
“English pronunciation application” as a media to improve students’ pronunciation: the effectiveness

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Abstract

This paper intended to investigate the effectiveness of *English Pronunciation Application (EPA)* as a media in pronunciation classroom. The objectives of this study were: 1) to find out the students’ ability in pronunciation before being taught using *EPA*, 2) to find out the students’ ability in pronunciation after being taught using *EPA*, and 3) to find out the significant difference between the students’ ability in pronunciation before and after being taught using *EPA*. Pre-experimental design in one group pre-test post-test design was applied as the research design. 32 students of class X Science III of *SMA Kesatrian 2 Semarang* in the academic year of 2018/2019 were taken as the sample. The instrument was valid and reliable, the level of difficulty was categorized as medium and the discriminating power was categorized good. The data collected were analyzed using t-test. It was found that the students’ ability in pronunciation before being taught using *EPA* was **inadequate**. The students’ ability in pronunciation after being taught using *EPA* was **good**. The value of t-test was higher than t-table, $14.03 > 1.9990$. It means teaching pronunciation using *EPA* was effective. At last, the paper proposed suggestions for teachers to apply *EPA* in teaching pronunciation.

Keywords: *English Pronunciation Application*, pronunciation ability, effectiveness

1. Introduction

These days, English is used to access information in all of parts of the world (Maxon, 2009). English has travelled to the parts of the world and has been used to help various humans’ purposes (Sharifian, 2009). As we know that

English brings good benefits in helping human communication and interaction. As an international language, English is used in every aspect of life such as education, arts, technology, science, trade, business, politic, and so on. Therefore, many people encourage themselves to learn English and have aims to be able to communicate in English fluently.

John (2010) states that language is a communication tool that is applied by the use of conventional system vocal sign which is well-known by pronunciation. Pronunciation becomes one of important parts in speaking skill. It helps the students to transfer the sound that represent meaning. In practicing pronunciation, the student may listen to the teacher. The teacher will lead the students to pronounce the words correctly. Further, Maxon (2009) claims that the process of learning language begins with listening, then continue with speaking, reading, and writing. In other case, pronunciation is a comprehensive course that helps beginner to speak more clearly and accurately. As we know we can speak sensibly if we understand what people said. In fact, people cannot catch the meaning if they hear an error pronunciation. Therefore, pronunciation is needed in the oral communication between the speakers and the listener. In English, there are so many words that have closer pronunciation even if it is differently both written and meaning. For example, the word 'sank' is pronounced as /sæŋk/ and thank is pronounced as /θæŋk/, they sometimes are confusing for high school students. Another consideration is phonological fossilizations which are very difficult to fix as mentioned by Senowarsito & Ardini (2019) that "those phonological fossilisations were due to the interference of the phonological and orthographic systems of their mother tongue." Therefore, this research needs to be conducted due to the urgency of senior high students' pronunciation.

The urgency of having good pronunciation for senior high students is not supported by government policy where English teaching learning time allotment in senior high school is very limited, only two hours in a week. It shows that the students get a limitation in learning English. By this situation, English teachers need media to enhance the students' skill. It has the aims to stimulate the students' mind, skills, and attention. Based on that case, due to we are living in the modern era that fully internet accessed, the researchers would like to introduce the mobile media learning to improve students' pronunciation. The media is called *English Pronunciation Application (EPA)*. By using this application, the researchers hope that the students are potentially to study pronunciation independently.

Nowadays, smartphone has become an everyday technology. The students are using smartphone android-based as their daily activity. With the advance of the technology and its easiness, new applications have been developed rapidly to facilitate the user. The smartphone is used to access all information that the user needs. For example, sending an e-mail, searching information in google, download the application in *Google play store*. *English pronunciation Application (EPA)* android-based is one of the application available in *Google Play store*. Through *English Pronunciation Application (EPA)*, the students are able to hear and know the correct pronunciation based on the audio. The audio in the application is based on English-native speaker. In addition, the accent in the *English Pronunciation Application (EPA)* is British and American accent.

Some previous studies showed that using application evidenced significance improvement in students' pronunciation. By this experiment, the researchers carried out the collaboration of *SMA Kesatrian 2 Semarang* to apply *English Pronunciation Application (EPA)* as media to improve

students' pronunciation. By using a quantitative method, very important results related to students' ability in pronunciation before being taught using *English Pronunciation Application (EPA)*, after being taught using *English Pronunciation Application (EPA)*, also the significant difference between those two data will be found.

2. Definition of Pronunciation

The words "pronunciation" is generally represented with the use of phonetic symbols and represented with phonetic transcription (Gussenhoven & Jacobs, 2011). A good pronunciation is the essential of communication in order the native speaker or non-native speaker will understand the means of communication. In Bahasa Indonesia, there is no the difference between the written form and the pronunciation one. Reversely, in English, it is different. For example, the word "personally" is pronounced /ˈpɜːsənli/. In English there is different between the written form and the spoken one. Therefore, pronunciation can be concluded as the product of the sounds of a language, in this case is English, and how it impacts to the listeners.

a. Teaching Pronunciation

Maxon (2009) states that by instructed the students to find new vocabularies and the difficult words are one of ways to enhance the students' pronunciation. Then, they can pronounce and repeat the words. By giving repetition it will influence the student in understanding the correct pronunciation. As said that the common order for learning language skills the first step is listening, then speaking, continue by reading and the last is writing. Repeating becomes the most important way in teaching pronunciation. By saying "repeat!" naturally the students will follow and

repeat what the teacher said. There are two types of class in conducting repetition; solo and whole class. In the whole class, repetition is called as choral drilling. The students feel calm and confident due to the practice pronunciation of the words as a team. So, they feel not shame. However, the teacher should listen to the students' pronunciation carefully. The second is a solo repetition that is called as an individual drilling which means that the students repeat the words alone. In the solo repetition, the teacher will be easier to listen to the students' tune in pronouncing the words.

b. Displaying Phonemes

According to Roach (2009), in a language, phoneme is identified as a small number of sounds whether it is vocal or consonant. For example, the vowels in the words 'din' and 'dim' are different phonemes. In English, the spelling is rather misleading. Therefore, many of students who learn English as a Foreign Language confused about how to pronounce the words correctly. Maxon (2009) states that every individual sound in the language is represented by a phoneme. It provides a great contribution in teaching pronunciation or even the way how to read the English words correctly. We can describe how each sound is produced. In considering the meaning of words, we know how to use the right words and its meaning. For example, in phonetic transcription letter "eat" as /i:t/, "it" as /It/, and so on. Further, he said that in the English sounds there are forty four sounds. Those are single vowels, double vowels and consonants. The forty four English sounds divided as 12 single vowels, 8 double vowels/ diphthongs, and 24 consonants (see Figure 1).

c. Boosting Pronunciation

In learning pronunciation, we should often practice to pronounce the sound of words. The more we practice, the more we understand in pronouncing the English words. Maxon (2009) views that in the learning foreign language, students do not need to read aloud in the class because it will not boost the students in learning English. This kind of study will make the students bored. However, by reading aloud in pairs give different sense of learning. The students will feel more confident when they read aloud in pairs. It because of they get a support from their partner, the mistake they make will be corrected by the partner, the corrector will easily to *correct their partner and so on*.

d. International Phonetic Alphabet

International Phonetic Alphabet (IPA) shows the way how we pronounce the words. In English, the pronunciation of a word often differs from its spelling. By using IPA, it is a very useful tool to improve and correct pronunciation. In the phonetic alphabet, each symbol represents only one sound and each sound is represented by one symbol.

Figure 1

International Phonetic Alphabet (IPA) taken from <http://ipa-paradise.weebly.com/ipa.html>

ɪ READ	ɪ SIT	ʊ BOOK	u: TOO	ɪə HERE	eɪ DAY	John & Sarah Free Materials 1996	
e MEN	ə AMERICA	ɜ: WORD	ɔ: SORT	ʊə TOUR	ɔɪ BOY	əʊ GO	
æ CAT	ʌ BUT	ɑ: PART	ɒ NOT	eə WEAR	aɪ MY	aʊ HOW	
p PIG	b BED	t TIME	d DO	tʃ CHURCH	dʒ JUDGE	k KILO	g GO
f FIVE	v VERY	θ THINK	ð THE	s SIX	z ZOO	ʃ SHORT	ʒ CASUAL
m MILK	n NO	ŋ SING	h HELLO	l LIVE	r READ	w WINDOW	j YES

e. English Pronunciation Application (EPA)

English Pronunciation Application (henceforth EPA) was developed since February 2018, the application has been downloaded by 8.860 users. This fantastic amount indicates that this application is a good tool for honing English pronunciation. According to Kirubahar and Ramprasath (2018), who able to access the android mobile will enhance their English knowledge. The application can be downloaded in the Google play store or another Google market and those applications are free of cost. Via audio, video, picture and spelling the users able to hear the correct pronunciation; the users may repeat the audio as much as the user want. By using a smart phone, the users are able to enjoy the complete facilities. By using EPA, the students are able to correct themselves. When they did a mistake, they will know what they should do to correct their mistakes.

Figure 2

English Pronunciation Application (EPA)



3. Research method

In this research, the researchers used pre-experimental design in one group pre-test post-test design. Creswell (2012) states that traditionally, quantitative research is characterized by the use of an experimental design. In this experiment, the researchers gave tests to measure students' pronunciation competence through forty-four English sounds in order to find out whether there was any influence or not between before and after using EPA as media to improve students' pronunciation ability. Pre-experimental one group pretest-post-tests design; one group pre-test, treatment and post-test based on Cohen et al. (2007) was used in this research.

a. Population

According to Urdan (2010), population is the representation of an individual group in all the members of a certain interest group. The population in this research was the tenth-grade students of SMA Kesatrian 2 Semarang in the academic year of 2018/2019. There were 194 students consisting of 37 students of X Science I, 36 students of X Science II, 32

students of X Science III, 29 students of X Social I, 30 students of X Social II and 30 students of X Social III.

b. Sample

Urdu (2010) states that sample is a part of larger from the larger population. In this research, the researchers used one class as the sample that is X Science III occupied by 32 students.

c. Sampling

According to Creswell (2012), in simple random sampling, the researchers select participants such as school for being the sample. Therefore, any individual has an equal probability to be selected. In this research, the researchers used simple random sampling to collect data. Urdu (2010) argues that random means that every part of a group in the population has an equal chance of being selected to be a sample. Further he explains that random sampling is selecting from a population in a manner that ensures each part of the group in the population has an equal chance of being selected into the sample.”

d. Instrument

A set of the instrument for data collecting is an important tool in conducting a research. Without any instrument, a research would fail to the scientific level. In this research, the researchers used test as an instrument to collect the data. There were two tests in this research; pre-test and post-test which were spoken tests that would be recorded.

Creswell (2012) states that a pretest gives a measure to the student in some characteristics before they get a treatment.” The pre-test was given before

the students were given a treatment. It is used to know the ability of the students before they get a treatment. The researcher gave forty-four English sounds that represented in three words of each sound as the pre-test to be recorded.

Creswell (2012) states that treatment variable is measured in categories whether the sample will receive or denied the activities to determine its effect on an outcome. After the pre-test was given, the treatment was started. The students did the treatment by using *English Pronunciation Application (EPA)*. They used their smartphone.

After giving treatment, post-test was given to the students. Creswell (2012) states that post-test measure on some characteristics that is assessed for participants in an experiment after a treatment. It was used to measure the students' enhancement in mastering pronunciation skill after the researchers gave the treatment. The researchers gave forty-four English sounds that represented in five words each sound as the post-test.

Before the test was given to the students who were the sample of the study, the researchers should know whether the instrument which would be tested was valid and reliable or not. The researchers gave a tryout test to other students to measure whether the test was valid or reliable, is based on the instrument used. So, after the result of the try out was gained, an analysis was made to find out the validity, reliability of the test, level difficulty of the test, and discriminating power of the items test.

e. Level of difficulty

The index of level difficulty was generally expressed as the fraction or percentage of the students who answered the items correctly. To measure the level of difficulty of the test, the researchers used the formula as follows:

$$IF = \frac{\# \text{ of } Ss \text{ answering the item correctly}}{\text{Total \# of } Ss \text{ responding to that item}}$$

(Brown, 2004)

Where:

IF : item facility

Table 1. Standard Level of Difficulty

Level of Difficulty	Criteria
0.00 – 0.30	Difficult
0.31 – 0.70	Medium
0.71 – 0.1	Easy

(Arifin 2016)

Based on the computation of level of difficulty in the forty-four items, the result of item was represented as a good if the item categorized not too easy or even not too difficult. Based on the computation, item number 1 $TK_1 = 0,678$ because the TK_1 was on the interval 0.31 – 0.70, so it was categorized as medium item. The result of the level of difficulty, 20 items were categorized easy, 19 items were categorized and 5 items were categorized difficult.

f. Methods

Test

Test was one of ways to measure the students' ability especially in understanding pronunciation. In this research, there were try out of test, pre-test, and the last is post-test. According to Cohen et al. (2007), there were two kinds of tests. Those are parametric and non-parametric test. In parametric test, the design shows for the large population. Besides, non-parametric test is design for the smaller group that there is no a characteristic population.

In collecting the data, the researchers used an instrument due to it plays an important role in collecting the data. The researchers applied one way to collect the data. The tests given were pre-test, and post-test.

In pre-test, the researchers gave forty-four English sounds. Each sound represented in five words. After doing pre-test, the students got treatment. In treatment, the researchers applied how to pronounce the words correctly by using *English Pronunciation Application (EPA)* android-based. The last was post-test. In post-test, the researchers gave the students forty-four English sounds that represented the same words. The researchers used an oral test to measure the students' pronunciation.

g. Data Collection

In collecting data, the researchers used a test. It was used to learn more about the subject of the researchers' needs and progress. Test was used in the small-scale research are not intended to provide definitive results, but simply to provide researchers with some form of feedback to set against impressionistic judgment about the effectiveness or otherwise of particular materials, techniques or approaches and to help them in making next decision about using these.

The systematic process of research and the scientific method led to the generic activities involved in conducting a research. The activities which were similar to the steps described earlier to get the data. To get the data, the researchers did the steps or procedures for collecting the data as follows:

- 1) The researchers came to the school to ask permission and also ask about the condition of the school.

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- 2) The researchers asked the teacher about the data that related to the students.
 - 3) The researchers came to both groups that become sample of this research to gives an introduction and guidelines of what they should do in the class.
 - 4) The researchers gave pre-test to the students to know their ability in pronunciation skill without using treatment.
 - 5) The researchers checked the pre-test from both classes.
 - 6) The researchers scored the result from pre-test.
 - 7) The researchers gave the treatment. The researchers gave know the *English Pronunciation Application* to the students.
 - 8) The researchers gave the post-test to the students.
 - 9) The researchers scored the result from post-test and reanalyze the data to find the result of the research.

h. Method of Data Analysis

After collecting the data by recording, the researchers analyzed the result to know the students' pronunciation ability before and after using *English Pronunciation Application (EPA)*. The researchers used scoring to correct students' pronunciation. The method of data analysis was an important part of this research due to the researchers got the result of the data analysis. The researchers use t-test whether there was any significant difference or not by using *English Pronunciation Application (EPA)* to answer the aims of this research whether there were significant changes after the researchers implemented *English pronunciation Application (EPA)* as a media to enhance the students' pronunciation skills.

i. Validity

In the research, validity was needed to conduct the research. It was important to measure the validity of the test. Cohen et al. (2007) states that validity is an important key in doing effective research. If a piece of a research was invalid, it would be worthless. If the test was valid, the instrument could be used. Besides, if it was not valid, the instrument cannot be used. Validity was a measure that shows the correctness degree of the instrument. A good test content validity if each part of the test that was used to collect data have relevancy to aim and cover representative material. To measure the validity of the test, the formula is:

$$r_{xy} = \frac{N(\sum xy) - (\sum x)(\sum y)}{\sqrt{\{N(\sum x^2) - (\sum x)^2\}\{N(\sum y^2) - (\sum y)^2\}}}$$

(Arikunto, 2013)

Where:

r_{xy} : correlation between variable x and y

x : the score of odd items

y : the score of even items

N : the number of students

$\sum x$: the number of items of x score

$\sum y$: total of score

$\sum x^2$: total of quadrant of item

$\sum y^2$: total quadrant of total score

After the researchers got the r_{count} then the researchers compared the result of r_{count} and with r_{xy} and r_{table} with $\alpha = 5\%$, if $r_{count} > r_{table}$, therefore, the item was categorized as significant it means that the item was valid. Besides, if $r_{count} \leq r_{table}$ the result item was not valid and it cannot be used. Based on the result of validity from forty-four items that were given to the student was valid.

j. Reliability

Based on Cohen et al. (2007), reliability in a quantitative research is essentially a synonym for dependability, consistency and replicability over time, over instruments and over the group of the respondent. Reliability showed that what extent was an instrument can be believed. The requirement of reliability test was suitable for the curriculum or agreement of many people; it was not an individual judgment.

Reliability showed that an instrument was enough to be trusted to be used as a collection means due to it was good. Besides, the research has to find the reliability of all test items. To count the reliability of test, this can be calculated using the formula:

$$r_{11} = \left(\frac{n}{n-1} \right) \left(1 - \frac{\sum \sigma_b^2}{\sigma_t^2} \right)$$

(Arikunto, 2013)

Where:

- r_{11} : instrument reliability
- n : total item number

$\sum \sigma_b^2$: variants score point

σ_t^2 : variants of total point

Based on the computation of reliability test, the result of reliability was 0.961. It means the instrument was reliable.

4. Results and analysis

In this chapter, the researchers dealt with the analysis of the data that have been collected. The purpose of the research is to analyze the students' pronunciation taught with and without using *English Pronunciation Application (EPA)* Android-based as the media to find out and analyze the significances difference before and after the students being taught using it. The results were described in the following paragraphs.

The Students' English Pronunciation before Being Taught Using English Pronunciation Application.

The researchers did pre-test and post-test by recording students' pronunciation of 220 English words as the test. Most of the students needed 5 minutes to record the test. The pre-test was held before the students knew the material in order to find the prior knowledge of their pronunciation. Based on the data, the result showed the sum of the pre-test was 2.114. After getting the sum of the pre-test, the researchers found the mean of pre-test. The mean used to get the condition of the score generally. Based on the data, the mean of experimental group of pre-test was 66. The next step, the researchers calculated the percentage score of the students' pre-test results were shown as follows:

Table 2

Students Percentage Score of Pre-test

Student's Score	Grade	Category	Frequency (f)	F%
90-100	A	Excellent	0	0%
80-89	B	Good	0	0%
70-79	C	Adequate	8	25%
60-69	D	Inadequate	21	66%
Less than 60	E	Failing	3	9%

Table 2 showed that in the pre-test there was no student who was categorized excellent and good (0%), 8 students were categorized adequate (25%), 21 students were categorized inadequate (66%), 3 students were categorized failing (9%).

The Students' English Pronunciation after Being Taught Using English Pronunciation Application.

The researchers did post-test by recording students' pronunciation of 220 English words as the test. Most of the students needed 5 minutes to record the test. The pre-test was held after the students got the treatment using *English Pronunciation Application (EPA)*. After giving pre-test, the researchers did treatment for the experimental group. In the treatment, the first meeting was introducing *English Pronunciation Application (EPA)*, the researchers instructed the students to download the application. Then, the researchers gave them to know how to use the application and its use. They practiced every part of the application such as what English pronunciation was, single vowel, double vowel (diphthong), and consonant. The second meeting was focused on the single vowel sound and how to produce the

sound. The third meeting was focused on the practice of double vowel (diphthong). The fourth meeting was focused on consonant sound and continued with post-test.

Based on the data, the result showed sum post-test was 2.740. After getting the sum of post-test score, the researchers found the mean of post-test. The mean used to get the condition of the score generally.

Table 3

Students Percentage Score of Post-test

Student's Score	Grade	Category	Frequency (f)	F%
90-100	A	Excellent	10	31%
80-89	B	Good	19	60%
70-79	C	Adequate	2	6%
60-69	D	Inadequate	1	3%
Less than 60	E	Failing	0	0%

Based on the data shown in Table 3, the mean of post-test was 86. In the post-test, there were 10 students who were categorized excellent (31%), 19 students were categorized good (60%), 2 students were categorized adequate (6%), 1 student was categorized inadequate (3%) and there was no student who was categorized failing.

The Significant difference in the students' pronunciation competence of the students who were taught with and without English Pronunciation Application.

To know the difference between the students before and after being taught using *English Pronunciation Application (EPA)*, there were some steps such as calculating the mean of pre-test and post-test, standard deviation, standard error, and t-test. T-test formula was used to find out whether there was significant difference between students' pronunciation competence before and after taught using *English Pronunciation Application (EPA)*. Based on the table above, the sum of $(\sum X_1 - \bar{X}_1)^2$ was 898. After getting the data in pre-test, the researchers computed the data in post-test that was presented in the table below. Based on the table above, the sum of $(\sum X_2 - \bar{X}_2)^2$ was 1.114. The next step, the researchers computed the data. Then, the researchers calculated the value of t-test. It was aimed to know whether there was significant difference of the ability in pronunciation competence between the students who were taught with and without using *English Pronunciation Application (EPA)*. To find t-test, the researchers counted the standard deviation. The result of standard error of pre-test was 5.38 and posttest was 5.99. The standard error of pre-test was 0.95 and standard error of post-test was 1.06. The result of the degree of freedom was 62. Based on the distribution of the t_{table} with the degree of freedom (df) 62 for the significant of 5% was 1.9990; while the t value was 14.08. $t \text{ value} > t \text{ table}$ ($14.08 > 1.999$).

The data that researchers collected are analyzed to find out three research aims in this research. First, it is to find out the students' ability in pronunciation before being taught using *English Pronunciation Application (EPA)*. Second, to find out the students' ability in pronunciation after being

taught using *English Pronunciation Application (EPA)*. Third, to find out any significant difference between the students' ability in pronunciation before being taught using *English Pronunciation Application (EPA)* and after being taught using *English Pronunciation Application (EPA)*

The researchers had done a try out in X Social I. It was aimed to know the validity, reliability, level of difficulty and discriminating power of the instrument. The instruments given to the student were English words tests based on each English sounds. There were forty-four English sounds and each sound was represented by five words. So, there were 220 English words that were recorded by each student. By using SPSS, the researchers counted the validity, reliability, level of difficulty and discriminating power of the instrument. The result of the validity of forty-four items were valid. The result of reliability of the instrument was 0.961, it meant the instrument was reliable. The result of the level of difficulty, 20 items were categorized easy, 19 items were categorized medium and 5 items were categorized difficult. The result of discriminating power, each item has different category; 15 excellent and 29 good categories.

The sample of the research was X Science III occupied by 32 students. The students did pre-test, treatment and post-test. The instrument used for pretest and post-test was the same instrument. The treatment was about explaining what pronunciation is, the important of English pronunciation, and the media to improve pronunciation and its use. The media is *English Pronunciation Application (EPA)* android-based. It has aim to influence the students' pronunciation. The researchers asked them to download and install the application in the *google play store*. The researchers gave to know how to use the application and its features. Then, the researchers allowed the students to practice every part of the application such as what English

pronunciation is, single vowel, double vowel (diphthong), and consonant. Also, the researchers gave to know the students to use the application independently whenever they wanted to practice and learn pronunciation. After giving treatment, the researchers gave post-test. As a result, the mean of the pre-test was 66 and the post-test was 86. In the pre-test, the highest score was 73 and the lowest score was 55. In the post-test, the highest score was 95 and the lowest score was 66. The researchers concluded that the treatment influenced the students to pronounce the words correctly. Based on the collected data, the students who were taught after using *English pronunciation Application* (EPA) got better result than who were taught before using *English pronunciation Application* (EPA). After doing the same steps in calculating the data, the result of t-value was 14.03. Thus, the hypothesis was accepted by comparing the t-value which was higher than the t-table $14.03 > 1.9990$. In sum, using *English Pronunciation Application* (EPA) as the media to improve the students' ability in pronunciation was an effective way.

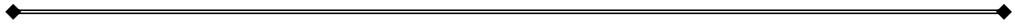
5. Conclusion

Based on the research results and analysis which had been described in the previous sub-section, the researchers could draw conclusions of this research as follows: 1) The ability in pronunciation of the tenth grade of SMA Kesatrian 2 Semarang in the academic year 2018/2019 who were taught before using *English Pronunciation Application* (EPA) was inadequate. The mean of the pre-test was 66 with the highest score is 73 and the lowest score was 55. 2) The ability in pronunciation of the tenth grade of SMA Kesatrian 2 Semarang in the academic year 2018/2019 who were taught after using *English Pronunciation Application* (EPA) was **good**. The mean of the post-test was 86

with the highest score was 95 and the lowest score was 66. 3) The value of t-test was higher than t-table, $14.03 > 1.9990$. Therefore, the alternative hypothesis (H_a) was accepted that the students who were taught after using *English Pronunciation Application* (EPA) was better than those who were taught before using *English Pronunciation Application* (EPA).

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