rather than lecturing, teachers assign a material as homework to introduce the topic (Danker, 2015). Flipped classroom can be describe as reversal of traditional teaching where students gain first exposure to new material outside of class, usually via reading or lecture videos, and then class time is used to do the harder work of assimilating that knowledge through strategies such as problem-solving, discussion or debates (Breztmann, 2013). It's means that flipped classroom is a learning strategy which is allow the student to study in individually through the learning material such as reading text or articles, video learning or presentation slide that has been share before the class that shared by the teacher to online media which is support file sharing and easy to download. Proponents of Flipped Classroom list numerous advantages of inverting teaching and learning in higher education according to the Flipped Classroom model: it allows students to learn at their own pace, it encourages students to actively engage with lecture material, it frees up actual class time for more effective, creative and active learning activities, teachers receive expanded opportunities to interact with and to assess students' learning, and students take control and responsibility for their learning (Betihavas, Bridgman, Kornhaber, & Cross, 2016; Gilboy, Heinerichs, & Pazzaglia, 2015).

Flipped classroom is actually a place to overcome problems, to enhance concepts, and to get engaged in collaborative learnings (Kachka, 2012). This fact is, different from the standard teacher style at courses in which students usually come to the class by preparing to absorb knowledge and information and then to practice that information through completing homework exercises. The flipped classroom is as a strategy to help teacher make time in class more efficient and effective. The flipping classroom change traditional teaching strategy by delivering lesson online outside the class and moving homework into the classroom where teachers have more beneficial time to help students with their question and one-on-one support (Bishop, & Verleger, 2013).

It is 21st century learning where learning is no longer confined within limited classroom timetable so Flipped Classroom through WhatsApp is convenient and it helps to foster students' higher order thinking skills and promotes autonomous learning and collaboration among students (Norhayu, Azmah, & Nukman, 2016). WhatsApp is popular instant massaging applicable for various devices and gadgets. It was invented by (Koum and Brian, 2009) starts booming since 2010 and used by more that 350 millions users in 2013 (Cohavi, 2013) As a free messenger application, it works across multiple platforms like iPhone and Android phones, and this app is being widely used among undergraduate students to send multimedia messages like photos, videos, audios, files, along with simple text messages (Chan & Holosko, 2017). Since

internet facility is required for using WhatsApp, lots of information can also be accessed in real time, and sharing that information through technology is both instantaneous and convenient (Ajid, Reni, Yunita, & Dwi, 2018).

EFL learning are recently interested to use WhatsApp as an instructional tool to develop students' language skills and motivation (Susanti & Tarmuji, 2016). There is also an emerging evidence that these Apps have a significant potential to support the learning process and has substantial implications on pedagogies, allowing direct access to lots of online resources, more focus on student's creativity, autonomy, and responsibility on one's own learning (Ifenthaler & Schweinbenz, 2016).

Based on Muthaiyan & Kanchana 2016 in improving reading skills of students, the teacher sends a simple reading text, such as short story or Narrative text in the WhatsApp group. Neri (2015) states that Whatsapp can be used as a multimedia tool to make classes more attractive and consequently to improve the relationship between student and teacher also can improve the student reading ability. WhatsApp, when used in an educational context, can be used in a variety of ways, such as: environment for discussing subjects, solving problems, clarifying doubts and taking courses, and presenting several advantages such as: increased motivation and interactivity, and improvement in student-teacher relations. It may also present some difficulties, such as: need for planning, attention to application distractions, possibility of not all students having mobile devices and inherent difficulties of high message flow (Bottentuit Junior; Albuquerque & Coutinho, 2016). This application has shown that it provides the possibility for students to act actively within the learning process (Souza, 2015). Using WhatsApp also helped to facilitate the students discussion, and helps the students overcome their fear of using the language, WhatsApp helped students to develop their reading skills (Hamad, 2017).

**Related Study**

"The effects of a flipped English classroom intervention on students' information and communication technology and English reading comprehension" The examined by Huwang and Zuway (2015) said that reading comprehension improved significantly.

The study of Kurniawan, Wulandari, and Muchyidin in 2017 stated in their study about "Development of Flipped Classroom Strategy in Teaching Reading" and the result students become more active and aware to use technology as the aid of teaching-learning process

"The Effect of Flipped Classroom on Students' Reading Comprehension" that examined by Herlindayana, Sahlan, and Alberth (2017) said by the result which was a significant positive effect of Flipped Classroom on students' reading comprehension

The study of Karimi and Hamzavi in 2017 about the effect of flipped model of instruction on EFL learners' reading comprehension also showed a positive result where analyses indicated that EFL students in the experimental group had positive attitude towards attitude flipped model of instruction and agreed that it was helpful to them in many ways and had a significant positive effect on their reading comprehension ability.

Move to the use of WhatsApp as a study in reading Comprehension. As Warman's study in 2018 stated in their study about "Students' Perception of Using Whatsapp in Blended Learning on Reading", the result there were positive aspects and drawbacks of using Whatsapp in blended learning on reading comprehension.

The study of Hamad 2017 in their study about "Using WhatsApp to Enhance Students' Learning of English Language", the result show that using WhatsApp helped students to develop English skills, enriched their vocabulary and learn from their mates mistakes, although the study laid out some disadvantages of the experience such as preparing the materials and having discipline in the group.

The study of Tarisman & Hanafi 2020 on their study about ”The Effect of Whatsapp in A Flipped Classroom on Students’ Writing Achievement at MTsN 1 Konawe” showed that WhatsApp has significant effect on students at the second grade students of MTsN 1 Konawe.

The study of Arifani 2017 on their study about “The Application of Small WhatsApp Groups and the Individual Flipped Instruction Model to Boost EFL Learners’ Mastery of Collocation” showed that Whatsapp has significant effect on student.

The study of Martins 2018 on their study about “Flipped Classroom Applies to High School with WhatsApp Aid” showed that WhatsApp stimulatted student’s responsibility for their own learning processes.

Conceptual Framework :

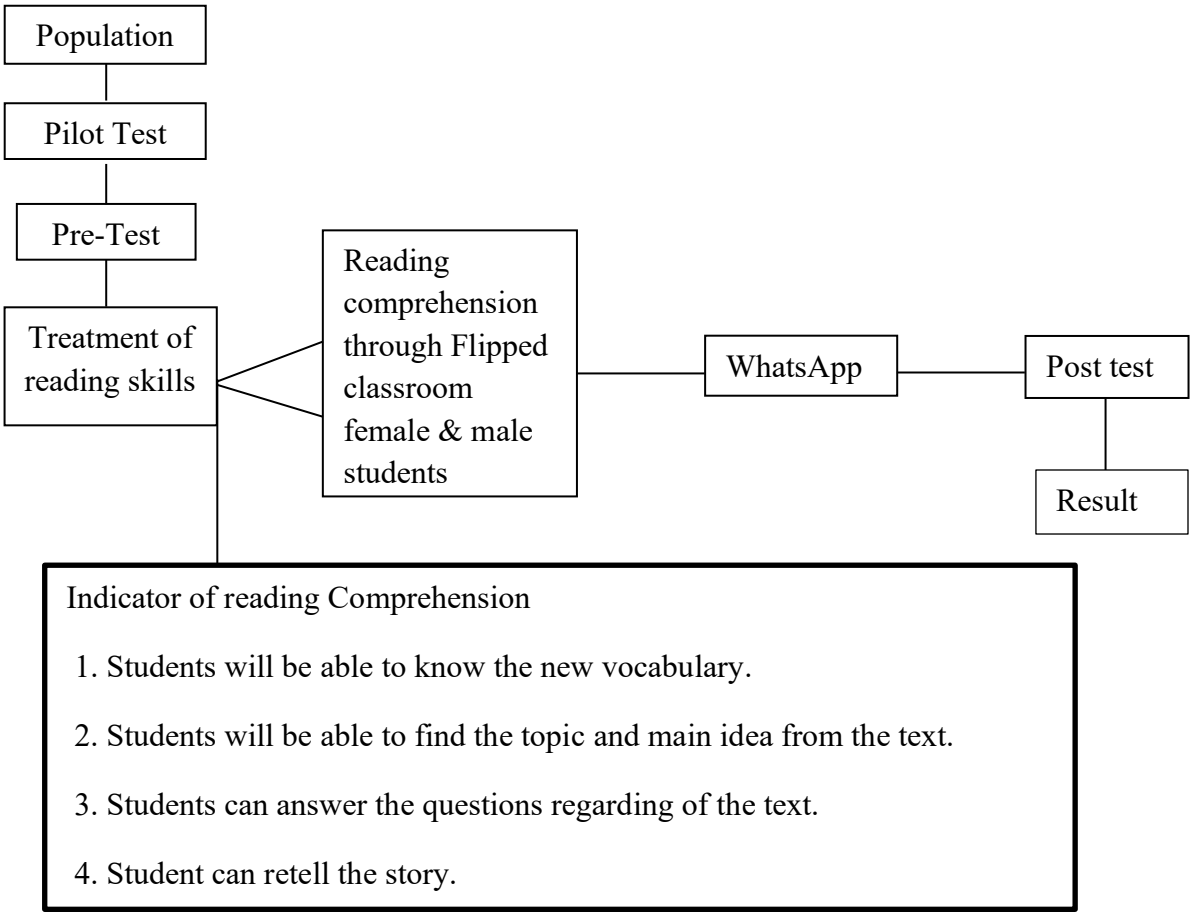


Figure Flipped Classroom through WhatsApp

## RESEARCH METHODOLOGY

### Reseach Design

This study used quantitative research with a comparative design. This comparative research design was for the eight grade of junior high school, both class A and class B. The pretest was given to the students before the treatment and the post-test after the treatment.

**Table 1 Research Design**

| Research Design | | | |
|---|---|---|---|
| **Group** | **Pre-test** | **Treatment** | **Post-test** |
| G1 | O | X1 | O |
| G2 | O | X1 | O |

Explanation :
G1 : Group of male students
G2 : Group of female students
X1 : Reading Comprehension using Flipped Classroom through WhatsApp.
O : Pre-test and Post-test

**Population and Sample**

The population was taken from Senior High School grade VIII students of SMP N 10 Cimahi. The research employed two classes. The sample are grade VIII A and VIII B students. The researcher used both classes to imply the same treatment, as well as the strategies. After the treatment, the researcher got the result (the data) from the students' pre-test and post test scores to see the effect of Flipped Classroom through WhatsApp in their reading comprehension.

**The Instruments**

The instruments in this study are the reading comprehension test and used in the pre-test and the post-test and quiz (help the students to recall the previous material) that still related to the lesson. In this study, the researcher used reading comprehension class test which compose of 50 questions multiple choice pilot tested in grade XI E students, of SMP N 10 Cimahi. The reading test was pilot tested to find its validity, reliability and its significancy for the proper level to used the pre-test and post-test designed to measure the ability of the students in the reading comprehension before applying the treatment. Another instrument use in the facilitating the flipped classroom is smartphone, Iphone, laptop, Tab, Ipad, Notebook, Laptop.

**The Research Instrument**

The research instruments were reading test which is the pre-test and post-test. Instruments used to facilitate this research and to collect data or information that is important to find the results of this research, the pre-test and post-test will use, and the same instruments used for both classes. To validate the test a pilot test will be given. The instructions are explained below:

**Lesson Plan**

The lesson plan was designed to direct the researcher to conduct step-by-step detailed description of the course. The lesson plan enabled the researcher to focus on achieving the goal. The lesson plan included the tasks of the students and teachers, the strategies of the teacher, the time allocation and what material was used in the classroom.

**Pilot Test**

Before giving the pre-test, the pilot test was conducted. The test is a method of reading; adapted by the students from some sources and textbook. This test was validated by using

Anates. Anates was used to facilitate researcher to do reliability test, difficulty level test, validity test and analyzing discrimination index. It consisted of 50 questions of multiple choice tests.

**Pre-test**

After the pilot test was administer; a pre-test performed to get the performance before the treatment was given. The pre-test was given to understand the reading comprehension level of the students.

**Treatment procedure**

After administering the pre-test, the treatment was conducted to the students. The material was taken from the text book prepared by the school and other material from internet. Students were introduced to the use of the flipped classroom through WhatsApp.

**Procedure of using flipped classroom through WhatsApp :**

**Prior Class Period :**

1. The teacher post a Narrative text in the WhatsApp group.
2. Every student, have to read the Narrative text topic.
3. Each student was given a comprehension of individual tasks to complete the text.
4. Each Student submited the individual task to the teacher's in "Personal Chat" teacher's WhatsApp.

**During Class Period**

1. The student divided into group with the same gender, each group consist of 4-5 members.
2. Student discuss the Narrative text that they have read Prior Class time.
3. A representative from each group reported to the whole class regarding their class discussion.
4. Teacher provides feedback to clarify comprehension mastery of the topic.
5. Teacher evaluated on student's reading comprehension.

**Post-test**

The purpose of post-test is to know the students' comprehension after being given treatment. And the purpose of conducting post-test is to find out the whether there are any significant difference in students' comprehension between the experimental groups.

**Questionnaire**

The questionnaire used in order to know the response of the subjects toward Reading Comprehension using Herringbone technique. The questionnaire was designed in the form of multiple choices on the basis of rating scale 1-4 and the options of the questionnaire were SS (*sangat setuju*) for strongly agree, S (*setuju*) for agree, CS (*cukup setuju*) for slightly agree, and TS (*tidak setuju*) for disagree. An SS option will get 4 score, S will get 3 score, CS will get 2 score, and TS will get 1 score. The questionnaire was distributed at the end of the session after conducting the post-test.

**Statistic Procedures**

A good test should have four criteria, such as validity, reliability, level of difficulty, and discrimination index. There are eight steps in data analysis. They are validity test, reliability, discrimination index, difficulty index, normalized gain, normality test, homogeneity test, and difference of two mean test.

**Validity Test**

There are 50 questions of the self-made test was constructed by the researcher as the pilot test. After the self-made test was being piloted, it was found that there there were 39 items that were valid. There were, 3 items that were high, 24 items were moderate, 17 tems were low, 3 items were very low, and 3 items that are not valid. However, only 40 items from the self-made test were based on the criteria of validity that considered satisfactory.

**Reliability Test**

A test that said to be reliable if the result is relatively the same and reach 0.60. Based on the calculation of the pilot test, the reliability level of the pilot test was 0.89 , it meant the selfmade test has a very high level.

**Descrimination Index**

From the discrimination index calculation, it was found 4 items were not valid, 2 items in poor category, 22 items in satisfactory category, 18 items in good category, and 4 item in excellent category.

**Table 2. Discrimination Index**

| Number of Question | Discrimination Index | Interpretation |
|---|---|---|
| 1,2,4,50 | -0.11-(-0.33) | Very bad |
| 40,49 | 0.00-0.11 | Poor |
| 3,7,8,9,10,12,25,16,17,18,19,23,24, 29,30,34,37,39,42,45,47,48 | 0.22-0.33 | Satisfactory |
| 5,6,11,14,15,20,26,27,28,31, 33,35,36,38,41,43,44,46 | 0.44-0.67 | Good |
| 21,22,25,32, | 0.78-1.00 | Excellent |

**Level of Difficulty**

Most of the items are in the level 0.76-0.82 and 0.41-0.67 and which are 28 items. So the difficulty level of the test is Easy and Moderate.

**Table 3.Difficulty Level**

| Number | Index of Difficulty | Difficulty Degree |
|---|---|---|
| 1,2,3,4,10 | 0.70 – 1.00 | Very easy |
| 5,7,8,13,14,24,35,39,40,42,50 | 0.76 – 0.82 | Easy |
| 6,9,11,12,15,16,17,18,19,20,21,22,23,26,27,28,29,30,33,34,36,37,38,41,43,44,45,49 | 0.41 – 0.67 | Moderate |
| 25,31,32,46,47,48 | 0.20 – 0.26 | Difficult |
| | 0.08 – 0.14 | Very difficult |

**Normalized Gain**

To find out the extent of the improvement in the ability of students reading comprehension in the first and second classes, a descriptive analysis was performed on the pretest and posttest data and the normalized gain. The analysis was carried out to find Mean,

Standard Deviation, Variance, Minimum Statistics, Maximum Statistic, and Normalized Gain can be searched using the formula of Hake (1999):

$$g = \frac{\%\ \text{posttest} - \%\ \text{pretest}}{100\ \% - \%\ \text{pretest}}$$

Where,
G : Average normalized gain
% pretest : Percentage of pre-test scores
% posttest : Percentage of post test scores
According to Hake (2007) the criteria of normalized gain is shown in the table 4

**Table 4 The Criteria of Normalized Gain:**

| Gain (g) | Category |
|---|---|
| $0.71 < g \leq 1.00$ | High |
| $0.31 < g \leq 0.70$ | Moderate |
| $0.00 \leq g \leq 0.30$ | Low |

**Normality Test**

Normality test was conducted to see whether the population of the data collected from is normally distributed or not. To test the normality of the population the researcher used the Shapiro-wilk (Ruseffendi, 1998). Because according Saphiro-wilk is more accurate than any other test for testing normality (Santoso 2007).
The formula is:

$$W = \frac{\left(\sum a_i x_i\right)^2}{\sum \left(x_i - \bar{x}\right)^2}$$

Where,
W : Test statistic
*Xi* : statistic order $X_1, X_2, X_3 \ldots, X_n$
*Ai* : Constant generated from the average value (mean), variance, and covariance structure sample distribution of and from a normal distribution.
*X* : The mean of sample data

The hypothesis was the following:
*Ho* : The data population is normally distributed
*Ha* : The data population is not normally distributed

**The criteria of Normality test if the data is analyzed with SPSS:**

- Data is normally distributed if sig. value is larger (>) than α (0.05), or Ho is not rejected.
- Data is not normally distributed if sig. value is lesser or equal (≤) or α (0.05), then Ho is rejected

**Homogeneity Test**

To determine whether the population variances are homogeny or not which means having the same basic qualities, the researcher used the homogeneity test based on the result of normality test (Uyanto, 2009).

The formula:

$$F = \frac{S_1^2}{S_2^2}$$

Where,
F: value (variance variable data)
$S_1^2$: the larger variance
$S_2^2$: the smaller variance

The hypothesis will be used are:
*Ho* *:* The population variances are homogeny
*Ha* *:* The population variances are not homogeny

**The criteria of Homogeneity test if the data is analyzed with SPSS:**

- The population variances are homogeny if sig. Value > α (0.05), then Ho is not rejected.
- The population variances are not homogeny if sig. Value ≤ α (0.05), then Ho is rejected.

**Mean Difference Test**

The significant value will be using either T-Test or U-Test to determine if there is significant difference or not between both data (Different mean test). This step will be answering the second statement for the statement of the problem. If the two populations are homogeneous, the sample T-test will be used with the formula (Supranto, 2009).

$$t = \frac{\overline{x_1} - \overline{x_2}}{SD\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \qquad SD = \sqrt{\frac{(n_1 - 1)\, s_1^2 + (n_2 - 2)\, s_2^2}{n_1 + n_2 - 2}}$$

Explanation:
$\overline{x_1}$ : Average students' score (experimental class)
$\overline{x_2}$ : Average students' score (control class)
$n_1$ : Number of students (experimental class)
$n_2$ : Number of students in (control class)
$s_1$ : Variance of students' score (experimental class)
$s_2$ : Variance of students; score (control class)

However, if the data is not homogeneous, then the two-different test average used is a non-parametric test or Mann-Whitney, with formula below.

$$U = n_1 n_2 + \frac{n_2(n_2 + 1)}{2} - \sum_{i=n_2+1}^{n_2} R_2$$

(Supranto, 2009)

Where:
U :Mann-Whitney U test
$n_1$ :sample size one
$n_2$ :Sample size two
$R_i$: Rank of the sample size
The hypothesis of different mean test was as the following:

*Ho* *:* There is no significant difference in the improvement of reading comprehension between the experimental group and control group.
*Ha* *:* There is significant difference in the improvement of reading comprehension between the experimental group and control group.

**The criteria of Different Mean test if the data as analyzed with SPSS:**

- Ho is not rejected if the sig. value > α (0.05), means that there is no significant difference in the improvement of students' reading comprehension.
- Ho is rejected if the sig. value ≤ α (0.05), means that there is significant difference in the improvement of students' reading comprehension.

## Data Analysis

In analyzing the data, researcher calculated the data of pre-test, post-test and the data of normalized gain. Researcher calculated those data of Flipped Classroom through Whatsapp male and female by using SPSS 24.0. The data was summerized on

**Table 4.Result of Pre-Test, Post-Test, Standard Deviation and Normalized Gain**

| | Male | | Female | |
|---|---|---|---|---|
| | Mean | Standard Deviation | Mean | Standard deviation |
| Pre-Test | 53.30 | 6.874 | 53.30 | 6.974 |
| Post-Test | 73.13 | 7.587 | 79.40 | 7.704 |
| Normalized Gain | .4280 | .13084 | .5613 | .15355 |

From the table it can be seen the mean pre-test of Male group is 53.30 with st.deviation 6.874 and post-test 73.13 with st.deviation 7.587. For Female group, the mean of the pre-test is 53.30 with st.deviation 6.974 and post-test 79.40 with st.deviation 7.704. Based on the increasement of the mean and decreasement of st.deviation from pre-test to post test of both groups, it can be concluded that there is an improvement on students' reading comprehension.

**Analysis of Significance Differences of Initial reading comprehension ability**

In analyzing the data, the researcher used Microsoft Excel and Statistical Program, SPSS 24. Before giving the treatments, researcher gave pre-test and from the pre-test's score, researcher needed to conduct normality test, homogeneity test and the hypothesis testing.

**Normality Test of the Pre-test**

Normality test was conducted to see whether the data obtained was normally distributed or not. $H_0$ is accepted if the p-value is greater than α (0.05) but Ho is rejected if the p-value is lesser than or equals α (0.05). Table 4.2 showed the result of the pre-test score for both groups:

**Table 5 Normality Test of the Pre-test**

| Group | Shapiro-Wilk | | |
|---|---|---|---|
| | Statistic | Df | Sig |
| Male | .972 | 30 | .585 |
| Female | .978 | 30 | .763 |

Based on the data, it depicted the data population of both classes are normally distributed, where the significant value of male group, is 0.585 > (0.05) and the significant value of female group, is 0.763 > 0.05. It meant both experimental group were normally distributed.
Since both data are normally distributed, then for the data based on mean row is considered for homogeneity test.

**Homogeneity Test of the Pre-test**

Homogeneity test is a test to find whether the data obtained is homogeneous or not. The result of the homogeneity test can be seen on the table 6

**Table 6 Homogeneity Test of Pre-Test's Score**

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| .002 | 1 | 58 | .962 |

Based on the table above, it can be seen the data was homogenous because the variance was 0.962 > α 0.05. Since the data population is normally distributed and the population variance was homogeneous, Independent Sample t-test was conducted.

**Hypothesis Testing**

Since the pre-test population is normally distributed, then independent sample t-test was done. The result calculation can be seen on the table.

**Table 7 Independent Sample T-test for Pre-Test**

| | Levene's Test | | T-test for Equality of Means | | |
|---|---|---|---|---|---|
| | F | Sig. | T | df | Sig. (2-tailed) |
| Equal variances Assumed | .002 | 962 | .000 | 58 | 1.000 |

The result of the data above in table showed that ρ-value = 1.000 > α (0.05). It means that Ho is not rejected. Therefore, it is concluded that there is no significant difference in the student's reading comprehension between Female and male before being taught using Flipped classroom through whatsapp. After conducting the pre-test, the researcher applied the treatment and at the end of the session there was post-test to know the enhancement in reading comprehension of the students. Then, the pre-test and post test scores from both classes were calculated using Normalized Gain formula.

**Different Between Means Test**

Different between means test was done to see whether the two groups reading comprehension are significantly different or not, but the normality test and homogeneity test were done first.

**Normality Test**

Normality test was conducted to see whether the data population was normally distributed or not. $H_0$ is not rejected if the p-value is > 0.05 but $H_0$ is rejected if the p-value is < 0.05. The table 4.4 shows the result of the normality test.

**Table 8 Normality Test of Gain Score**

| Group | Shapiro-Wilk | | |
|---|---|---|---|
| | Statistic | Df | Sig |
| Gain Male | .956 | 30 | .251 |
| Gain Female | .981 | 30 | .853 |

According to the data above, it is shown that normalized gain for male group and female group are normally distributed, it proved from the significant of experimental of male group was 0.251 > 0.05 and the significant of experimental of female group was 0.853 > 0.05. Since the data of gain was normally distributed, t-test was conducted.

**Homogeneity Test**

To see the homogeneity of population variances, homogeneity test was done. The result of the homogeneity test can be seen on the table.

**Table 9 Homogeneity Test of Gain Score**

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| .406 | 1 | 58 | .527 |

According to the data above, the significant value is 0.527 > α (0.05), so it means that the population variances are homogenous.

**Independent Sample Test of the normalized gain**

Since the normalized gain population was normally distributed, t-test was used for the normalized gain means difference test.

**Table 10 The Result of Independent Sample T-Test of Normalized Gain**

| | Levene's Test | | T-Test | | |
|---|---|---|---|---|---|
| | F | Sig. | T | Df | Sig. (2-tailed) |
| Equal variances Assumed | .406 | .527 | -3.620 | 58 | .001 |

Based on the table the result of t-test showed that the sig (2-tailed) was 0.001 < 0.05. It meant Ho was rejected and Ha was accepted. Thus, there was a significance difference in the students' reading comprehension improvement after being taught using Flipped Classroom through WhatsApp, between female and male students.

**Students' Response**

The additional data required for the present study were collected through administering questionnaire to the respondent in order to know their response toward Flipped Classroom through Whatsapp. The results are explained in table 4.8.

**Table 11 Students' Response Towards Flipped Classroom Through WhatsApp**

| Subject | Strong-ly Agree | | Agree | | Slight-ly Agree | | Dis-Agree | | Total Score | % | Criteria of Response |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Statement | + | - | + | - | + | - | + | - | | | |
| 1 | 1 | 0 | 6 | 1 | 0 | 1 | 0 | 0 | 27 | 75.00 | Moderate |
| 2 | 4 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 31 | 86.11 | Positive |
| 3 | 3 | 0 | 4 | 0 | 0 | 1 | 0 | 1 | 31 | 86.11 | Positive |
| 4 | 0 | 1 | 5 | 0 | 0 | 1 | 2 | 0 | 21 | 58.33 | Moderate |
| 5 | 3 | 0 | 4 | 0 | 0 | 1 | 0 | 1 | 31 | 86.11 | Positive |
| 6 | 3 | 0 | 3 | 0 | 1 | 1 | 0 | 1 | 30 | 83.33 | Positive |
| 7 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 2 | 32 | 88.89 | Positive |
| 8 | 1 | 0 | 3 | 0 | 2 | 0 | 1 | 2 | 26 | 72.22 | Moderate |
| 9 | 1 | 2 | 3 | 0 | 0 | 0 | 3 | 0 | 18 | 50.00 | Negative |
| 10 | 3 | 0 | 4 | 0 | 0 | 1 | 0 | 1 | 31 | 86.11 | Positive |
| 11 | 2 | 0 | 4 | 0 | 0 | 0 | 1 | 2 | 29 | 80.56 | Positive |
| 12 | 2 | 0 | 5 | 0 | 0 | 2 | 0 | 0 | 29 | 80.56 | Positive |
| 13 | 2 | 0 | 4 | 0 | 0 | 2 | 1 | 0 | 27 | 75.00 | Moderate |
| 14 | 0 | 1 | 4 | 0 | 0 | 1 | 3 | 0 | 19 | 52.78 | Negative |
| 15 | 4 | 0 | 3 | 0 | 0 | 1 | 0 | 1 | 32 | 88.89 | Positive |
| 16 | 3 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 30 | 83.33 | Positive |
| 17 | 2 | 0 | 1 | 0 | 2 | 1 | 2 | 0 | 20 | 55.56 | Moderate |
| 18 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 2 | 27 | 75.00 | Moderate |
| 19 | 2 | 0 | 3 | 0 | 2 | 0 | 0 | 2 | 29 | 80.56 | Positive |
| 20 | 3 | 0 | 3 | 0 | 0 | 1 | 1 | 1 | 29 | 80.56 | Positive |
| 21 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 2 | 30 | 83.33 | Positive |
| 22 | 3 | 0 | 4 | 0 | 0 | 1 | 0 | 1 | 31 | 86.11 | Positive |
| 23 | 2 | 0 | 3 | 1 | 2 | 0 | 0 | 1 | 27 | 75.00 | Moderate |
| 24 | 2 | 0 | 4 | 0 | 0 | 0 | 1 | 2 | 29 | 80.56 | Positive |
| 25 | 3 | 0 | 3 | 1 | 1 | 0 | 0 | 1 | 29 | 80.56 | Positive |
| 26 | 1 | 0 | 5 | 0 | 1 | 0 | 0 | 2 | 29 | 80.56 | Positive |
| 27 | 1 | 1 | 3 | 1 | 1 | 0 | 2 | 0 | 20 | 55.56 | Moderate |
| 28 | 4 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 29 | 80.56 | Positive |
| 29 | 2 | 0 | 3 | 0 | 2 | 0 | 0 | 2 | 29 | 80.56 | Positive |
| 30 | 1 | 1 | 0 | 1 | 4 | 0 | 2 | 0 | 17 | 47.22 | Negative |
| 31 | 2 | 0 | 3 | 0 | 1 | 2 | 1 | 0 | 26 | 72.22 | Moderate |
| 32 | 3 | 0 | 2 | 0 | 2 | 1 | 0 | 1 | 29 | 80.56 | Positive |
| 33 | 5 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 31 | 86.11 | Positive |
| 34 | 1 | 0 | 5 | 0 | 1 | 2 | 0 | 0 | 27 | 75.00 | Moderate |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 35 | 2 | 0 | 5 | 1 | 0 | 1 | 0 | 0 | 28 | 77.78 | Positive |
| 36 | 5 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 33 | 91.67 | Positive |
| 37 | 2 | 0 | 2 | 1 | 3 | 0 | 0 | 1 | 26 | 72.22 | Moderate |
| 38 | 3 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 26 | 72.22 | Moderate |
| 39 | 4 | 0 | 3 | 0 | 0 | 1 | 0 | 1 | 32 | 88.89 | Positive |
| 40 | 6 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 33 | 91.67 | Positive |
| 41 | 3 | 0 | 3 | 0 | 1 | 1 | 0 | 1 | 30 | 83.33 | Positive |
| 42 | 2 | 0 | 4 | 0 | 1 | 2 | 0 | 0 | 28 | 77.78 | Positive |
| 43 | 4 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 30 | 83.33 | Positive |
| 44 | 0 | 0 | 4 | 1 | 1 | 1 | 2 | 0 | 21 | 58.33 | Moderate |
| 45 | 6 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 32 | 88.89 | Positive |
| 46 | 2 | 0 | 4 | 2 | 1 | 0 | 0 | 0 | 26 | 72.22 | Moderate |
| 47 | 1 | 0 | 4 | 0 | 2 | 1 | 0 | 1 | 27 | 75.00 | Moderate |
| 48 | 5 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 30 | 83.33 | Positive |
| 49 | 5 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 32 | 88.89 | Positive |
| 50 | 1 | 0 | 2 | 0 | 4 | 0 | 0 | 2 | 26 | 72.22 | Moderate |
| 51 | 4 | 0 | 2 | 0 | 1 | 0 | 0 | 2 | 32 | 88.89 | Positive |
| 52 | 4 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 31 | 86.11 | Positive |
| 53 | 2 | 0 | 4 | 0 | 1 | 1 | 0 | 2 | 33 | 91.67 | Positive |
| 54 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 2 | 28 | 77.78 | Positive |
| 55 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 26 | 72.22 | Moderate |
| 56 | 0 | 2 | 4 | 0 | 2 | 0 | 1 | 0 | 19 | 52.78 | Negative |
| 57 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 27 | 75.00 | Moderate |
| 58 | 3 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 30 | 83.33 | Positive |
| 59 | 2 | 0 | 4 | 0 | 1 | 0 | 0 | 2 | 30 | 83.33 | Positive |
| 60 | 4 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 31 | 86.11 | Positive |

**Table 12 Percentage of Students' Response**

| Criteria of Response | Percentage of Students' Response |
|---|---|
| Positive | 63.33 |
| Moderate | 30.00 |
| Negative | 6.67 |

Overall 93.33% having positive response toward Flipped classroom through WhatsApp and 6.67% responded negatively.

**Discussion of the Research Finding**

The result of the data from Table 4 there was significant difference on the students' reading comprehension using Flipped Classroom through WhatsApp in female and male students. From the result of the normalized gain, we can see that the male group got 0.4280 and the female group got 0.5613. So, it can be said that students who were taught using Flipped Classroom through WhatsApp in female achieved higher than the students that were taught using Flipped Classroom through WhatsApp in male.

According to the researcher's experience in the field, the students' that were taught using Flipped Classroom through WhatsApp found more experience in using WhatsApp in how to send assignment, they also experienced a new method in studying their materials that were

post in WhatsApp. On the other hand, students who use WhatsApp sometimes found difficulty because to some of them, WhatsApp is a new platform in teaching and learning process. However, almost all the students said that WhatsApp helped them to know new platform that helped them to understand easier on the lesson, for example the researcher gave the reading text to facilitate their learning. The researcher often helped the students when they were asking on how-to send their assignment through WhatsApp.

## Conclusion

As a conclusion, the female students' reading achievement is higher than the male students. The female is more active and excited during the learning process compared to the male students.

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