

The Effectiveness of Android Smartphone-Based Mobile Applications in Learning English Grammar

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Abstract

This study is quantitative research. The purpose of this study is to determine the effectiveness of using Android smartphone-based mobile applications to learn English grammar. The population of this study was the first-year students in the English language education study program. To determine the research sample, the writers used the cluster sampling technique. The sample for this research was 20 students. The results of this study, after analyzing the obtained data, show that the Android smartphone-based mobile apps application is effectively used in learning English grammar. The study revealed that the post-test was higher than the pre-test, with the post-test scoring 87.04 and the pre-test scoring 42.65. The significance results also indicate that the t-test is greater than the T-table score, with t-test = 11.350 and t-table = 2.093, respectively.

Keywords: effectiveness, android, mobile app, English grammar

Introduction

In the era of globalization 4.0, the increase in information and communication technology is very fast and rapid. Technology in the world of education has taken on an important role to support and expedite the learning process, especially for online learning has taken on an important role to support and expedite the learning process, especially for online learning. Therefore, the teachers need to be able to operate and use technology to push the teaching and learning process along effectively. According to some experts and researchers, it has been previously stated that the use of technology can stimulate students' interest in learning because it has a varied and attractive appearance so that students do not feel bored while following the lessons. (Agustian & Salsabila, 2021; Fatimah et al., 2019). The role of technology in learning is to facilitate the formation of relationships that are more collaborative and contain explanations that are easier to absorb and understand. (Ibáñez et al., 2019) The use of technology in learning activities such as Android smartphones will be more fun for students and not boring because it is not monotonous. Submission of information through advanced technology looks more attractive because it is more varied and modern. Using information and communication technology, such as Android smartphones and mobile applications, can allow the students to access the material easily and make it possible for them to learn anytime and anywhere.

The technology that is widely used in the world of education is the use of Android smartphones by utilizing mobile app-based applications. By using a smartphone, teachers can download any kinds of mobile applications from their phone based on the learning topic

that can help students understand the material taught, like when students learn English grammar. The mobile apps application itself displays a variety of material that teachers and students can access freely so that students can access it at any time. (Setyowati, 2018; Vebrianto Susilo et al., 2020). The use of applications can help teachers explain learning material to students in a way that is more interesting and fun. (Subiyantoro & Nugroho, 2018). It means that mobile app applications can be used to teach teachers and students about digital literacy. By using an Android-based smartphone, Android can help EFL learners improve their English proficiency. In addition, the use of Android-based mobile smartphones can also develop student skills according to the segmentation of skills to be achieved. In learning English, students can choose the applications they want, such as speaking, listening, reading, writing, understanding language content such as vocabulary, even constructing English sentences, and so on. Mobile smartphones can be used by all groups to help develop English language skills. Besides, it is being used as a learning resource so that the teaching and learning process becomes more fun and interesting. (Darman & Lukas, 2022; Poláková & Klímová, 2019).

Grammar is an essential component of learning any language, including English. Because English grammar is extremely complex, some students have difficulty learning it. However, grammar is one of the most vital aspects of learning English. (Maya Sartika, 2020; Syafiqah Yaccob & Md Yunus, 2019) Grammar has an important role to play in helping the reader or listener get the point of what is being communicated, both in written and spoken language. (Demir & Erdogan, 2018; Tandikombong & Atmowardoyo, 2016).

The use of technology, such as the application of applications that aim to support learning English, Based on the results Utilizing information and communication technologies to study English in the 21st century is crucial. The research conducted by (Istiqoma & Nani Prihatmi, 2020) that using technology can provide maximum results, help students more easily understand the material, and is also not boring because it is more interesting than conventional methods. (Haris Budiman, 2017) His research shows positive results where the use of technology can increase the enthusiasm of students for participating in the teaching and learning process (Chen, 2022; Fannakhosrow et al., 2022)

Based on the results of the research described above, it can be concluded that information and communication technology play an important role in supporting the quality of education. Therefore, all teachers must be proficient with technology to improve the online learning process effectively.

Android Smartphones

Android smartphones are one of the information and communication technologies that are multifunctional. While an Android smartphone is often used as a communication tool for long distances, it can also be used in education to support the online learning process. Android smartphones were used to support English learning to help the learner join online learning easily and also to increase the students' motivation in order to improve their English competence. There were some researchers who conducted research about the use of an Android smartphone in teaching English. (Poláková & Klímová, 2019). (Nurchintyawati, 2022) conducted research on the use of Android smartphones in learning English, and the results showed that the use of Android smartphones can support English learning and improve students' English skills. (Kurniawan et al., 2020; Wahyuni et al., 2022) the results of research conducted on the role of Android smartphones show that Android smartphones can support

motivation and attract students to learning English. Therefore, in the modern world, using technology in teaching is very important to improving the quality of education in the future.

Apps Mobile Application

The Mobile Apps application is an application that can be downloaded on an Android smartphone and has several benefits, one of which is that it can be used to support teaching and learning activities, including learning English grammar. There are several researchers who have tested the use of the Apps mobile application in learning English, and the results indicate a positive effect on the level of enthusiasm of students for learning English. (Lam Kieu et al., 2021; Wijaya et al., 2019). (Wijaya et al., 2019) states that the Mobile Apps application is an application that can be downloaded on an Android smartphone and has several benefits, one of which is that it can be used to support teaching and learning activities, including learning English grammar. There are several researchers who have tested the use of the Apps mobile application in learning English, and the results indicate a positive effect on the level of enthusiasm of students for learning English. (Arifin et al., 2021; Aziz et al., 2018; Muhfiyanti et al., 2021; Rahmanita et al., 2021)

Types of Mobile Application Used in Teaching English Grammar

There are many types of applications that can be used in learning English, especially in learning English grammar. The following are several ways the application can be used to test and increase students' English grammar mastery.

a. *(E) English Grammar Test*



Figure 1. The logo of (E) English Grammar test application

(E)English Grammar Test, This application is available at any level of grammar exercise. The materials are: exercises *for beginners*, exercises for intermediate *grammar*, and exercises for upper *intermediate grammar*.

b. *Learn English Grammar*



Figure 2. The logo of Learn English Grammar application

The application *English Grammar* presents any kind of level of English grammar test. They are: 1) The beginner *test* consists of nouns, subjects, and verb agreement; the simple past tense and simple future tense; gerunds and infinitives; modal verbs; pronouns; articles; prepositions; etc. 2) Advance test, which includes tenses, verbs, word formation, and other tests.

c. *Learn English Grammar*

The Application to Learn English Grammar includes a variety of leveled tests. They are: the *elementary test*, the *intermediate test*, the *upper intermediate test*, *important topics*, and the *grammar lesson*.



Figure 3. The logo of Learn English Grammar application

d. *En Test*



Figure 4. The logo of En Test application

The En Test application prepares different types of level lesson tests, such as: noun, article, adjective, adverb, pronouns, numbers, tense, verbs, verb pattern, question, word order, and so on.

The applications above are the exercise-based applications. The aim of this application used in learning English grammar is to make the online learning more fun and to stimulate the students' motivation in learning English grammar. These applications can be downloaded freely from the Play Store.

Method

This is the quantitative study. It focuses on the effectiveness of the implementation of Android smartphone-based mobile applications in learning English grammar (exercise-based applications), and it was conducted at the Universitas Kristen Indonesia Toraja. The population of this study was the first semester students of an English study program, with a total of 40 students divided into two classes. This study was an experiment; therefore the written test was used as an instrument, consisting of a post-test and a pre-test. Where the pre-test was given to the respondent before giving treatment and the post-test was given to the respondent after giving treatment.

The sample for this was the first semester students of the English education study program for the academic year 2022/2023. The sample was chosen by using the cluster sampling technique. Therefore, only one class served as a sample in this research, namely class B. It consisted of 20 students.

The data was collected from the participants by using a written test. The written test used multiple choices. The data were also obtained from the results of the pre-test and the post-test. The pre-test was given to students before giving them treatment, and the post-test was given to the students as respondents after the treatment.

There were four phases to the process of collecting data, which were: 1) Observation: Before collecting the data, the writer made an observation about the students' perceptions toward English grammar material. 2) The pre-test was done to know the students' abilities about grammar. 3) Treatment: the treatment was given to students by using android smartphone-based mobile applications (based exercise applications). The students did the exercise in the application after I gave an explanation about learning material. 4) A post-test was given to the students after giving treatment in order to find out the final score.

To find out the answer of the research question of this study the writer used the following formula:

$$\bar{X} = \frac{\sum x}{N}$$

To find out the significance about the effectiveness of android smartphone-based mobile applications in learning English grammar writers used SPSS.

Results

After collecting and analyzing the data were obtained from the participant through written test the writer found the result as follows:

Table 1. The students' result of Pre-test

Students	Correct Answer	Students' score	Category
S.1	11	37	Very low
S.2	18	60	Low
S.3	10	34	Very low
S.4	12	40	Very low
S.5	10	34	Very low
S.6	14	47	Very low
S.7	14	47	Very low
S.8	6	20	Very low
S.9	19	63	Low
S.10	8	27	Very low
S.11	16	53	Very low
S.12	5	17	Very low
S.13	6	20	Very low
S.14	21	70	Good
S.15	17	57	Low
S.16	12	40	Very low
S.17	8	27	Very low
S.18	15	50	Very low
S.19	18	60	Low
S.20	15	50	Very low
$\sum x$		853	

The diagram in Fig. 5 demonstrates that there are no pupils with a perfect score of 0 (100%) as depicted above. There is one student (5%) who receives excellent grades. There are four students (20%) with lower scores, and fifteen students (75%) with very low scores. The aforementioned results indicate that students' mastery of grammar is still deficient.

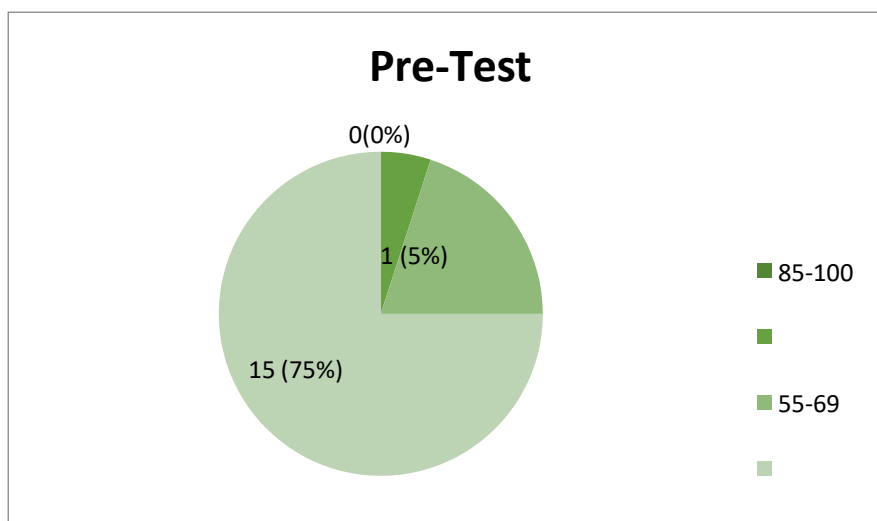


Figure 5. The frequency and percentage of the students' pre-test results

Table 2. The students' result of Post-test

Students	Correct Answer	Students' score	Category
S.1	26	86.7	Very good
S.2	28	93.4	Very good
S.3	21	70	Good
S.4	28	93.4	Very good
S.5	25	83.4	Good
S.6	26	86.7	Very good
S.7	23	76.7	Good
S.8	27	90	Very good
S.9	27	90	Very good
S.10	26	86.7	Very good
S.11	28	93.4	Very good
S.12	27	90	Very good
S.13	27	90	Very good
S.14	25	83.4	Good
S.15	25	83.4	Good
S.16	28	93.4	Very good
S.17	28	93.4	Very good
S.18	25	83.4	Good
S.19	24	80	Good
S.20	28	93.4	Very good
$\sum X$		1740.8	

Table 2 presents student scores from the post-test results. It can be seen in the table above that there are 17 (or 65%) students who get scores that are in the very good category range. There were 7 (35%) students who got good scores, and there were no students (0%) who got less than very good scores. The results of this posttest indicate that the mastery of grammar is good.

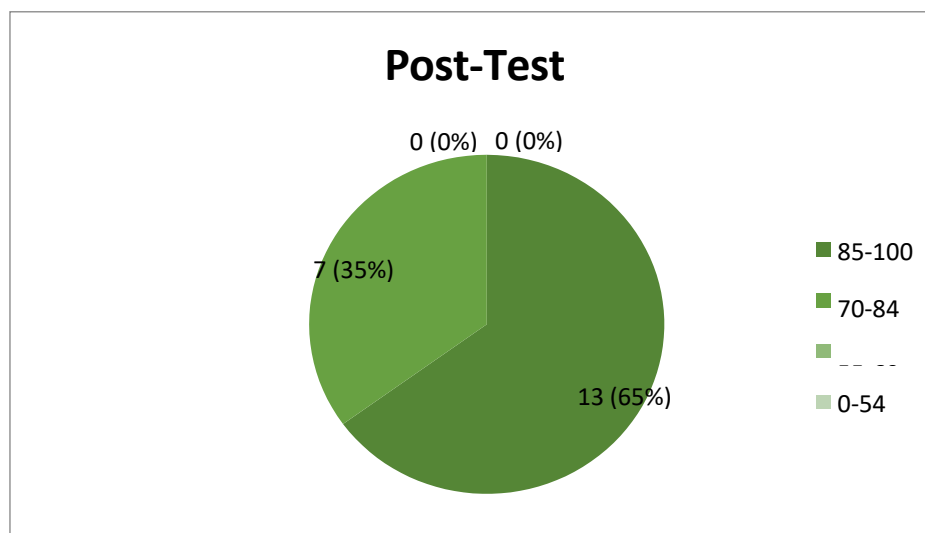


Figure 6. The frequency and percentage of the students' post-test results

Table 3. Paired Samples Statistics

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
PRE TEST	42.6500	20	15.54713	3.47644
Pair 1	87.0400	20	6.39872	1.43080
POST TEST				

Table 4. Paired Samples Test

Paired Samples Test

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
Pair 1 PRE TEST - POST TEST	-44.39000	17.49093	3.91109	-52.57601 -36.20399	-11.350	19	.000

The difference between the average pre-test score and the average post-test score is -44.390, which is between -52.576 and -36.203 (95% Confidence Interval of Lower and Upper Difference). When $\alpha = 0.05$ and $df = 19$ are used to determine statistical significance, t -table = 2.093 is obtained. The t -test value, as shown in the table above, is 11.350, or $t = 11.350$. It can be negative if the pre-test mean score is lower than the post-test mean score. Consequently, the t -test is positive. Using the difference between the values of the T test and the t -table, where t -test at the table, it is possible to conclude that the English grammar skills of students treated with Android-based mobile applications have improved. In light of

these findings, applications can be used to teach English grammar and improve students' grammar skills.

Discussion

There were some researchers who conducted research about the use of Android smartphone-based mobile applications in teaching English. Exploring mobile apps for learning English has a positive perception among the students because it provides some lessons for them that can be accessed at any time. In addition, mobile apps help the students practice their English outside of class anytime and anywhere (Zou & Li, 2015). Another researcher also conducted research about the use of smartphone applications in learning English, which has received positive responses from the students because it can increase students' motivation and self-confidence and also help low-achieving students achieve their goals (Kaceti & Klímová, 2019). The use of mobile apps in teaching vocabulary can increase students vocabulary. Besides that, the use of mobile apps in teaching can attract students' interest in learning English. (Jamal et al., 2021).

The previous research above also supported this research. The results of this study show that mobile applications can help students learn English more freely. It can be seen from the result of the post-test that it is higher than the pre-test. Where the pre-test showed that no student got a very good score of 0 (0%). There is one (5%) student who gets good grades. There are four (20%) students who get lower scores, and there are 15 (75%) who get scores that are in the very low range of scores. The results above indicate that students' mastery of grammar is still lacking.

Based on the results of the post-test It can be seen in the table above that there are 17 (or 65%) students who get grades that are in the very good category who get grades that are in the "very good" category. There were 7 (35%) students who got good scores, and there were no students (0%) who got less than very good scores. The results of this post-test indicate that the students' mastery of grammar is good.

For the statistical significance test $\alpha = 0.05$ with degrees of freedom (df) = 19, then the value of $t = 2.093$ is obtained. for the t-test value based on the table above, namely $t = 11.350$. It can be negative because the pre-test mean score is lower than the post-test mean score. That means that the t-test leads to a positive. Because $t\text{-test} > t\text{-table}$, it can be concluded that there is a significant increase in English grammar skills after treating students using the Android smartphone-based mobile application as a medium to improve their English grammar skills.

Conclusion

Based on the results of the significance test, it can be concluded that the use of Android-based mobile applications (exercise-based applications) for learning English grammar is effective. Thus, the Android smartphone-based mobile application can be used to improve students' English grammar. The result when $\alpha = 0.05$ and $df = 19$ are used to determine statistical significance is $t\text{-table} = 2.093$. The t-test value, as shown in the table above, is 11.350, or $t = 11.350$. It can be negative if the pre-test mean score is lower than the post-test mean score. Consequently, the t-test is positive. Using the difference between the values of the T test and the t-table, where $t\text{-test} > t\text{-table}$, it is possible to conclude that the

English grammar skills of students treated with Android-based mobile applications have improved significantly. Android-based mobile applications can be used to teach English grammar and improve students' grammar skills in light of these findings.

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