Available online at www.ejal.info
http://dx.doi.org/10.32601/ejal.911505
Eurasian Journal of Applied Linguistics, 7(2) (2021) 58-72

EJAL
Eurasian Journal of Applied Linguistics

The Effect of Tablet Use on EFL Reading Achievement

Nurcan Kose[a], Ulas Kayapinar[b*], Sarp Erkir[c]

[a,b,c] *American University of the Middle East, Kuwait*

Received 10 February 2021 | Received in revised form 10 August 2021 | Accepted 20 October 2021

APA Citation:
Kose, N; Kayapinar, U; Erkir, S. (2021). The Effect of Tablet Use on EFL Reading Achievement. *Eurasian Journal of Applied Linguistics, 7*(2), 58-72.
Doi: http://dx.doi.org/10.32601/ejal.911505

Abstract
There is little information to prove the effectiveness of tablet use concerning the acquisition of language skills, especially reading skills. This article answers some research questions with a specific focus on the mastery of reading comprehension. A control group design with the help of an experimental pretest-posttest design was used at a private university. The data were collected from the test, an attitude scale, and interview results. Pre- and post-test scores of the groups were analyzed to find out a possible significant difference. Also, the instructors responded to an attitude scale. Moreover, the experimental group instructor answered interview questions. The experimental group students responded to a Likert-type questionnaire and put their views on tablet use. The results showed no significant difference between the scores of the students in both groups. These results were cross-checked. The experimental group instructor had a negative attitude toward tablet use in teaching at the end of the process when the total score was compared to the one before the process. In the interview, the instructor emphasized some advantages and disadvantages of tablet use in teaching EFL reading. The students' responses indicate a noticeable increase in independent study, motivation, and participation in the classroom; however, the total scores still seem limited at the end of the process. The results indicate that tablets can be used as an educational tool when there is a need in distance learning.

Keywords: Effect, EFL, reading, success, tablet

1. Introduction

The advancements in information and communication technologies influenced English language teaching over the past 30 years. The early stages of technology integration "was limited to rudimentary word processing and gap-filling exercises" (Dudeney & Hockly, 2012). The development in hardware and software evolved our perception of technology and its application in the classroom drastically. Of the prominent names who studied the phases of this evolution, Bax (2003) talks about the notion of "normalization," a Computer Assisted Language Learning stage. Both language learners and teachers use computers as educational tools on a daily basis. Having reached the stage of normalization as anticipated by Bax, there is an emerging need to reflect on the effect of specific technologies on different language skills.

Research in second and foreign language learning has provided ample evidence showing the transformative impact of the use of digital technologies in assisting students' language learning. A good part of this research has been focused on mobile learning. Mobile learning is defined as learning that is supported or delivered by a handheld or mobile device (Traxler, 2009). Evidently,

* Corresponding Author.
E-mail address: ulas.kayapinar@aum.edu.kw

the rapid development of mobile technologies continues to define new ways of teaching and learning. The positive impact of mobile technologies on teaching and learning has been a focal point of attention of the researchers (Ally, 2009; Traxler, 2011).

The primary focus of interest for researchers have predominantly been on the affordances that mobile learning has brought forward such as flexibility, accessibility, interactivity, and motivation and engagement (Liu, Navarrete, & Wivagg, 2014). Mobile devices promote flexible learning in and out of the classroom where the learner is not confined to a computer (Brand & Kinash, 2010). Besides, with additional unique affordances, a Tablet PC is also more than a notebook computer as it combines the flexibility of a standard notebook computer with a stylus that allows ease of input by writing, annotating or drawing on the screen (Tront, Eligeti, & Prey, 2006).

Another area that the educational researchers seem to have paid considerable attention is the motivational impact of technology adoption for language learning. Researchers like Stockwell and Hubbard (2013); Ushioda (2013) studied how learners are engaged with technology and how it facilitates language learning. Similarly, researchers like Habel and Stubbs (2014); Zweekhorst and Maas (2015) point to the potential for greater student engagement in classroom settings with studies showing that asking students to use their mobile devices for class-related activities can make lectures more interactive, which in turn increased students' overall engagement. As the rapid development of mobile technologies provide educators with a multitude of possibilities of using mobile devices such as tablets in the classroom, it is important to examine how the emerging tools and technologies influence the learning process. When so much attention is paid to these affordances, and the accompanying motivational factors, investigation of the effectives of using mobile devices such as tablets on student reading success in the classroom remains to be an uncharted territory for the educational community. A closer analysis of the body of existing research shows that flexibility, accessibility, interactivity, motivation and engagement aspects of mobile learning has taken precedence over an investigation of the effectiveness of these technologies.

With today's computer technology, data transfer from paper to an electronic environment has become very easy. This easiness resulted in more technology use because it was easier to reach information and make changes to this information. Due to this technology, in the near past, a range of text forms (e.g., e-books and tweets) and channels for text presentations (e.g., iPad, Kindle) have come up and demanded readers to change their ways of reading (Alexander & Fox, 2004). Aspects of digital literacy, such as navigating through and making meaning out of graphical layouts and voyaging in the nonlinear digital space medium successfully, challenged readers (Eshet, 2004). This digitalization has played a significant role in reshaping the media sphere and redefining present-day culture and society in reading comprehension. With the effect of this digitalization, humanity tends to shift from paperbound reading to screen-based reading. Adopting this screen-based trend has become even easier for digital natives (Bennett, Maton, & Kervin, 2008; Prensky, 2001).

Many studies have been done on the impact of different features of digitalized reading. Many studies have tackled the relationship between screen-based reading and paperbound reading in terms of time, ergonomics, affordances, performance, or comprehension (Chen, Cheng, Chang, Zheng, & Huang, 2014; Connell, Bayliss, & Farmer, 2012; Dündar & Akçayır, 2012; Farinosi, Lim, & Roll, 2016; Fortunati & Vincent, 2014; Levine, Ferenz, & Reves, 2000; Mangen, Walgermo, & Brønnick, 2013; Taipale, 2014, 2015). Studies have shifted from paperbound to screen-based reading. However, this shift does not always result in the positive. Some of these studies state that material presented on screens slows down the reading process (Creed, Dennis, & Newstead, 1987; Gould & Grischkowsky, 1984; Heppner, Anderson, Farstrup, & Weiderman, 1985; Muter, Latrémouille, Treurniet, & Beam, 1982; Wilkinson* & Robinshaw, 1987). As Noyes and Garland (2003) stated, Dillon declares the difference between speeds to be 20-30% in his authentic text on this issue. Readers who are using the screen to read are reading more slowly.

Reading time is not the only concern in studies conducted on the shift from paperbound to screen-based reading. Another variable is the level of comprehension. To check their comprehension, participants are asked questions about the content. The degree of understanding is figured out based on the correct answers given by the participants. The very early studies conducted on this topic revealed that there is not much discrepancy between comprehension levels for screen and hardcopy texts (Cushman, 1986; Muter et al., 1982; Muter & Maurutto, 1991; Oborne & Holton, 1988). Chen et al. (2014) investigated reading comprehension effects across paper, tablets, and computers. He claims that whether the user is familiar with the device or not

is a potential factor that affects reading on digital devices. Reading comprehension in the study was tested by two reading comprehension type questions: shallow level and deep level comprehension. The result showed that the higher the tablet's familiarity, the better the readers' deep comprehension level. It is not only related to familiarity. Many studies in the literature suggest that being trained on using the technology will make a massive difference in how students use the offered aspects (Johnston, Berg, Pillon, & Williams, 2015; Marston, Thrasher, & Ciampa, 2014; Sun, Flores, & Tanguma, 2012).

Connell et al. (2012) in their study about text presentation format, argued that university students read printed material faster than the material on tablets. However, when it comes to reading comprehension, there was no text presentation effect. Similarly, Dündar and Akçayır (2012), who conducted a study with 20 fifth-grade students, compared tablet PCs and printed material in terms of text reading performance, reading speed, and reading comprehension. The study resulted in no significant difference between reading speed and reading comprehension. On the other hand, a study conducted on the effects of elaborative feedback on online second language reading comprehension shows that low proficiency readers who get elaborative feedback after their pre-tests performed better in their post-tests (Bown, 2017). This study proved that with a small amount of scaffolding, reading comprehension can be raised significantly. Mangen et al. (2013) analyzed the impact of the technological interface on reading comprehension. Even though they did not use tablet PCs but computer screens, the study results can shed light upon this study. The results revealed that students using print material accomplish better in reading comprehension.

Reading performance from different aspects has been and will be a top issue for many years to come. Although there is an extensive literature in EFL reading comprehension, there is limited research apparently in not only EFL reading, but also reading comprehension and achievement using technology, especially tablets. The more technology develops**;** the more methods appear to reach the highest level of reading performance. Recently, tablets have become part of everyday use among students because of their practicality, portability, affordability, and interactivity. This led the way to an increasing demand of tablet use in educational settings that has grown fast in pandemic. This might pave the way to more extensive research on this matter.

The current study, in this sense, tries to prove the effectiveness of tablet use concerning achievement in reading comprehension. The objective is to reveal the potential difference in reading comprehension levels with and without tablets and discuss the attitudes of the experimental group's instructor participated in the study and the conceptions of the students who used tablets for their classes. In this respect, this study is specifically focusing on an experimental design to reveal the effect of tablet use on achievement in reading comprehension, and it is supported with the experimental group instructor's attitudes and views along with the students' views on tablet use in teaching and learning process. For this reason, the study tries to find answers to the following research questions:

1.1 Research Questions

1. Does tablet use have an impact on the attainment of reading comprehension in EFL?
1. 1. Do the experimental group students' reading comprehension scores in the pre- and post-test differ significantly?
1. 2. Do the control group students' reading comprehension scores in the pre-and post-test differ significantly?
1. 3. Do the post-reading comprehension scores of experimental and control groups differ significantly?
2. Does using tablets create an attitude change in the teaching of the instructor? If yes, how?
3. How does the experimental group instructor comment on the use of tablet in the teaching and learning process?
4. How do experimental group students view their learning with the help of tablets?

2. Methodology

2.1 Research Design

This research study used multiple methods to answer the research questions better and evaluate findings (Tashakkori & Teddlie, 2010). Hence a mixed-methods research design was preferred since alternative methods help back up, develop, and/or complement the results (John

W Creswell & Clark, 2017). A true experimental design revealed the study's quantitative data, including two groups randomly assigned from a pool of subjects. One group was randomly named the control group and the other as the experimental group (J.W. Creswell, 2012; LoBiondo-Wood, Haber, Cameron, & Singh, 2014). The design is in the following Table:

Table 1. Pretest-Posttest Control Group Design

Groups	**Pre-test**	**Process (16 Weeks)**	**Posttest**
Experimental Group (EG)	Reading Achievement Test	Educational tablet use for learning	Reading Achievement Test
Control Group (CG)		Regular classroom practice	

The dependent variable in the experimental design was specified as the students' achievement in reading comprehension, whereas the educational tablet used for reading comprehension was the independent variable. Within a period of 16 weeks, EG students used educational tablets for regular classroom practice while CG students did not have any exposure to them, as seen in Table 1. Before and after the process, the instructors responded to a scale of attitude towards tablet used in the classroom (Kayapinar, Spathopoulou, Safieddine, Nakhoul, & Kadry, 2018). Additionally, the experimental group students answered a Likert-type questionnaire (Dillman, 2007). Since the study collected qualitative data, M.Q. Patton et al. (1987) phenomenological interviewing techniques were employed to look into the instructor's views on the tablet's use in the reading classroom.

2.2 Research Sample

The participants of the study were all from a foundation program at a private university in Turkey. The classes, including the student participants of the study, were selected randomly among 13 classes. The convenience sampling method was used for convenient accessibility and ease to reach the sample (M.Q. Patton et al., 1987). All the experimental study participants were randomly assigned using reading comprehension levels obtained from the subtest of the Foundation Program's entry test. In total, 58 students in two different classes participated in the study. Twenty-eight of them were in the experimental group, and 30 of them were in the control group. The experimental group was selected randomly between these two groups. Students in this program are all at the A1 level of CEFR, as the university's proficiency exam revealed. Pre-test results also supported this outcome as it provided evidence for the equality of the groups. There was no significant difference between the groups' academic achievement in reading (Z= -.877, p= .380 > .05). The results indicated that the groups were equal.

Table 2. Number of the participants in each group

Groups	**Experimental Group**	**Control Group**	**Total**
Pre-test	28	30	58
Posttest	28	30	58

Two of 35 volunteer instructors were randomly assigned to the groups. Both had four years of experience in English teaching at the higher education level. The researchers with the help of an IT employee provided a two-hour training session on using the tablet in general and the learning management system specifically to the experimental group's instructor. No training was provided to the instructor of the control group. Next, the instructors responded to an attitude scale before and after the process. They accepted to act as volunteers. Besides, an interview in personal communication format was done with the instructor of the experimental group.

2.3 Research Instruments

A reading achievement test, including 20 items at different cognitive levels of Bloom's Taxonomy were employed for the pre-test and the post-test. The test provided four task types: skim texts to understand the gist, the main idea, and the purpose; scan texts to locate information, collect information from the text; understand how a text is organized; and make inferences. All texts were taken from sources such as course books they use, newspaper and magazine articles, and current websites. The internal consistency of the test was found .84 (α=.84).

Additionally, the instructors' attitudes towards tablet's use in teaching were measured by Kayapinar et al. (2018) Scale of Attitudes towards Tablet Use in Teaching before and after the process. This Likert-type 5-point scale had a response format such as "Strongly Agree (4)" on one end to "Strongly Disagree (0)" on the other. Three factors-teaching practices, student learning, and faculty development- were observed. The total variance of 71.848 was explained by these three factors. Cronbach's Alpha (Crα) reliability of the scale was .88 (Kayapinar et al., 2018). Phenomenological interviewing was employed for processing the qualitative data from the EG instructor. This interviewing method used questions considering contextualizing the experience, apprehending the phenomenon, and its clarification (Bevan, 2014). To reveal the students' attitudes before and after the process, a questionnaire was also employed, including 20 items on "learning practice, study needs, motivation, and participation" (Kayapinar, Erkir, & Kose, 2019).

2.4 Procedure

The researchers provided the students with tablets programmed by IT specialists. The tablets included internet access, a keyboard, office software, an English-English dictionary, an e-book pack from the publication company, a note pad, a search engine, and a learning management system. The students could also communicate synchronously and asynchronously by e-mail, forum, and instant messaging opportunities. In this way, they were able to receive immediate feedback from their peers and the instructor. The control group students were provided with hardcovers of the coursebook, the workbook and used their own notebooks. Moreover, they had to study in the campus library or use their laptops to access the learning management system and its features such as e-mailing, forum, instant messaging, quizzes, homework, supplementary materials, and messaging outside the classroom when necessary.

The EG instructor used a tablet for teaching. All class presentations and practice, quizzes and homework, notes for feedback, and announcements were installed on the tablet. The CG instructor, however, used hardcovers and worksheets. The students and the instructors responded to a questionnaire at the end of 16 weeks. The application process is presented in Table 3:

2.5 Data Analysis

To check the difference between the pretest-posttest scores of EG students and CG students, a Wilcoxon Signed-Ranks test was used. This non-parametric test was used instead of a t-test for dependent samples. The test also examined the difference between EG and CG students' post-test scores. As a non-parametric equivalent to the t-test for independent samples, a Mann-Whitney U test was employed. Also, the descriptive statistics were computed. To identify "core consistencies and meanings" in the qualitative data, content analysis was applied (M.Q. Patton et al., 1987). Computing quantitative data was done by using SPSS 23. .05 was taken as the significance level for all statistical analyses. The results of the attitude scale were also analyzed to make a comparison between the total scores of the instructors. The students' responses in the questionnaire were calculated in percentages and discussed accordingly.

For the qualitative data, the interview transcripts of the interview with the EG instructor were analyzed through "pattern recognition" to find out categories and themes (Boyatzis, 1998), and memos were written after the analysis of the transcript line-by-line (Glesne, 2016; Strauss & Corbin, 1998). Pattern codes also revealed recurring themes and core consistencies (Miles & Huberman, 1994; Michael Quinn Patton, 2002).

3. Results

The results are explained separately for each research question:

Research Question 1: Does tablet use have an impact on the attainment of reading

comprehension in EFL? The results of the analysis for each sub-question are given below:

1.1. Do the experimental group students' reading comprehension scores in the pre- and post-test differ significantly?

Table 4 illustrates the descriptive statistics for EG students' reading comprehension scores:

Table 3. The Application Process

Groups	**Pre-test**	**Process (16 Weeks)**	**Posttest**
Experimental Group	• Reading Achievement Test • Scale of Attitudes towards Tablet Use in Teaching (for the instructor) • Student Questionnaire for Tablet Use in learning	***Educational tablet use for learning*** - Screen-based reading with comment function - Online dictionary -Synchronous-Asynchronous messaging - Online practice - E-coursebook pack - LMS	• Reading Achievement Test • Scale of Attitudes towards Tablet Use in Teaching (for the instructor) • Student Questionnaire for Tablet Use in learning
Control Group	• Reading Achievement Test • Scale of Attitudes towards Tablet Use in Teaching (for the instructor)	***Regular classroom practice*** -Coursebook materials - Notebook	• Reading Achievement Test • Scale of Attitudes towards Tablet Use in Teaching (for the instructor)

Table 4. Descriptive statistics for EG students' pre-test and post-test reading comprehension scores

	N	**Mean**	**Std. Deviation**	**Minimum**	**Maximum**
Pre-test	28	11.6786	4.02423	.00	19.00
Posttest	28	15.2500	3.54916	4.00	20.00

Table 4 indicates an increase in the mean score with less deviation when compared to the pre-test results. The results of the Wilcoxon Signed-Ranks test are in Table 5:

Table 5. Results for EG students' pre-test and post-test reading comprehension scores

		N	**Mean Rank**	**Sum of Ranks**
Posttest – Pre-test	Negative Ranks	2[a]	13.44	28.50
	Positive Ranks	24[b]	14.25	322.50
	Ties	2[c]		
	Total	28		

a Posttest < Pretest
b Posttest > Pretest
c Posttest = Pretest

The negative and positive rank in Table 5 gives evidence of the comparison of EG students' pre-test and post-test scores. The table's legend shows that most students had a higher score after the process.

Table 6. EG test statistics (b)

	Post-test – Pre-test
Z	-3.743[a]
Asymp. Sig. (2-tailed)	.000

a Based on negative ranks.
b Wilcoxon Signed Ranks Test

Table 6 presents educational tablet's use in the classroom indicating a statistically significant difference in achievement scores. Accordingly, 16-week use of the tablet in the reading class created a statistically significant change in EG students' scores (Z=-3.743, *p*= .000).

1.2. Do the control group students' reading comprehension scores in the pre-and post-test differ significantly?

The descriptive statistics for CG students' reading comprehension scores are in Table 7:

Table 7. Descriptive statistics for the control group students' pre-test and post-test reading comprehension scores

	N	**Mean**	**Std. Deviation**	**Minimum**	**Maximum**
Pre-test	30	13.3000	3.57337	5.00	20.00
Posttest	30	16.1333	3.20273	7.00	20.00

Wilcoxon Signed-Rank test results reveal a possible difference between the pre-test and the post-test reading comprehension scores of CG students.

Table 8. Results for the control group students' pre-test and post-test reading comprehension scores

		N	**Mean Rank**	**Sum of Ranks**
Posttest – Pre-test	Negative Ranks	5[a]	7.90	39.50
	Positive Ranks	22[b]	15.39	338.50
	Ties	3[c]		
	Total	30		

a Round 2 < Round 1
b Round 2 > Round 1
c Round 2 = Round 1

Table 8 presents the negative and positive ranks. The data is evident of the comparison of CG students' pre-test and post-test reading comprehension scores. The table's legend shows that most CG students had a higher score after the process.

Table 9. Control group test statistics (b)

	Post-test – Pre-test
Z	-3.604[a]
Asymp. Sig. (2-tailed)	.000

a Based on negative ranks.
b Wilcoxon Signed Ranks Test

Table 9 shows a statistically significant difference in CG scores due to a regular practice in the reading comprehension class. A Wilcoxon Signed-Rank test revealed a statistically significant change in achievement scores after a 16-week practice (Z=-3.604, p= .000).

1.3. Do the post-reading comprehension scores of experimental and control groups differ significantly?

The results can be seen in the following table (Table 10):

Table 11 gives evidence that CG scores were not statistically and significantly higher than the scores of EG students, although the mean score was higher (U=308, p=.080).

The results indicate that tablet's use did not significantly affect reading comprehension in the teaching and learning process.

Research question 2: Does using tablets create an attitude change in the teaching of the instructor? If yes, how?

The following table results can describe the instructors' attitudes based on the scores of the scale before and after the teaching process.

Table 10. Posttest results for EG and CG students' reading achievement scores

		N	**Mean Rank**	**Sum of Ranks**
Posttest Exp.– Posttest Cont.	Tablet Use	28	25.50	714.00
	Regular Practice	30	33.23	997.00
	Total	58		

a Posttest Exp.< Posttest Cont.
b Posttest Exp.> Posttest Cont.
c Posttest Exp.= Posttest Cont.

The mean score and sum of ranks in the table indicate that CG students scored higher after the process.

Table 11. Posttest statistics (b)

	Posttest
Mann Whitney U	308.000
Wilcoxon	714.000
Z	-1.750
Asymp. Sig. (2-tailed)	.080

a Based on negative ranks.
b Wilcoxon Signed Ranks Test

Table 12. Instructors' attitude scale scores

	Total (100)		Subscale 1 Teaching practices		Subscale 2 Student learning		Subscale 3 Faculty development	
	S1*	S2*	S1	S2	S1	S2	S1	S2
Instructor-EG**	72	59	36	27	20	19	16	13
Instructor-CG**	75	52	35	25	24	15	16	12

** Session 1, Session 2 **EG: Experimental Group; CG: Control Group*

The results show that the EG instructor had a lower scale total than the CG instructor in the first session before the process and had a higher scale total in the second session after the process. Still, the total scores of both instructors were seen lower in the second session after the process. Considering the subscales, all the scores of the instructors went lower. This might indicate that both instructors had a positive attitude at the beginning of the process, but their attitudes toward tablet's use changed dramatically negatively during the process.

Research question 3: How does the experimental group instructor comment on the use of tablet in the teaching and learning process?

The instructor reported many benefits of tablet's use in teaching reading. First, tablets allow

better utilization of learning management systems (LMS) such as Blackboard. All materials are uploadable electronically, and all students have access to it. This proves beneficial, especially for students who are absent in the class and miss getting involved in the classroom activities. As a result, students start to use LMS daily actively. They also manage to decrease their reliance on print materials. Secondly, the instructor reported that tablets effectively incorporate different online games and applications, such as Kahoot or Quizlet. Tablets make it easier to share YouTube links with students and ask students to work on various videos. Lastly, tablets reportedly revealed a positive change in students' academic behavior, especially at the beginning of the semester. The beginning of the semester is usually a tough time when students show up with no materials. It takes time for students to tune into the new academic semester. It also takes time for them to purchase new material. Tablet makes this transition a very smooth one.

The instructor also reported some disadvantages of tablet use in teaching reading. The first disadvantage stemmed from technical issues. The use of tablets caused disruptions due to some technical issues regarding the tablets themselves. Sometimes charging the tablets took time. Downloading the e-books to the tablets was an arduous process. Students found it challenging to work on electronic books, especially if the e-books were not user-friendly. This manifested itself with some parts of the e-book when some exercises did not have type in function. In terms of classroom management, it could also prove challenging for the instructor to frequently check how students used tablets. Sometimes students were not on task, and instead, they may be playing different online games while they seemed deeply engaged in the activity. There were some non-technical concerns reported by the instructor. For example, typing can be a problem at the beginning of the semester, especially for students who may not be as familiar with typing as some other peers may. This led to some students asking the instructor for printed handouts, which they found more practical.

The instructor reported that incorporating tablets opened the door to many different classroom techniques otherwise impossible. One such technique was to get instant pronunciation feedback from the electronic coursebook, briefly, e-book. The e-book used for this study had a feature that allowed the user to highlight anything in the book and listen to its pronunciation.

Research Question 4: How do experimental group students view their learning with the help of tablets?

EG students responded to a questionnaire including 20 items with subtopics such as study needs, learning practice, motivation, and participation (Kayapinar et al., 2019). In the first session of the questionnaire, 14 % of the students tended using tablets in the daily study; at the end of the process, this went higher, and a higher number of students (42%) in the experimental group stated that they would be comfortable with using educational tablets for their study needs. This percentage may not be higher; however, tablet's use seemed to influence students' study needs. Supporting this result, while 48% agreed on the idea that tablet's use would be a challenge when studying, this percentage decreased to 11% at the end of the process. There was an increase in the percentage (47%) of students who mentioned tablet use made multitasking easier. The result of item number 4 (The courses I am studying would greatly benefit from the use of tablets) might mean that the EG students had a positive attitude on tablet use as they mentioned a great benefit from the use of tablets in their courses. Still, there was almost a 50% increase in the number of students who mentioned being uncomfortable using tablets. The students who mentioned that tablets should have been used as supplementary slightly decreased from 48% to 42%. Many students mentioned that tablets should not replace other studying tools in the first session before the process (71%), and this percentage went lower after the process (53%).

Besides, 42% mentioned that tablet use would not add a lot to their studying needs, with a slight decrease from the first session's result. Supporting the result of Item 4, the students who mentioned the courses would not benefit from tablets decreased to 32%. The percentage of Item 10 and 11, referring to developing creativity, increased from 29% to 37%. The percentage of developing as an organized student decreased from 33% to 26%. With an increase from 33%, 42% of the students mentioned that homework presentations would be done by using a tablet. The result of Item 13 (I would use a tablet for practicing the exercises in the classroom) had the highest value of percentage among others with 58%. The students mentioned that they would prefer practicing exercises by using tablets. This item also had the second-highest increase after the result of Item 1. The highest value of decrease (21%), moreover, was in Item 14. Almost 90% of

the students did not mention that tablet's use would be a distraction in their studying practice.

There was no major difference in the number of students who mentioned that a tablet would organize their study material (29%-26%). The students who said that a tablet would provide functions not possible with a textbook was 48% in the first session. In the second session, this percentage went lower to 32%. This might result from the teaching process and the applications used during the teaching and learning process, primarily because of the course books' pdf versions. It seemed that there was more interaction between the students and the instructor during the application. There was a considerable increase from 19% to 37% in the percentage of the students who mentioned tablet's use increased the interaction with the instructor in the classroom. There was also a distinct increase in the number of students who said tablet use increased classroom participation and motivation to learn. Finally, the percentage of the students who mentioned the tablets positively affected learning did not increase significantly (from 29% to 32%).

Although there is a positive increase in the percentages of most of the items in the second session, these results might indicate that the number of the students who believed tablet use would be helpful in the teaching and learning process was not higher than the ones who believed they would not.

4. Discussion

This study tried to give evidence of the effect of tablet's use in the achievement of EFL reading comprehension. A variety of results have been reached after the data were analyzed. First, descriptive statistics for the EG students' pre-test and post-test reading comprehension scores indicated an increase in the mean score with a less deviation than the pre-test results. The results indicated a statistically significant difference because of the use of tablets in classrooms. The use of tablets (for 16 weeks) in reading classes brought out a statistically significant difference in the achievement scores which was shown by a Wilcoxon signed-rank test (Z=-3.743, p= .000).

EG's achievement can be attributed to the anytime-anywhere nature of tablet use and the possibility of more practice and more time allotted to it with easy access to the material instead of the reluctance the students showed for carrying course books or hard copies of the materials they use. Moreover, practicing reading comprehension daily led the class to a statistically significant difference in achievement scores, and the Wilcoxon signed-rank test after a 16-week practice without educational tablet use in the reading comprehension class elicited a statistically significant change in achievement scores (Z=-3.604, p= .000). This might mean that students can progress similarly in EFL reading comprehension under different conditions, either with or without tablet use. Moreover, the mean score for the CG in the post-test results between EG and CG scores was higher, although the scores of the CG students were not statistically significantly higher than the scores of the EG students using educational tablets (U=308, p=.080). This suggests that it is beyond the evidence that educational tablet's use contributed to EFL reading comprehension more than regular practice without its use. At the same time, both groups could make satisfactory scores in both teaching and learning conditions. If higher education institutions are to realize the challenges of access to face-to-face education on a global scale during current circumstances created by COVID-19 precautions, educational tablet's use might present a temporary solution for EFL reading comprehension.

A possible complication for tablet use in teaching EFL reading comprehension may be the instructor's attitudes towards tablets in teaching. The EG instructor's responses seem positive towards tablet use in teaching due to a higher total score at the beginning of the process. However, all the scores went lower dramatically at the end of the process, especially in teaching practices (approximately 10%). The idea of tablet's use in teaching motivates instructors and encourages them to teach in new ways of using technology. Surprisingly, this motivation and encouragement can make the instructors prone to cognitive biases towards the use of tablets, which proper training should alleviate but may not always overcome. For this reason, the instructor might have faced some unpredictable conditions, specifically in teaching reading comprehension, and have had some difficulty, as the conditions were more different from the ones they used to be. The training before the process was for tablet use, not for teaching reading comprehension using tablets.

More evidence for it is given in the instructor's comments. Despite the advantages of tablet's use such as easy access, utilization of games, videos, and applications for teaching and testing, the instructor reported some disadvantages such as technical issues, difficulty to work with e-

books without note-taking function, classroom management, new techniques to handle, and lack of familiarity with tablet's use. It seems appropriate to state that there are many extraneous factors and uncontrollable variables for the students and the instructors while working with tablets. However, this may not mean that instructors cannot overcome these challenges with appropriate training and experience.

Ample evidence also exists in students' views on tablet use in reading classes. Less than half of the students stated that they would be comfortable using educational tablets for their study needs. The use of the tablet for educational purposes might be a challenge for the students as they experienced it during the process. However, it reveals an impact on some students' study needs while 48% stated tablet's use would be a challenge during learning. This percentage decreased to 11% at the end of the process. This result might mean that established methods and tablet's use in reading comprehension would provide practical experience regarding uncontrollable variables and unexpected occurrences. Supporting this implication, many students (53%) stated tablets should not replace other studying tools. Almost 90% of the students did not mention that tablet's use would be a distraction in their studying practice. This evidence may be vital considering that the tablet's use, as long as it is fit-for-purpose, has varying strengths and challenges when employed, and a rich body of research and experience can help define, develop, and ensure the quality in online courses currently and in the future.

5. Conclusion, Limitations and Recommendations

This study represents an opening of an unavoidable discussion and dialogue regarding the use of tablets in teaching reading skills, especially in the absence of similar studies of this nature. This study was planned to reveal the effect of tablet's use on the achievement in reading comprehension of students as the use of tablets in the teaching and learning process at different levels of education was becoming popular. Using tablets to reinforce, support and transform the learning behavior was an action already applied by institutions. However, there was a lack of scientific evidence behind these attempts, especially tablet's use in different contexts in higher education.

The pre-test and post-test results in this study revealed a significant difference for each group of students. Both teaching practices with and without tablet's use revealed a significant difference at the end of the process. The experimental group's pre-test post-test scores and the control group's pre-test post-test scores showed no significant difference. The results of the scale responded by the instructors before and after the process showed that the instructors of the experimental group had a slightly lower score than the score of the instructors of the control group in the first session. However, the experimental group's instructor had a slightly higher scale in the second session at the end of the process. Both instructors' total scores were lower in the second session after the process. Considering the subscales, all the scores of instructors went lower. This might indicate that both instructors had a positive attitude at the beginning of the process.

It was also felt that their attitude toward tablet's use changed negatively in a dramatic way after the process. The experimental group's instructor's comments at the end of the scale revealed his views and supported the scale results. According to the experimental group's instructor, the use of tablets let them actively use the learning management system and online materials; however, working on e-books made it difficult for both the students and the instructor, especially when the exercises did not have a type-in function. In this way, students faced difficulty in making notes and writing while they were reading. Navigating through e-book was also difficult compared to doing the same thing using a hard copy. The e-books did not always allow the students to type their answers on the exercises. Students did not always have a written record of what they had done in the classroom, which was a serious challenge for revising and retaining information and knowledge. However, it was a lot easier to underline things and take notes on the book.

The tablet had a similar function, but it was not nearly as easy or convenient as the book. Small screens did not make reading from the tablet the most convenient reading experience. As technical issues kept coming, some students were frustrated and lost their enthusiasm to use the tablets. It took a considerable amount of time for all the students to get their tablets set up at the beginning of lessons. The instructor also noted that the students' autonomy by the use of tablets played an active role in the engagement to different platforms from time to time. Besides, typing became impractical during practice in the classroom. Handouts such as worksheets were uploaded on the electronic learning systems, and the students easily retrieved them using the tablets. This

helped save paper and the instructor's time, who would otherwise have to spend time photocopying materials. However, getting the students to sign into the e-learning system and download the handouts took a long time in comparison.

The Internet connection was another aspect that positively impacted the tablet's use. Having tablets in the classroom with active internet connection gave the instructor a great opportunity. This allowed the instructor to have the students do on-the-spot research. When students ran into an issue related to a name, for instance, the instructor could give them a few minutes to do quick research on the Internet in a reading text. This presented an opportunity for the students to be exposed to authentic material while using the language meaningfully. However, this can easily happen when the students do their research using their mobile phones since they seemed a lot more enthusiastic about using mobile phones than tablets in the classroom.

The responses of the students also supported these outputs. For example, 42% of the students mentioned that they would comfortably use a tablet to study. Almost half of them mentioned that they could benefit from using tablets in the courses they studied while 53% stated tablets should not replace other studying tools, 58% stated they would use tablets for practice. The percentage increased when it came to motivation from 19% to 42%, but 58% still did not agree with this idea at the end of the process. The same result occurred for participation in the classroom in the second session.

Overall, a tablet's use was not seen as a convincing alternative to replace other studying tools although it might have certain advantages. However, either of these advantages comes without limitations. Most of the advantages of tablet's use can be replaced by mobile phones in the classroom when necessary. It was observed that students' enthusiasm about using tablets in the classroom lessens over time. The instructor stated that he did not have to encourage students to use the tablets in the classroom at the beginning of the semester. Later on, students lost the enthusiasm which they had at the beginning of the process. To summarize, while tablet's use gave some opportunities that the instructor and the students would not have otherwise, serious doubts about the merits of using tablets in the classroom instead of books were still there. It seems that tablets can be useful as supplementary materials to be used in the classroom, or they can be used when face-to-face education was not possible. However, to conclude, whether they should replace books altogether carries a question mark.

The study had a few limitations like small sample size and lack of training to use the tablets. A larger participant sample would have given the study clearer results to understand the effect of a tablet's use on reading skills and student's success. Besides, although the instructors were aware of the basic technological uses of tablets in class, training on the various uses of tablets, especially regarding reading skills, would have helped them to adapt to different situations, and the attitudes of the instructor in the experimental group would not have been dropped after the study. Finally, keeping the current trend of distant learning (online learning) in mind, it is suggested that tablets should be used more intensely, to teach skills courses including reading skills. In a way, it would prepare students for the new trend of education.

References

Alexander, P. A., & Fox, E. (2004). A historical perspective on reading research and practice. *Theoretical models and processes of reading, 5*, 33-68. Retrieved from https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.472.2859&rep=rep1&type=pdf

Ally, M. (2009). *Mobile Learning: Transforming the Delivery of Education and Training*: AU Press.

Bax, S. (2003). CALL—past, present and future. *System, 31*(1), 13-28. doi:https://doi.org/10.1016/S0346-251X(02)00071-4

Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British journal of educational technology, 39*(5), 775-786. doi:https://doi.org/10.1111/j.1467-8535.2007.00793.x

Bevan, M. T. (2014). A method of phenomenological interviewing. *Qualitative health research, 24*(1), 136-144. doi:https://doi.org/10.1177%2F1049732313519710

Bown, A. (2017). Elaborative Feedback to Enhance Online Second Language Reading Comprehension. *English Language Teaching, 10*(12), 164-171. doi:http://doi.org/10.5539/elt.v10n12p164

Boyatzis, R. E. (1998). *Transforming Qualitative Information: Thematic Analysis and Code Development*: SAGE Publications.

Brand, J., & Kinash, S. (2010). *Pad-agogy: A quasi-experimental and ethnographic pilot test of the iPad in a blended mobile learning environment.* Paper presented at the Proceedings 27th Annual Conference of the Australian Society for Computers in learning in Tertiary Education.

Chen, G., Cheng, W., Chang, T.-W., Zheng, X., & Huang, R. (2014). A comparison of reading comprehension across paper, computer screens, and tablets: Does tablet familiarity matter? *Journal of Computers in Education, 1*(2), 213-225. doi:https://doi.org/10.1007/s40692-014-0012-z

Connell, C., Bayliss, L., & Farmer, W. (2012). Effects of eBook readers and tablet computers on reading comprehension. *International Journal of Instructional Media, 39*(2), 131-141.

Creed, A., Dennis, I., & Newstead, S. (1987). Proof-reading on VDUs. *Behaviour & Information Technology, 6*(1), 3-13. doi:https://doi.org/10.1080/01449298708901814

Creswell, J. W. (2012). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*: Pearson.

Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*: Sage publications.

Cushman, W. H. (1986). Reading from microfiche, a VDT, and the printed page: subjective fatigue and performance. *Human factors, 28*(1), 63-73. doi:https://doi.org/10.1177%2F001872088602800107

Dillman, D. A. (2007). *Mail and internet surveys: The tailored design method, 2nd ed*. Hoboken, NJ, US: John Wiley & Sons Inc.

Dudeney, G., & Hockly, N. (2012). ICT in ELT: how did we get here and where are we going? *ELT journal, 66*(4), 533-542. doi:https://doi.org/10.1093/elt/ccs050

Dündar, H., & Akçayır, M. (2012). Tablet vs. paper: The effect on learners' reading performance. *International Electronic Journal of Elementary Education, 4*(3), 441-450. Retrieved from https://iejee.com/index.php/IEJEE/article/download/188/184

Eshet, Y. (2004). Digital literacy: A conceptual framework for survival skills in the digital era. *Journal of educational multimedia and hypermedia, 13*(1), 93-106. Retrieved from https://www.learntechlib.org/primary/p/4793/

Farinosi, M., Lim, C., & Roll, J. (2016). Book or screen, pen or keyboard? A cross-cultural sociological analysis of writing and reading habits basing on Germany, Italy and the UK. *Telematics and Informatics, 33*(2), 410-421. doi:https://doi.org/10.1016/j.tele.2015.09.006

Fortunati, L., & Vincent, J. (2014). Sociological insights on the comparison of writing/reading on paper with writing/reading digitally. *Telematics and Informatics, 31*(1), 39-51. doi:https://doi.org/10.1016/j.tele.2013.02.005

Glesne, C. (2016). *Becoming qualitative researchers: An introduction*: Pearson.

Gould, J. D., & Grischkowsky, N. (1984). Doing the same work with hard copy and with cathode-ray tube (CRT) computer terminals. *Human factors, 26*(3), 323-337. doi:https://doi.org/10.1177%2F001872088402600308

Habel, C., & Stubbs, M. (2014). Mobile phone voting for participation and engagement in a large compulsory law course. *Research in Learning Technology, 20*(0), 19537-19531-19537-19515. doi:http://dx.doi.org/10.3402/rlt.v22.19537

Heppner, F. H., Anderson, J. G., Farstrup, A. E., & Weiderman, N. H. (1985). Reading performance on a standardized test is better from print than from computer display. *Journal of reading, 28*(4), 321-325. Retrieved from http://www.jstor.org/stable/40030408

Johnston, D. J., Berg, S. A., Pillon, K., & Williams, M. (2015). Ease of use and usefulness as measures of student experience in a multi-platform e-textbook pilot. *Library Hi Tech, 33*(1), 65-82. doi:https://doi.org/10.1108/LHT-11-2014-0107

Kayapinar, U., Erkir, S., & Kose, N. (2019). The Effect of Tablet Use on Students' Success in English as a Foreign Language (EFL) Grammar Classroom. *Educational Research and Reviews, 14*(5), 178-189. doi:https://doi.org/10.5897/ERR2018.3670

Kayapinar, U., Spathopoulou, F., Safieddine, F., Nakhoul, I., & Kadry, S. (2018). Tablet Use in Teaching: A Study on Developing an Attitude Scale for Academics. *Eurasian Journal of Educational Research, 78*, 219-234. Retrieved from https://qmro.qmul.ac.uk/xmlui/handle/123456789/54543

Levine, A., Ferenz, O., & Reves, T. (2000). EFL academic reading and modern technology: How can we turn our students into independent critical readers. *TESL-EJ, 4*(4), 1-9. Retrieved from http://www.tesl-ej.org/wordpress/issues/volume4/ej16/ej16a1/?wscr=

Liu, M., Navarrete, C. C., & Wivagg, J. (2014). Potentials of mobile technology for K-12 education: An investigation of iPod touch use for English language learners in the United States. *Journal of Educational Technology & Society, 17*(2), 115-126. Retrieved from http://www.jstor.org/stable/jeductechsoci.17.2.115

LoBiondo-Wood, G., Haber, J., Cameron, C., & Singh, M. (2014). *Nursing Research in Canada-E-Book: Methods, Critical Appraisal, and Utilization*: Elsevier Health Sciences.

Mangen, A., Walgermo, B. R., & Brønnick, K. (2013). Reading linear texts on paper versus computer screen: Effects on reading comprehension. *International journal of educational research, 58*, 61-68. doi:https://doi.org/10.1016/j.ijer.2012.12.002

Marston, S., Thrasher, E., & Ciampa, M. (2014). Does gender play a role in the acceptance of e-textbooks by students? *Research in Higher Education Journal, 23*, 1-15. Retrieved from http://www.aabri.comwww.aabri.com/manuscripts/131776.pdf

Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook*: SAGE Publications.

Muter, P., Latrémouille, S. A., Treurniet, W. C., & Beam, P. (1982). Extended reading of continuous text on television screens. *Human factors, 24*(5), 501-508. doi:https://doi.org/10.1177%2F001872088202400501

Muter, P., & Maurutto, P. (1991). Reading and skimming from computer screens and books: The paperless office revisited? *Behaviour & Information Technology, 10*(4), 257-266. doi:https://doi.org/10.1080/01449299108924288

Noyes, J. M., & Garland, K. J. (2003). VDT versus paper-based text: Reply to Mayes, Sims and Koonce. *International Journal of Industrial Ergonomics, 31*(6), 411-423. doi:https://doi.org/10.1016/S0169-8141(03)00027-1

Oborne, D. J., & Holton, D. (1988). Reading from screen versus paper: there is no difference. *International journal of man-machine studies, 28*(1), 1-9. doi:https://doi.org/10.1016/S0020-7373(88)80049-X

Patton, M. Q. (2002). Two decades of developments in qualitative inquiry: A personal, experiential perspective. *Qualitative social work, 1*(3), 261-283. doi:https://doi.org/10.1177%2F1473325002001003636

Patton, M. Q., Herman, J. L., Evaluation, U. o. C. a. L. A. C. f. t. S. o., California Univ., L. A. C. f. t. S. o. E., SAGE., & University of California, L. A. C. f. t. S. o. E. (1987). *How to Use Qualitative Methods in Evaluation*: SAGE Publications.

Prensky, M. (2001). Digital Natives, Digital Immigrants Part 1. *On the Horizon, 9*(5), 1-6. doi:https://doi.org/10.1108/10748120110424816

Stockwell, G., & Hubbard, P. (2013). Some emerging principles for mobile-assisted language learning. *The International Research Foundation for English Language Education, 2013*, 1-15. Retrieved from http://www.tirfonline.org/english-in-the-workforce/mobile-assisted-language-learning/

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research techniques*: Citeseer.

Sun, J., Flores, J., & Tanguma, J. (2012). E-Textbooks and students' learning experiences. *Decision Sciences Journal of Innovative Education, 10*(1), 63-77. doi:https://doi.org/10.1111/j.1540-4609.2011.00329.x

Taipale, S. (2014). The affordances of reading/writing on paper and digitally in Finland. *Telematics and Informatics, 31*(4), 532-542. doi:https://doi.org/10.1016/j.tele.2013.11.003

Taipale, S. (2015). Bodily dimensions of reading and writing practices on paper and digitally. *Telematics and Informatics, 32*(4), 766-775. doi:https://doi.org/10.1016/j.tele.2015.04.001

Tashakkori, A., & Teddlie, C. (2010). *SAGE Handbook of Mixed Methods in Social & Behavioral Research*: SAGE Publications.

Traxler, J. (2009). Learning in a mobile age. *International Journal of Mobile and Blended Learning (IJMBL), 1*(1), 1-12. doi:http://doi.org/10.4018/jmbl.2009010101

Traxler, J. (2011). Research essay: mobile learning. *International Journal of Mobile and Blended Learning (IJMBL), 3*(2), 57-67. doi:https://doi.org/10.4018/jmbl.2011040105

Tront, J. G., Eligeti, V., & Prey, J. (2006). *Classroom presentations using tablet pcs and writeon.* Paper presented at the Proceedings. Frontiers in Education. 36th Annual Conference.

Ushioda, E. (2013). Motivation Matters in Mobile Language Learning: A Brief Commentary. *Language Learning & Technology, 17*(3), 1-5. Retrieved from http://llt.msu.edu/issues/june2013/macdonaldetal.pdf

Wilkinson*, R., & Robinshaw, H. M. (1987). Proof-reading: VDU and paper text compared for

speed, accuracy and fatigue. *Behaviour & Information Technology, 6*(2), 125-133. doi:https://doi.org/10.1080/01449298708901822

Zweekhorst, M. B., & Maas, J. (2015). ICT in higher education: Students perceive increased engagement. *Journal of Applied Research in Higher Education, 7*(1), 2-18. doi:https://doi.org/10.1108/JARHE-02-2014-0022