THE USE OF SMARTPHONE IN DEVELOPING STUDENTS' READING COMPREHENSION FROM PERSPECTIVE OF GENDER DIFFERENCES

Mohamad Ibrahim Baliu
KarmilaMachmud
UniversitasNegeriGorontalo
Jl. Sudirman No.6 Kota Gorontalo
karmila.machmud@ung.ac.id
karmila36@gmail.com

Abstract

This study aims to know if there is a difference of students' reading comprehension between students taught with and without Smartphone, to investigate deeply if there also an interaction between using Smartphone toward students' reading comprehension, to find out the difference of students' reading comprehension between male students who use Smartphone and do not use Smartphone, to dig up any difference of students' reading comprehension between female students who use Smartphone and do not use Smartphone. This study is an experimental study which conducted on the seventh-grade students of SMP Negeri 1 Batudaa focused on two classes. One class as the treatment class consists of 20 students and one class as the control class consists of 20 students. They were selected by purposive sampling. The method used in this research was experimental method, and the data was collected by using test. The design used in this research is factorial design 2 x2 by using ANAVA.The result of this study has shown: (1) The students' reading comprehension that have been taught by using Smartphone is better than students' reading comprehension which taught without using Smartphone; (2) there is an interaction between using Smartphone toward students' reading comprehension; (3) there is a difference of students' reading comprehension between male students who use Smartphone and do not use Smartphone; (4) there is a difference of students' reading comprehension between female students who use Smartphone and do not use Smartphone. The applying the suitable model of teaching gave the significant influence towards students' reading comprehension.

Key words: *Smartphone, Reading Comprehension, and Gender Differences*

A. INTRODUCTION

Smartphone is becoming a major trend in the Indonesia right now. Since it is launched in 2012, Smartphone becomes the most new product with significant impact. It has impacted almost all of human life. The prominent areas, it impacts include in business, education, health and social life..

The application of Smartphone can be Android, Apple iOS, Windows Phone, and Blackberry OS. The operating systems that can be found on Smartphone allow user to run software, commonly known as apps usually in English that deliver highly usable and tightly focused functionality. In some cases apps comes pre-installed on Smartphone, though many others are freely and cheaply available: over 425,000 different apps are available for the iPhone in 2011. This means devices become highly customized personalized platforms for communication, organization, information production and content management (Woodcock, Andrew and Anne, 2011).

In education, learning by using Smartphone has led to the evolution of new paradigm known as mobile learning (m-learning). It has a potential of improving the teaching and learning processes as the tools are cheap compared to other ICTs which can be used for teaching and learning. M-learning or mobile learning is realized with mobile devices and wireless communication. Hence, Cuing and Wang (2008) stated that Smartphone use to store and retrieve information such as e-books, instructional materials, reviewing students' marks thus making teaching and learning practices more effective.

Beside that Smartphone can use to access some other online English learning resources via mobile phones and they can also take online tests. Related to reading and gender, Smartphonesare used by both of male and female students for digital reading, for example like reading e-book, e-news, online reading text or online comic.

According to Buck, McInnis and Randolph (2013), the 21st Century students are not limited to the knowledge of life, even in the classroom setting, where there are now various forms of technology. The face of the contemporary classroom is ever-changing. Innovations in technology are influencing how students' access, learn, retain, and apply information. The use of smartphone among the students especially in junior high school level, require an attention and control not only from the teacher but also from the parents. Since phones may be used for texting, web surfing, emailing, downloading and listening to music, playing games, and engaging in social networking; students should have clear and concise directions on how to use smartphones for educational purposes. Smartphones must be used

to reinforce learning spirit for students and as an instructional aide for students inside and outside of the classroom.

In teaching English, teaching reading must be done by the teacher creatively. Reading is referred to the four language skills for English as a Foreign Language (EFL). It is a skill to get meaning from a reading text and interpret the information. It means that when someone read reading text, he or she is hoped can derive the meaning of the text. Moreover, Nunan (2003, p. 68) "Reading is fluent of process combining information from a text from their own background knowledge to build meaning. On the other words, it can be stated that teaching reading in the classroom requires the students understanding of the text. The students must master the content of reading text in order to get the meaning, either explicit meaning or explicit meaning.

The ability of the students to answer the question based on the text is very important in reading activity. According to Klingner (2007, p.8) Reading comprehension involves much more than readers' responses to text. Reading comprehension is a multicomponent, highly complex process that involves many interactions between readers and what they bring to the text (previous knowledge, strategy use) as well as variables related to the text itself (interest in text, understanding of text types).

On the other hand, Wolley (2011, p.15) stated that Reading comprehension is the process of making meaning from text. The goal, therefore, is to gain an overall understanding of what is described in the text rather than to obtain meaning from isolated words or sentences. In line with Wolley's opinion, Grape and Stoller (2002, p.17) defined that reading comprehension is the ability to understand information in a text and interpret it appropriately.

Teaching by using Smartphone is termed as mobile learning (m-learning). Guy (2009, p.2) defines that mobile learning as electronic learning (e-learning) through mobile computational devices. It should be focused on mobility and restricted to learning on devices. Therefore Keegan (as cited in Guy 2009, p.3) explained that mobile learning as the provision of education and training on PDAs / handheld, Smartphone and mobile phones. Smartphone have a potential of improving the teaching and learning processes as the tools are cheap compared to other ICTs which can be used for teaching and learning. According to Huang et al

(2010), mobile learning applications can facilitate students not only learning contents conveniently but also interacting with others collaboratively anytime and anywhere. Hence, the development of m-learning as a new strategy for education has implications for the way students and tutors in educational institutions interact.

According to Buchegger (2010, p.35) the procedures of using Smartphone in the classroom as follow:

1. Students should find out which applications are available for their own mobile
2. Make sure how useful they might be.
3. Student should then install the application
4. Try out appropriate apps whether can be used or not

In conducting this research, we followed some steps to apply Smartphone in the classroom. The steps are modification from the steps or procedure by Buchegger, they are:

1. Check the students' Smartphone and their android version
2. Inform the application that will be used in learning
3. Ask the students to download or install the application in play store or app store
4. Make sure the application can be used or not
5. Give the students' task
6. Explain the students' task

To tofacilitate students' comprehension in class requires teachers' competence in teaching. The teacher should build students' competence include competence to answer the questions that given by teacher. Teacher can use media which available with the students in order to understand the meaning of the text and can respond the questions related to the text. In modern era nowadays, the media of technology like Smartphone can be used in teaching English especially in reading activity.

B. RESEARCH METHODS

The method which is used in this research is experimental research.The objective of this research is to know the effect of Smartphone towards students' reading comprehension. This research aims to investigate the effect of using

Smartphone toward students' reading comprehension from gender differences, so the design of the research use 2 x 2 factorial design, students with Smartphone as A1, students without Smartphone as A2, male students as B1 and female students as B2.

C. RESULT AND DISCUSSION

The goal of this chapter is to present the finding, discussion, and the limitation of the research. The data in this research is collected by using written test. The data that found during doing the research is illustrated in the following subheadings.

Test Data Analysis of Requirements.

As we has explained in chapter III that the data analysis in this research by using ANAVA two ways. It is used as the requirement to analyze the normality and homogeneity test. To make it clear, the description of the data can be seen below.

Normality data test.

Normality data was carried through Liliefors test with $\alpha=0.05$. The criterion of test is rejected the null hypothesis (normal distribution) if Lo is obtained from observational data greater than L_{tabel}, on the other words, the null hypothesis is accepted.

The normality data of this research is conducted for eight groups of data as follows:

a) The data of students' reading comprehension for group taught by using Smartphone.
b) The data of students' reading comprehension for group taught without using Smartphone.
c) The data of students' reading comprehension for group of male students
d) The data of students' reading comprehension for group of female students
e) The data of male students' reading comprehension taught by using Smartphone.
f) The data of male students' reading comprehension taught without using Smartphone
g) Data of female students' reading comprehension taught by using Smartphone

h) Data of female students' reading comprehension taught without using smartphone.

Table of t*he summary of normality data results in reading comprehension for the eighth groups of data*

Group	G	Lo	L list	Conclusion
A1	20	0,0827	0,190	Normal
A2	20	0,1485	0,190	Normal
B1	20	0,081	0,190	Normal
B2	20	0,1264	0,190	Normal
A1B1	10	0,1325	0,258	Normal
A1B2	10	0,1324	0,258	Normal
A2B1	10	0,1064	0,258	Normal
A2B2	10	0,1554	0,258	Normal

Homogeneity data test.

Homogeneity test of the data in this research was done for two groups' treatment and four group treatments. Homogeneity test for two groups' treatment doing to; (a) both of groups students which taught by using Smartphone (A1) and groups of students which taught without using Smartphone (A2); (b) male students (B1) and female students (B2), whereas homogeneity test for four group treatment doing to; (a) male students which taught using Smartphone (A1B1); (b) male students which taught without using Smartphone (A2B1); (c) female students which taught using Smartphone (A1B2); (d) female students which taught without using Smartphone (A2B2).

The homogeneity data of four groups' treatment.

The testing of this research is conducted by using Bartlett test, the homogeneity of the four treatment groups (4 groups of data) which starts from the calculation of standard deviation of each group as the table below:

Table2

The standard deviation ofthe reading comprehension for four treatments groups.

Group	db (n-1)	1/db	Average	Stand. Deviation	Variance ($Si^{2)}$	Log variance (Si^2)	$Db.Si^2$	$Db.log(Si^2)$
A1B1	9	0.1111	15,7	1,767	3.12	0.49	28.10	4.45
A2B1	9	0.1111	11,2	1,932	3.73	0.57	33.60	5.15
A1B2	9	0.1111	12,6	2,221	4.93	0.69	44.40	6.24
A2B2	9	0.1111	10,7	1,767	3.12	0.49	28.10	4.45
Total	36						134.2	20.29

Based on the table above, it could be explained that the average of male students' reading comprehension taught by using Smartphone (A1B1) is 15.7, standard deviation is 1.767, and variance is 3,12. The average of male students' reading comprehension taught without using Smartphone (A2B1) is 11,2, standard deviation is 1,932, and variance is 3,73. The average of female students' reading comprehension is taught by using Smartphone (A1B2) is 12.6, standard deviation is 2,221, and variance is 4,93. Whereas, the average of female students' reading comprehension taught using Smartphone (A2B2) is 10.7, standard deviation is 1.767, and variance is 3.12.

Based on the data above, then the calculations show that with dk = 36 and alpha = 0.05, It is obtained $\chi^2 = 0.656$. In which $\chi 2_{count} < \chi^2_{table}$ or 0.656< 7.815, thus, it can be concluded that the data variance is homogeneous.

The homogeneity of two treatments groups of data.

Table 2 Standard deviation of the data reading results for two treatments groups.

Calculation	**Data A1**	**Data A2**	**Data B1**	**Data B2**
Total	283	219	269	233
dk = (n-1)	19	19	19	19
1/dk	0.1111	0.1111	0.1111	0.1111
Average	14.15	10.95	13.45	11.65
Stand. Deviation = (s)	2.5189	1.8202	2.9285	2.1831
Variance = (Si)	6.3447	3.3132	8.5763	4.7658
Fcount	1.915		1.8	
Ftable	2.15		2.15	
Conclusion	**Homogen**		**Homogen**	

Based on the table above, it could be explained that the average of students' reading comprehension is taught by using Smartphone (AI) is 14. 15, standard deviation is 2. 5189, and variance is 6. 3447. The average of students' reading comprehension taught without using Smartphone (A2) is 10.95, standard deviation 1. 8202, and variance is 3.3132. The criteria of testing is Ho is received if $F_{count} < F_{table}$. Thereby, F_{count} = 1.915 andF_{table}= 2.15. It means that Ho is received and the data has homogeneous variances**.** Whereas, the average of male students reading comprehension (B1) is 13.45, standard deviation is 2.928 and variance is 8.5763, and the average of female students reading comprehension (B2) is 11.65 with standard deviation is 2. 1831 and variance is 4.7658. The criteria of testing is Ho is received if $F_{count} < F_{table}$. Thereby Fcount = 1.8 and F_{table}= 2.15. It means that Ho is received and the data has homogeneous svariances.

The Results of Hypothesis Testing

The hypothesis in this research uses variance in two lines (ANOVA 2 X 2). The analyses of variance are two lines are the main effects and interaction effects. The main effect means as the effect of the using of Smartphone on reading comprehension. The interaction effect means as the interaction of the using of Smartphone on reading comprehension.

The results of the calculation of these two lines ANOVA briefly could be seen in the following table:

Table 3*The Summary of Calculation of ANOVA2x2.*

Source of variance	JK	Db	RJK	F_{count}	F_{tabel} (α=0.05)
Kolom (A)	102.4	1	102.4	27.4694	4.11
Baris (B)	32.4	1	32.4	8.6915	
Interaksi (B K)	16.9	1	16.9	4.5335	
Dalam (d)	134.20	36	3.7278	-	-
Total (T)	285.9	39	7.3308	-	-

Based on the summary of calculation of ANOVA 2 x 2 lines above, it could be explained as follows:

First hypothesis: In the ANOVA table, it is obtaine dF_{count}= 27. 46 >F_{table}on α = 0.05 = 4.11, thus, the hypothesis 0 (H0) is rejected, it means that there were significant differences in English reading comprehensions on students

who are taught by using Smartphone and students who are taught without using Smartphone . In this case, the ability of students in understanding English text who are taught by using Smartphone is higher than students who are taught without using Smartphone.

Second hypothesis: In the ANOVA table, it is obtained F_{count} = 4. 5335>$F_{table}\alpha$ 0.05 = 4.11, thus, the hypothesis 0 (H0) is rejected; It means that there were interactions between using Smartphone toward students reading comprehension.

Based on the results of ANOVA testing above, It shows that the presence of a significant interaction between the use of Smartphone toward students reading comprehension. So, declaring differences interaction effect between the uses of Smartphone toward students reading comprehension, we conducted follow-up testing with Tuckey test.

To determine the significance of interaction between variable of research, then, we uses Tuckey test calculation. Tuckey test shows the difference in reading comprehension between:

1. The group of male students that is taught by using Smartphone and male students that is taught without using Smartphone.
2. The group of female students that is taught by using Smartphone and female students that is taught without using Smartphone.

The results of test calculations by Tuckey's test for the comparison groups are presented in the following table.

Table 4 *Summary of Tuckey test results*

No.	Groups	Q_h	$Q_{t(0.05)}$	Conclusion
1	A1B1 with A2B1	7.37	2.95	Very significant
2	A1B2 with A2B2	3.11	2.95	Significant

From the results of Tuckey test above, then it could be concluded as follows:

Third hypothesis; Q_{count}= 7.37 is bigger than Q_{table}= 2.95. It means thatH0is rejected. Thus, the hypothesis states that male students' reading comprehension by using Smartphone is higher than male students who are taught without using Smartphone.

Fourth hypothesis; Q_{count}= 3.11 is bigger than Q_{table}. It means that H0 is rejected. Thus, the hypothesis states that female students' reading comprehension

by using Smartphone is higher than female students who are taught without using Smartphone.

D. DISCUSSION

In the process of teaching by using Smartphone, teachers direct the students to join the group to discuss their problems in reading. Every student tried to understand the information from the passage and they search the difficult word or the meaning of the word that they didn't understand in their Smartphone. The application of this technique made students will not feel bored because most of students are more interested in learning.

Based on the interpretation of the first hypothesis, it showed that there were differences between students' reading comprehension that have been taught by using Smartphone and students' reading comprehension which taught without using Smartphone. It means that students' reading comprehension that have been taught by using Smartphone is better than students' reading comprehension which taught without using Smartphone, where F_{count}= 27. 469>F_{tablel}= 4.11. Therefore this hypothesis is received significantly. This result is reinforced from previous studies conducted by Claudius Bona in her research "The Use of Smartphone to Develop English Skills" where in his research it showed that using Smartphone leads to the development of English skills. Additionally, according to Huang *et al* (2010, p.1), mobile learning applications can facilitate students not only learning contents conveniently but also interacting with others collaboratively anytime and anywhere.

Interpretation of the second hypothesis showed that there is an interaction between techniques that used in teaching with the students' achievement. Based on the calculation using F test, we find out that the students' reading comprehension is influenced teaching techniques. it proves thatF_{Count}= 4.53 >$F_{table}$to α = 0.05 = 4.11 and then based on the figure 9 the interaction between teaching technique toward students reading comprehension, it can be seen the average of students reading comprehension in which students' reading comprehension who are taught by using Smartphone the score is15.70comparedwith students taught without using Smartphone the score is11.20. It can be conclude that the suitable technique in teaching will be effective on students' achievement. Henderson &Yeow (as cited in Blackwell, 2014,p. 3)

defines that mobile technologies are highly motivating and more engaging than traditional classroom tools. Mobile technology offers ubiquitous wireless technology for learners and educators and provides instructional materials and interaction among educators and learners wherever they are and foster individualized learning. Beside that Mobile learning also enables communication in the learning community

For the third hypothesis, from the test result showed that Q_{count} = 7.37and Q_{tabel} = 2.95 for α = 0.05. It means that Q_{count} = 7.37>Q_{tabel} = 2.95. In the other words the male students 'reading comprehension with using Smartphone is higher than male students' reading comprehension without using Smartphone. So, there is a difference of male students' reading comprehension who are taught by using Smartphone and male students' reading comprehension who are taught without using Smartphone. This is reinforced by Gömleksiz (as cited in Huang 2013,p. 97) defines that males considered learning science and technology more necessary and important. Male students are more active in exploration and learning new applications. They found firstly the application that asked by the teacher during teaching and learning process. Beside that male students discover the basic functions of the phone faster.

Concerning for the last hypothesis, the result of test show that Q_{count} = 3.11and Qtabel = 2.95 for α = 0.05, it means that Q_{count} = 3.11>Q_{tabel} = 2.95. Therefore, there is a difference between female students' reading comprehension who are taught by using Smartphone and female students' reading comprehension who are taught without using Smartphone in which the female students' reading comprehension who are taught by using Smartphone higher than female students' reading comprehension who are taught without using Smartphone. Meelissen and Drent, (as cited in Huang 2013,p. 98) stated that females' attitudes toward computers were less positive. During the process of learning they more focused on their task and activities using their Smartphone.

E. CONCLUSION

To make easy in teaching and learning process the teacher must choose the appropriate technique in order that students interest to study and learning objective achieved. In this research had been used Smartphone as a media in teaching English to help the students in learning. After applied as a media of

course Smartphone had a positive impact in teaching and learning process especially in teaching reading.

Based on the result of the data analysis in research finding, it was found that Smartphone give an effect for the students' achievement. The data showed that there is a difference of students reading comprehension who are taught by using Smartphone and students who are taught without using Smartphone. The average of the students who are taught by using Smartphone is 14. 1, while the average of the students who are taught without using Smartphone is 11. 9.

In teaching reading by using Smartphone, the teacher plays a role as a facilitator and the students as actors. The teacher only explain the rule play of activity that doing in the class then students do the activity based on the rule that has explained by the teacher. The students are very enthusiastic to learn because the media is familiar with them so the learning more fun.

Referring to the results and finding of this research that there is a difference between teaching reading by using Smartphone and teaching reading without using Smartphone. In this case, students' reading comprehension taught by using Smartphone is better than without using Smartphone. On the other word, teaching by using Smartphone could improve the students' achievement especially in reading. Therefore, we suggested for the teacher as follows:

1. Teaching using Smartphone could be used as alternative teaching techniques in teaching English because it can provide good learning outcomes.
2. Teachers should know that Smartphone application has beneficial to educator. It can help educator to organize course materials, grade assignment and better to interact with the students.
3. The other researcher can do the similar research, but in different object research.
4. For the students to use the Smartphone not only for communication media but also as a learning media.

To sum up, the use of smartphone in teaching reading is significantly benefits the students, both genders, in developing their reading comprehension.

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