CHAPTER I
INTRODUCTION

This part explains the urgency of teaching English pronunciation by using Cake android-based application related to some theories and the benefits of using them. For further understanding, the researcher discusses this chapter into some major points. They are background, research questions, problem statements, objectives of the research, significance of the research, and scopes of the research.

A. Background

In the midst of the times, technology is developed rapidly and the need for mastery of English is also increasing. Dependence on English as an international language is inevitable, all circles; the general public, workers, scholars, parents, teachers, and especially students must indirectly understand this language even though not in its entirety. Students themselves admitted that English language should be mastered with deeper understanding, it lead them to practice it in and out of the class, as the active users, not the passive ones (Gavran, 2013).

Various forms of modern technology play an important role in human life. It all started with the industrial revolution that took place in Germany also known as Industry 4.0 (Hariharasudan & Kot, 2018). The Industry 4.0 is at the center of changes that are happening in aspects of human life today. Humans seem to have a new challenge to face the digital world. In the area of education, the circles most exposed to these changes are students as the young generation in this digital era.

As a whole, this generation influenced by digital media that has been grown up with them since birth (Gaston, 2006). Marc Prensky in his book categorized them as “Digital Natives” (Prensky, 2001). For teacher, it is quite challenging to teach digital natives surrounding by digital world. In line with this, it leads the teachers to the next level of teaching by involving completely technology while teaching and learning process.

One of the cutting-edge technologies that are widely used in various aspects today is using Artificial Intelligence (AI). AI is a part of a computer that can do a job well and accurately as humans do. If in the past computers only functioned as automatic typewriters or as calculators, now computers can do more than that, they can do things as well as humans do (Jaya et al., 2018). AI has some advantages over natural intelligence owned by human, AI works permanently while natural intelligence changes easily because of the forgetfulness of human nature.

In its current use, there are several types of AI that have been developed which were functioned as a controller, forecasting, planning, and image processing. In image processing, there are three kinds that commonly used; computer vision, speech recognition, and object recognition. (Jaya et al., 2018). One that will be discussed broadly is speech recognition. Speech recognition works by recognizing the spoken word by the user and comprehend its meaning after processing it (Li et al., 2016). Speech recognition of AI embedded in several giant companies such as Apple.Inc in the Siri application and Google in the

Google Assistant works by recognizing the voice and the spoken word, the AI machine in those applications translating the word/sentences into a command to be done.

Pedagogically, the involvement of AI speech recognition greatly contributes to teaching and learning speaking. Problems that commonly faced by the students in the high school level is in the field of pronunciation, they got hardly to pronounce the English word or sentences correctly even though the teacher has given examples of the correct pronunciation of the word. In the last semester, when the researcher was teaching the last material, namely English song lyrics related to the lives of teenagers, more than half of the students scored below the KKM standard (75), they got a score of 60-65. This is because some students choose not to do the assigned task which is singing English songs. They choose not to do it because of the reason that they lack of English pronunciation. They feel shy and unconfident because of their pronunciation. Psychologically, it will make students feel that learning English is difficult and they do not find learning language are interesting and fun. In other words, they feel unmotivated to learn English beyond.

Relating to the problems above, the researcher conducted a mini study to ensure that these problems are in fact faced by English teachers today by distributing online questionnaire to the fourteen high school English teachers. There were 71, 2% teachers agreed that Industry 4.0 affected their teaching pronunciation teaching method. It means that the teacher adapting digital based

teaching have been applied by majority of them. Meanwhile, when they were asked about involving technology by using AI application in teaching speaking especially pronunciation, several of them used common technology tools such as Youtube, U-Dictionary, Bixby and Duolingo, and most of them used old way in teaching pronunciation like using text book contains pictures without combining the use of application. In line with this, problems in teaching pronunciation highly arisen. Most of the teachers acknowledged that lack of pronunciation become the biggest problem that students faced in speaking class. In line with this, based on the teaching experience conducted by researcher in grade X and XI, there are several types of pronunciation that are difficult for students to pronounce. They have difficulty in pronouncing some vowels and consonants. In vowel form, such as diphthong (sight, mouse, toy); central vowel (earth, teacher, nut); tense vowel (palm, thought, nurse, goose, fleece). Meanwhile, in consonant form, such as the -ed ending of verbs (stopped, liked, robbed, saved, wanted, hated); consonant combinations (accent, chain, bridge, science, scissors, share); with silent letter (doubt, debt, knife, wrap, wreck, wrong); letter in the suffix (nation, patient, measure, pleasure). Moreover, several teacher admitted that affective factor such as low of self-confidence contribute to the students' pronunciation error. The researcher concluded that most of the teachers found same problems among their students. Teaching pronunciation in an old-fashioned way affect their motivation in learning English pronunciation.

Relating to pronunciation problems mentioned above, the researcher conducted a survey to determine the causes of students' poor pronunciation. There

were 42 students involved from SMA Negeri 9 Wajo, 26 students from X grade and 26 students from XI grade. Based on the survey results, 64.4% of students agreed that they became less enthusiastic about learning English pronunciation because of the media used by the teacher is not interesting, so the students were unable to pronounce English words or sentences correctly.

Meanwhile, when students were offered to use an application that could help them to improve their English pronunciation, 72.9% of students stated that they strongly agreed with it. In line with this, the use of the FluSpeak application based on Speech Recognition system used in teaching English pronunciation to Korean EFL students has been proven to help them improve their English pronunciation, this application is used by recording their voices and then repeating each sentence. (Kim, 2006).

Involving technological modernity in teaching pronunciation will be good benefit to the students as digital natives. Besides playing role as a smart assistant for teachers, its presence makes students easier to solve their pronunciation problems.

In order to solve the problem, the researcher will involve an Android-based application. Cake is an Android based application with ASR features that famously used by the EFL digital users. Besides presenting learning English with fun, this application has also become their virtual assistant in learning languages that can be used every time and everywhere. This application is a sophisticated ASR that has been downloaded by 50 million users through Play Store and 11

million users through the App Store. It offers various features that can be used by all English learners. By focusing on learning real English through videos, this application presents audio visual interface that will make it easier for students to listen to and watch various English videos and record their voices to practice pronouncing sentences heard on the videos.

B. Problem Statement and Research Questions

Based on problem explained in the previous part, which is the final grades of students did not meet the KKM standard (75), especially on material that emphasizes mastery of good English pronunciation and also the limited learning applications when teaching pronunciation used by teachers. At the end, it makes pronunciation learning look boring and unattractive to students. Therefore, the researcher formulated the questions as follows:

1) Does AI speech recognition of Cake Android-based application boosting EFL learner's pronunciation ability in SMAN 9 Wajo?
2) How are the students' perceptions about AI speech recognition Cake Android-based application boosting their pronunciation ability in SMAN 9 Wajo?

C. The Objectives of the Research

Related to the problem statement above, the researcher wanted to achieve two objectives of the research namely:

1. To boost to boost EFL learner's pronunciation ability utilizing AI speech recognition of Cake Android-based application to boost EFL learner's pronunciation ability in SMA Negeri 9 Wajo.
2. To measure the students' perceptions toward the utilizing AI speech recognition of Cake Android-based application in boosting EFL learner's pronunciation ability in SMA Negeri 9 Wajo.

D. The Significance of the Research

The significance of the research is separated into two components of the significances, namely theoretical and practical significances.

1. Theoretical significance, the result of this research was expected to be useful information to develop English language teaching and learning, particularly in boosting EFL learner's pronunciation ability by utilizing AI speech recognition of Cake Android-based application.

2. Practical significance, the result of the research was expected to be useful information to every single teacher, educator, practitioner in emerging teaching English speaking by considering the development of Industry 4.0 consequently they were able to combine and involve technology in their teaching English speaking process by utilizing AI application to make students' pronunciation ability be better. In line with this, the students will interest to learn English, especially pronunciation ability; this research is used to stimulate the students to

be able to improve their English pronunciation ability, digital literacy of teacher; this research was wished to consider by the English teacher to involve it in their lesson plan of the part of pronunciation ability, therefore the students will be easy to improve their English pronunciation ability, the last is the next researcher; this research is expected to be useful and meaningful information to the next researcher in enlarging his/her research.

E. Scope of the Research

The scope of the research was separated by discipline, content, and activity as can be seen as follow:

1. By discipline, this research is limited to the field of linguistic study and it focused on boosting EFL learner's pronunciation ability for second grade high school students by utilizing AI speech recognition of Cake Android-based application with the main focus to boost pronunciation ability of students at SMA Negeri 9 Wajo.

2. By content, this research dealing with daily expression in pronunciation activity. As explain before, most of students find difficult to pronounce kind of words either vowel or consonant. Meanwhile, when the word has been arranged in the form of a sentence, they are even more difficult to pronounce it with the correct pronunciation. Based on that, the pronunciation activity that will be conducted by the researcher is relating to pronounce English words especially focusing on segmental features (vowel phonemes and consonants phonemes) based on the English American pronunciation. The CAKE application categorized the user into three level; beginner, intermediate, and advanced. The researcher

categorized the students into beginner level because most of them make a lot of pronunciation error. The activity that will be used by the students in the application is limited only for beginner level. The kind of daily expression will be formulated by the researcher by considering materials that have been arranged based on the lesson plan of K13. The phase of learning consists of preparation activity, pre activity, whilst activity, autonomous practice activity, posts activity and systematic assessment activity.

3. By activity, this research referring to the receptive and productive activity including watching the videos of daily expression that have been chosen by the researcher and repeat it by pronouncing the word and sentences that have been listened by using AI speech recognition features in Cake Android-based application. By using this application as the learning tool, the students will find many kind of daily expressions that have been existed in the Cake android-based application. The students will get the result score of their pronunciation after pronouncing the sentences. The AI speech recognition will recognize the true pronunciation (based on the English American pronunciation by giving the good score, otherwise the poor/bad pronunciation will get bad score. In another activity, the students directly learn about new vocabulary that will enrich their stocks of vocabulary. The output of this application is the students get a better pronunciation.

4. By Location, this research is conducted at SMA Negeri 9 Wajo, exactly at the XI IPS 1 classroom.

CHAPTER II
REVIEW OF RELATED LITERATURE

A. Some Previous Related Research Findings

The use of the FluSpeak application based on Speech Recognition system used in teaching English pronunciation to Korean EFL students has been proven to help them improve their English pronunciation, this application is used by recording their voices and then repeating each sentence. This software is very helpful to boost students' pronunciation (Kim, 2006). Meanwhile, Bridging pedagogy and technology had conducted by Tsai (2006) in his study. By Using MyET, a popular pronunciation oriented software in Taiwan, he evaluated the students at the beginning and intermediate levels. The questionnaire result of the students shown that they enjoyed using the software, practicing their pronunciation and getting feedback.

Al-Qudah (2012) conducted a study on Jordanian students by investigating the effect of CAPT on English pronunciation of students. She used Two Way ANOVA method and including 149 third year students, she found that the CAPT was effective in promoting students English pronunciation. In line with this, Luo, (2016) investigated CAPT technique which combined reading with peer correction to improve English pronunciation in English Department students in Taiwan. Students get a short text each week along with a sound recording of the text recorded by a native speaker. They listened and practiced themselves then comparing their recording to the native speaker. It shown that it was very useful to

reduce students' pronunciation problems. Thus, Ali, (2016) investigated university students who has been studying English for 7 years before becoming a college student. This researcher combined a direct approach method with pronunciation exercises carried out face-to-face with online instruction and using Computer Assisted Pronunciation Training programs (CAPT) involved ASR systems, his result of the research shown that ASR systems were efficient for pronunciation training (Hincks, 2002). Parsiani, et al (2020) revealed in their study about the effectiveness of involving CAPT on teaching foreign language pronunciation. The study involved 48 students on Persian monolinguals and Turkmen-Persian and also Baloch-Persian bilingual pronunciation. The result shown the significant effect on pronunciation production of the students.

Meanwhile, Elimat & AbuSeileek (2014) used ASR system to the sixty-four Third Grade students in the second semester. The result of the study shown that the ASR system was effectively to help students in learning foreign language pronunciation. Moreno, (2015) used VISP (Videos for SPeaking), an application based on Audio Description in their case study. This study involved less than 20 Spanish students as EFL. They gave a lot of positive perceptions regarding the application which means this application has a good impact on their English pronunciation. It was also efficient to help them for improving their speaking.

Halimah, et al (2018) conducted a study to examine EFL learner's perception on Orai App by using Likert-scale questionnaire. The total of 24 first year students university were the subject of the research. The result of the research shown that the students had overcame their speaking problems. It also highly

recommended by the researchers of the study to assist students to become a better speaker. Meanwhile, Saleh & Gilakjani, (2021) used Accent Master Software (AMS) in their experimental research by involving seventy EFL learners. The results showed that the experimental group scores higher than the control group in the post-test. A CAKE application used by Yanthi (2021) to answer technological revolution. She used the app in teaching speaking to Senior High School students by using qualitative method. The result shown that the application created fun English learning, improving their speaking skill and confidence.

These researches mentiond above had similiarites and and differences with this research. The similiarity is that all these researches mentioned using Speech Recognition system to elevate students' pronunciation. Meanwhile, the differences can be seen in each research. First research used FluSpeak application to Korean EFL students, while this research used Android application to high school students. The second research used MyET, a computer software to boost pronunciation of the students while this research focused on Android application that can be used easily by smartphone. The third, fourth, and fifth researches used CAPT at the university level, while this research has high school students as the participant. The seventh research also using CAPT to the Persian Monolinguals and Turkmen-Persian and also Baloch-Persian bilingual pronunciation, while this research will be applied to the Indonesian-Buginese high school students. The ninth research used VISP, an application based on Audio Description to drill students' pronunciation, while this research used Cake Android-based application. The tenth research used Orai app to measure students' perception using

questionnaire at university level, while this research focused on the improvement of students pronunciation using quantitative method (paired t-test). The eleventh research used Accent Master Software (AMS) to boost students' pronunciation while this research used different application which is Android-based application (Cake application). Thus, the last research used Cake application to know students perception, while this research focused on improving students' pronunciation by using quantitative method.

In conclusion, the researches above showed that involving AI technology in teaching English pronunciation has a significant impact on students. It was evidenced by the student interest and student grades getting better after using these applications. Compared to traditional classrooms setting which were the students do assignments using pen and paper, engaging AI in digital learning today is considered capable of changing the classroom atmosphere and elevating the students' pronunciation ability to a higher level.

B. Some Pertinent Ideas

1. The Emergence of Teaching Pronunciation

Pronunciation is a way of producing the sound of letters clearly when speaking, it is closely related to the phonological processes associated with grammar that determine how sounds and patterns in language are formed. In conclusion, pronunciation is knowledge that studies how word sounds are produced clearly orally. This is very important to make communication between speakers and listeners easier to understand.

Pronunciation is an important subsection taught in learning speaking. Good pronunciation leads students having high self-confidence when they speak English. It also makes other (the interlocutor) minimize the barrier and understand more about the spoken words speak by the speakers. Conversely, poor pronunciation will cover good English skills of the students; if a student can speak accurately but the words spoken are hard to get the meaning because of using poor pronunciation, then it leads communication to be misinterpreted. At the end, a poor pronunciation becomes barriers in communication with other.

In line with this, Fraser (1999) stated that pronunciation is the important part in teaching English. Furthermore, Fraser added that pronunciation aspect still received little attention among the English teacher. The main reason is about the uncertainty to use the better way/method in teaching pronunciation. Beside of that, the limited learning time in the class makes teachers have no time to pay attention pronunciation aspect and hard to detect the difficulty faced by students.

In conclusion, it is very important to know how to teach pronunciation and recognize the difficulties and weaknesses of students in pronunciation aspect. It is also a big challenge faced by English teachers (Gilbert, 2008).

A. Major English Pronunciation

a. Difference between American English (GA) and British English (RP) Pronunciation

1. Rhotic Accent

The presence of the rhotic accent is one of the most noticeable differences between British and American English. Rhotic accent refers to the manner letter r is pronounced after a vowel within a syllable. In English, rhotic accent is produced as a retroflex approximant. The following words have rhotic accent: *York, quarter, four, born, door, water, later, hers, heard, hurt, university, were, birth, thirty, ear, nearly, air, where.*

Furthermore, rhotic accent is produced according to the following circumstances.

a) There is rhotic accent when a word is pronounced in isolation or at the end of a prosodic break. For example, “It was very hard.”

b) The rhotic accent is lost when the letter r does not belong to the same syllable. Compare *water* [ˈwɔːtəɻ] and *watery*[ˈwɔːtəɹi].

c) If within a prosodic unit the last syllable of a words ends by [ɻ] and the next word begins by a vowel, then the rhotic consonant

is substituted by [ɹ] or [ɾ], depending on the particular accent. For example, the sentence. *That water is cold* is pronounced as [ðætˈwɔːtəɹɪzˈkoʊld]; notice the change from [ɻ] to [ɹ] in *water*.

2. Differences in Vowel Pronunciation

2.a Change of Vowel [ɒ]

Letter o is pronounced in many different ways in English. Here we have a few illustrative examples of such diversity: Hot [hɒt] in RP, but [hɑːt] in GA; love lʌv]; corn [kɔːn] in RP, but [kɔːrn] in GA; continue[kənˈtɪnjuː]; moon[muːn]; coast[kəʊst] in RP, but [koʊst] in GA; house[haʊs]. The so-called “short o”, which often appears in a stressed syllable with one letter o such as in dog or model, underwent a change in American English. In British English that sound is pronounced as an open back rounded short sound [ɒ], as in hot [hɒt], or possible [ˈpɒsəbl]. In American English it is pronounced either as an open back unrounded long sound [ɑː], as in hot[hɑːt], or as an open-mid back rounded long vowel [ɔː], as in dog[dɔːg].

2.b Change of [æ]

This near-open front unrounded vowel [æ] is first lengthened to [æ:] and later lowered to the open back unrounded vowel [ɑ:]. However, the change did not take off in GA, bringing about a new difference between both accents. Below are some examples to illustrate the above rules as well as a few exceptions.

a) Words pronounced with [æs] in GA but with [ɑ:s] in RP: brass, class, glass, grass, pass, mast, past, master, plaster, clasp, grasp, gasp, mask, task, ask, basket. Exceptions: crass, gas, lass, mass, astronaut, pastel.

b) Words pronounced with [æf] in GA with [ɑ:f] in RP:*calf, graph, giraffe, half, laugh, staff, after, craft, daft, draft, laughter, raft, shaft.*

c) Words pronounced with [æθ] in GA with [ɑ:θ] in RP: *bath, lath, path*. Exceptions: *hath, maths, athlete, decathlon.*

d) Words pronounced with [ænt] in GA with [ɑ:nt] in RP: *aunt, plant, can't, advantage*. Exceptions: *ant, banter, scant, mantle.*

e) Words pronounced with [æmp] in GA with [ɑ:mp] in RP: *sample, example.* Exceptions: *trample, ample.*

3. Diferences in Consonant Pronunciation

3.a Pronunciation of letter *"t"*

Both GA and RP have aspirated and de-aspirated [t] sounds, which, in a formal or simply careful enunciation, the only two sounds are

corresponding to stop [t]. In colloquial and other registers, the other allophones may appear. In the RP the flap [t] is never used, but instead it is pronounced as a de-aspirated

4. Change of Stress

4.a Ending –ate

Words ending in -ate, mostly verbs, have a different stress pattern in both accents depending on the length of the word.

a) Most 2-syllable verbs ending in -ate have first-syllable stress in GA and second-syllable stress in RP. This includes *dictate, donate, locate, migrate, placate, pulsate, rotate*. There are exceptions where both pronunciations agree, as in *abate, checkmate, duplicate, evacuate, graduate, imitate*.

b) Most longer -ate verbs are pronounced the same in GA and RP. There are a few exceptions where in RP it has a first-syllable stress and in GA a second-syllable stress, as in *elongate, remonstrate, tergiversate.*

b. Australian English Pronunciation

1. The ‘oh’ sound /əʊ/

The ‘oh’ sound is more open and wider than the British and American dialects. We drop the draw lower and open the mouth more. The jaw is more relaxed. Below are the examples.

a) don’t (I d**o**n’t know)

b) know (I don’t kn**ow**)

c) home (It’s time to **go** h**o**me)

d) no one (N**o** one g**oe**s there though)

e) though (No one goes there th**ough**)

f) hopeless (This is h**o**pelessly slow)

g) slow (This is hopelessly sl**ow**)

h) lonely (He seems l**o**nely)

2. The /t/ sound, when it comes between two vowels in a word, sounds like a /d/. Below are the examples.

a) Better (I feel b**ette**r today) **[bedder]**

b) Water (He drinks a **lot o**f w**ate**r/ **[alodda/wader]**

c) lot of (He drinks a **lot o**f w**ate**r/ **[alodda/wader]**

d) eating (Sit up while you’re e**ati**ng. **[eading]**

e) sit up (Sit up while you’re e**ati**ng. **[eading]**

f) writer (She wants to be a w**rite**r. **[wrider]**

3. The /a/ sound or schwa /Ə/ when a word ends in these vowel sounds. To make the typical Australian sound like this, the draw drops quite a lot and the mouth is quite wide open.

a) a – sofa / area / coma (Come and sit on the sof***a*** next to the f***ire*****)**
b) re – centre / metre / fire
c) or – actor / doctor (He's a doct***or*** and part time act***or***)
d) ure – pure / cure / nature (I love the p***ur****e* air in nat***ure***.
e) our – hour / neighbour / sour (My mother got a lett***er*** from her neighb***our***)
f) er – mother / another / letter

B. Segmental Features

a. Vowel Phonemes

The English vowel based on Received Pronunciation (RP) consists of 12 simple vowel phonemes and 8 diphthongs (Poole 1999: 60), the same with General American (GA) (Ladefoged 1993: 31). The quality of the vowel can be distinguished between lax (short) consist of 6 vowel phonemes and tense (long) consist of 10 phonemes. The lax vowels are {/ɪ, e, æ, ʊ,,ʌ ɝ/} and the tense vowels are {/i, eɪ, , ɑ ɔ, oʊ, u, ju, aɪ, aʊ, ɔɪ /} (Ladefoged 1993: 87). There is a vowel known as schwa /ə/, used to designate vowels that have reduced vowel quality or the vowel is unstressed during the realization in a connected speech. Comparing the number of

phonemes and the quality of vowels, it is difficult for Indonesian to pronounce or speak the English words since in Indonesian; there are only six vowel phonemes and they do not have tense vowels since it is not phonemic (Alip, 2016: 16)

b. Consonant Phonemes

There are 24 consonant phonemes which can be categorized into 6 oral stops {/p, b, t, d, k, g/}, 3 nasal stops {/m, n, ŋ}, 4 approximants {/l, r, j, w/}, 2 affricates{/tʃ, dʒ/}, and 9 fricatives {/f, v, ð, θ, s, z, ʃ, ʒ m, h/} (Giegerich, 1992: 41). Comparing the English consonant phonemes with Indonesian consonants phonemes, there are slight differences. The most differences found in fricatives and affricates. For Indonesian, they perceived the phonemes /f/ and /v/ as /p/ while /ʃ/, /z/, / /ʒ as /s/. The latter is both phonemes are alveo-palatal in Indonesia while in English the phonemes are palato-alveolar or also labelled as postalveolar (Alip, 2016: 16)

C. Types of Vowels

a. Monophthong/ Pure Vowels

This type of vowel is known as a stable vowel because it is only articulated with one sound according to the original form of the spoken letter. Below are some of the pronunciation symbols of the monophthong vowel letters and the examples.

a) Hit [i]

b) Lick [I]
c) Beg [e]
d) Fed [ɛ]
e) Glad [æ]
f) Two [u]
g) Should [ʊ]

b. Diphthongs

Diphthongs are type of vowels created when two vowels are articulated into one syllable. In general, starting with the first vowel then moving to the next vowel when spelling a syllable. These are the list of the examples:

a) Sight [aɪ]
b) Mouse [aʊ]
c) Toy [ɔɪ]
d) Make [eɪ]
e) Fur [ʊə]

c. Close vowel

This type of vowel is formed when the tongue is raised against the roof of the mouth. Therefore, the mouth will be closed when articulating this type of vowel so it is called a closed vowel. Below are the examples.

a) [i] See
b) [i:] Any
c) [ɪ] Lit
d) [e] Bait
e) [o] Hope

f) [θ] Thing

d. Open Vowel

Open vowel is formed when the tongue moves down towards the jaw so that the mouth automatically opens when articulating this type of vowel. Below are the examples of open vowel.

a) [ɛ] Head

b) [ɔ] Small

c) [ʌ] Fun

d) [æ] Laugh

e) [a] Snake

e. Front Vowel

To articulate this type of vowel, the tongue is placed at the front of the mouth like spelling a word, so it is called a front vowel. To be more careful, when this vowel is articulated with a different tongue position it will turn into a consonant. Below are the examples.

a) Island [i]
b) East [e]
c) Have [a]
d) Pin [ɪ]
e) Cake [eɪ]
f) Cat [æ]

f. Central Vowel

Central vowels are vowels which are also known as mixed vowels. This is due to the position of the tongue which is in the

middle, between the front and back of the mouth. The following are the examples of central vowel:

a) Earth [ɛ]
b) Teacher [ə]
c) Nut [ʌ]

g. Back Vowel

To articulate this vowel, the tongue is positioned at the back of the mouth when spelling words, so that the back of the vowel produces the sound. Examples of back vowel:

a) Book [u]
b) Egyptian [i̯]
c) Go [o]
d) Oops [U]
e) All [)]

h. Rounded Vowel

This vowel will form a mouth like a circle when spelling syllables. It results rounded vowels. Examples of rounded vowels:

a) N**o**te
b) L**oo**k
c) R**u**le
d) B**oo**t
e) **W**ell *(semivowel)*

i. Unrounded vowel

Unlike round vowels, these vowels are created when the mouth is opened and pointing to the side, so they are known as unrounded vowels. Examples of unrounded vowels:

a) M**i**lk
b) S**e**w
c) D**e**sk
d) **A**sk
e) W**a**v**e**

j. Tense vowel

This type of vowel requires more effort and muscle to articulate. The position of the tongue will rise to a higher position and be held for a long time compared to other vowels. Below are the examples of tense vowel:

a) Palm
b) Thought
c) Nurse
d) Goose
e) Fleece

k. Lax Vowel

This type of vowel must be followed by a consonant behind it. This is because the vowel will not sound without a consonant because it is at the end of the word. Lax vowels are also shorter than tense vowels. Below are the example of lax vowels:

a) **I**nk
b) R**e**d
c) S**ai**d

d) S**a**nd

e) Br**o**ther

f) G**o**ne

g) P**u**ll

h) Teach**e**r

D. Types of Consonant

a. Consonant letters and their sounds

Letters	**Sounds**	**Examples**
b	[b]	baby, best, buy, bring
c	[s] [k]	center, cellar, cigarette cake, come, panic
d	[d]	day, dear, ended
f	[f]	fast, female, cuff
g	[g] [j] [zh]	game, gap, egg; general, gin, manage; mirage, garage, beige, rouge
h	[h] [-]	hair, help, inherit; hour, honor, honest
j	[j]	jam, Jane, jet
k	[k]	Kate, kind, look
l	[l]	late, let, live, alone
m	[m]	make, men, mind
n	[n]	napkin, never, night
p	[p]	paper, person, crisp
q (qu)	[kw] [k]	quality, question, require; unique, technique
r	[r]	rain, red, rise, brief
s	[s] [z]	send, simple, song cause, present, reason,

t	[t]	task, tell, time, tone,
v	[v]	vast, vein, vivid, voice,
w	[w]	wall, war, way, west
x	[ks] [gz] [z]	exercise, exchange, relax; exam, exact, executive; Xenon, Xerox, xenophobia
z	[z] [ts]	zero, zoo, horizon, jazz; pizza, Mozart, Nazi,

Table. 2.1 Consonant Sound

b. The letter Y

a) [i]: baby, hurry;

b) [ai]: by, try, rely;

c) [y]: yacht, yard

c. The letter W

The letter W represents the vowel sound [u:] in the diphthongs

[au] and [ou]: now, how, owl; low, own

d. The -s/es ending of nouns and verbs

[s]	[z]	[iz]
tapes [teips], streets [stri:ts],	ribs [ribz], kids [kidz], legs [legz], leaves [li:vz]	pieces ['pi:siz], roses ['rouziz], prizes ['praiziz]
(he) grips [grips], writes [raits]	(he) robs [robz], reads [ri:dz], digs [digz], saves [seivz]	(he) kisses ['kisiz], loses ['lu:ziz]
Pip's [pips], Kate's [keits]	Abe's [eibz], Fred's [fredz]	Chris's ['krisiz], Tess's ['tesiz]

Table 2.2 The -s/es ending of nouns and verbs

e. The –ed ending verbs

[t]	[d]	[id]
stopped [stopt], liked [laikt], coughed [ko:ft]	robbed [robd], saved [seivd], seized [si:zd]	wanted ['wontid], hated ['heitid], counted ['kauntid]

Table 2.3 The –ed ending verbs

f. Consonant combinations

Letters	**Sounds**	**Examples**
cc	[ks] [k]	accent, accept accommodate, account
ch tch	[ch]	chain, check; kitchen, catch
ch (Latin, Greek) ch (French)	[k] [sh]	character, chemical champagne, charlatan
ck	[k]	black, pack
dge	[j]	bridge, edge
gh	[g] [f] [-]	ghost, ghastly cough, enough though, through
gu	[g] [gw]	guard, guess language, linguistics
ng	[ŋ] [ŋ]+[g]	king, sing finger, anger
ph	[f]	phone, photograph
qu	[kw] [k]	quality, question unique, technique
sc	[s] [sk]	science, scissors scan, scandal
sch	[sk] [sh]	school, scholar schnauzer, schedule
sh	[sh]	share, she, shine
th	[θ] [ð]	thank, thick, think this, that, then
wh	[w] [h]	what, when who, whom
xh	[ks] [ks]+[h] [g]+[z]	exhibition; exhumation, exhume; exhaust, exhibit
With silent letters	**Sounds**	**Examples**
bt, pt	[t]	doubt, debt, subtle;

kn, gn, pn	[n]	knee, knife,
mb, lm	[m]	lamb, climb
ps	[s]	psalm, pseudonym
rh	[r]	rhapsody, rhetoric
wr	[r]	wrap, wreck
Letters in the suffix	**Sounds**	**Examples**
ti, ci, si, su	[sh]	nation, patient
si, su	[zh]	vision, fusion, Asia,

Table 2.4 Consonant combinations

E. EFL Students' Pronunciation Errors

Mispronunciation can be interpreted as an act of pronouncing words/sentences incorrectly. This becomes very important because the wrong pronunciation can lead to misunderstanding, misinterpretation between the speaker and the speaker. Therefore, in the pedagogical context, the problem of pronunciation is an important thing to be considered both teachers and students (Silalahi, 2017).

A study conducted by Lestari, et al (2020) relating to the pronunciation errors made by the students. Based the results of the study, it was found that students made the most mistakes in vowels, followed by consonants, and diphthongs. There are several factors that contributed to students' pronunciation errors. There are three factors including internal factors such as the lack of preparation of students before doing speech and the anxiety of students when doing speech, external factors such as lack of time and opportunity to use English in everyday life, while inter lingual factors are the influence of mother tongue pronunciation (Silalahi, 2017).

F. Solution to Students' Pronunciation Errors

Lestari, et al (2020) offers solutions to overcome those errors mentioned above. The solutions explained as follows:

a) Regarding pronunciation, students can increase their vocabulary by reading a lot, then checking their mistakes and dealing with them well. On the other hand, involving social media is very helpful for students to learn English well, such as Facebook or Instagram which can help them communicate more widely with English native speakers.

b) Teacher involvement can help students to improve their English vocabulary pronunciation skills by providing lot of pronunciation exercises when teaching pronunciation in the classroom.

Meanwhile, Silalahi, (2017) offers different solutions as follows:

a) Using appropriate and authentic materials to improve students' pronunciation skills by providing English expressions.
b) Improving student's ability to pronounce English expression can be done by using suitable and authentic materials.
c) To increase students' phonological awareness, the teacher provides drills with words that have similar spellings

2. Digital Technology in Language Teaching

From various sources, the generation division is identified into 5 typological sections. (1) People who were born between 1928 and 1944 categorized as traditionalist (2) The generation born between 1945 and 1965 who are passionate about work known as baby boomer; (3) They were born between 1965 and 1979 categorized as generation X,; (4) They who were who were born between 1980 and 1995 known as generation Y who grew up in the establishment and already have knowledge of technology; (5) Generation Z, those born after 1995, have entered the workforce and become natives of the digital world. They are able to make decisions quickly. (Consultancy.uk, 2015; Dauksevicuite, 2016)

Digital natives referring to the native speakers of the digital language of internet, and computer. Nowadays, these generations have been growing up and spent their most time by interacting with smartphone, computers and other digital technologies. (Prenski, 2001). Meanwhile, some people assumed that they were born during or after digital technologies introduced to people, after 1980s or during 1980s, they called "generation Y" and “Millenials” (Prenski, 2001). A study conducted by Yong and Gates (2014) found that students get a lot of time to access their smartphone and computers. They preferred to use portable electronic devices to make them easier to access internet and computer at anytime, anywhere.

Cilliers, (2017) conducted a study to investigate the preferences of the new Generation Z students using technology within formal educational systems. The study collected the perceptions among the Generation Z students and the teacher. There were several different point of views found in the study, for instance the students get to know more about technology rather than the lecturers and some different point of views. The researcher presented solutions to solve the problems and elevate teaching-learning English in the classroom by using several methods and strategies.

Hussin, (2018) stated that education in this era is an implementation of the needs of IR 4.0 where technology and human are collaborated to activate new probabilities. Not only learning skill and knowledge, but also helping digital learners to learn and identify the initial of the knowledge and skill (Fisk, 2017). Learning environment built around them with the captivating atmosphere. They learn together and share each other by involving digital technology in their learning. Involving digital technology in language teaching helps the learners to know how to read and write and fulfill knowledge and skills for their daily life. (Hariharasudan & Kot, 2018).

There are nine possibilities related to using technology in language teaching (Fisk, 2017). First, learning can be conducted anytime anywhere. By using e-Learning tools, it offers good chances to students to do remote learning, they can learn themselves without teachers next to them.

Second, learning will be focused individually on students. Giving them more complicated tasks if they have mastered certain tasks. Transferring positive reinforcement to provide good learning experience and make students confident about their achievement in school.

Third, students have the right to choose the way they want to learn. In line with this, learning results will be determined by educational institutions/schools, they can still determine the preferred learning tools or forms they want. In line with this, teachers can apply blended learning, flipped classrooms and the BYOD (Bring Your Own Device) approach.

Fourth, learners get more project-based learning. They are asked to apply their knowledge and skills in finishing several short term projects. These projects hopefully make them practicing their organizational, management and collaborative skills in their future careers.

Fifth, they get more direct learning through experiences such as mentoring projects and collaborative projects. The variety of available technologies makes studying more effective, so there is more room to acquire skills that involve direct interaction and human knowledge.

Sixth, learners will be challenging to interpret the data by applying their theoretical knowledge in the form of numbers and then drawing conclusions according to the logic of the given data. At the end, the computer will statistically analyze and try to read what will happen beyond.

Seventh, students will be assessed differently using conventional platforms. Students' knowledge will be assessed by the teacher during the learning process. It is also known as process assessment. Meanwhile, how they apply the knowledge they had when they get or work on field projects.

Eighth, the student's point of view will be considered in designing and updating the curriculum. Their advice and input helps curriculum makers maintain a contemporary, up-to-date and usable curriculum.

Last, in the learning process, students will be independent because the teacher will act as a facilitator who guides students during learning process.

It will greatly help teachers in the contemporary learning process, where students will get new things in their learning process that they do not find in conventional learning.

Hussin (2018) illustrated how digital technology can be integrated in teaching and learning in flipped classroom. By collaborating several digital tools, she brought up a topic about top 10 skills in 2020 to the students. An interactive application is known as Mentimeters. This application is in the form of presentation software (https://www.mentimeter.com) which can help teachers to see student responses quickly and accurately to a topic. To vote, students only need to visit the link (https://www.menti.com/)

Then, using a free bulletin board called Padlet (https://padlet.com/). The students use the application to collaborate, share contents, links, audio, video. To assess student work, several applications can be used depending on the assignment given. For online quizzes, she used Kahoot! and Socrative check students' understanding related to the course.

3. The Overview of Artificial Intelligence (AI)

a. The Definition

The development of Artificial Intelligence (AI) increasingly provides many conveniences in various aspects, one of them is education. Jaya, et al (2018) defines AI is a part of a computer that can do a job well and accurately as humans do. If in the past computers only functioned as automatic typewriters or as calculators, nowadays computers can do more than that, they can do things as well as humans do (Jaya et al., 2018). AI has some advantages over natural intelligence owned by human, AI works permanently while natural intelligence changes easily because of the forgetfulness of human nature.

There are some definitions related to AI, according to Schalkoff (1990), AI is a field of study that seeks to explain and imitate the behavior of intelligence in the form of computational processes. Thus, Rich & Knight (1991) defines AI as the study of how to make computers do things that until recently, people could do better. In line with this, (Luger & Stubblefield, 1993; Haag & Keen, 1996) explain that AI is a field of study

that deals with capturing, modeling, and storing human intelligence in an automated technological system so that the system can facilitate decision-making processes normally performed by humans.

Referring to the definitions above, the researcher concludes that AI is an invention that exist to help humans work easier, by working automatically, thinking and acting like real human behavior. The existence of AI in various aspects of human life, makes AI able to help human activity.

b. Main Application Domains of AI

According to I.D.A.I (2011). There are several purposes for making AI; make machines smarter, understand intelligence, and make the machine more useful. The existence of AI in human life is applied in several types as explain below:

a. A Deep Blue computer equipped with a chess program in 1997 and has been used against world champion Garry Kasparov
b. Logic Theorist is a program that is able to prove some of the theorems contained in the first chapter of Whitehead and Russell's Principia Matematica.
c. SYSTRAN is a program that can be used to translate from and to German, French, Italian, Japanese, Korean, Russian, Portuguese, and Spanish.
d. Delco Electronics created a self-driving car. This car uses edge detection to stay on the road.

e. Volkswagen AG (Germany) creates an automated vehicle driver system.

Thus, according to O'Brien, et al (2001), there are the main application domains of AI as explain as follow:

a. Natural Language Processing (NLP) is a field of AI that deals with understanding human language. The application of this domain is Babel Fish Translations which is a language translation program for the web environment which is a product of Altavista and Intellect which is developed by AICorp. This program is used to get information based on questions in English. This system works on the basis of an English dictionary and is able to recognize the meaning of words such as those, them, and their.

b. Computer Vision also known as visual perception or image recognition. Computer vision is one of the areas of AI that is concerned with recognizing an object and then using it for decision making. In the industrial world, computer vision is used to automatically sort products.

c. Voice/Speech Recognition is a process that allows computers to recognize voices. The application of this technology is used for document typing through voice and voice analysis in foreign language learning programs. Currently, voice synthesis technology has also been widely used, where it is possible for computers to speak. The application of this technology can be seen in Siri application, Google

Voice, Games with Speech Recognition, and some learning application that processing the voice user and analyze it.

d. Robotics is an electromechanical device that can be programmed to automate a task normally performed by humans. Robots are widely used in the car industry. For instance, *RoboCup* is a robot that can play ball, *Scrubmate* is a robot that can clean the bathroom. The robot is equipped with cleaning equipment, ultrasonic eye sensor and computerized control, *Sojourner* is a six-wheeled robotic vehicle used by NASA in exploration of the planet Mars. This robot is equipped with a laser eye can take samples of the atmosphere and soil and then send data and photos to the earth, and *SICO* which is a robot known as Robot Therapist can help children who have emotional problems.

e. Expert system also known as knowledge-based system is a system that imitates a person's expertise in a particular field in solving a problem (Horn, et al, 1986). According to Politakis & Weiss (1984), expert system can do some job such as deal with complex and real problems, which require expert interpretation and solve these problems by using computer models that use expert human reasoning and produce the same conclusions as the conclusions produced by expert humans when faced the same problems.

f. Fuzzy Logic is a technique that was developed by Lofti A Zadeh in 1965 which used to deal with uncertainty in problems that have many answers. The application of this technique such as subway controller in

Sendai, Japan, adjust the autofocus mechanism on the camera or camcorder to eliminate distractions due to image focus shaking, car braking system (Nissan), saving on AC power consumption (Mitsubishi Heavy Industries, Tokyo, and stock selection.

g. Neural Network or Artificial Neural network / ANN is a field of AI that imitates pattern processing in the human brain based on pattern recognition. ANN is a collection of processing elements with each subgroup performing its own computation and passing the results to the next subgroup. Each subgroup is independent.

h. Genetic Algorithm (Adaptive Computing) is an approach that imitates the ability of living things to adapt to the environment so that an evolutionary process is formed to solve problems. There are three methods that used to solve the problems, the first is mutation which is trying random combinations of processes and evaluate the results, the second is crossover which is combining part of a good result with hope can get a good result, the third is selection which is selecting good processes and discarding bad ones.

i. Hybrid AI System (Hybrid Intelligent System) is a system that combines several AI technologies to take advantage of or combine the advantages of each technology. For instance, soft computing that combines ANN, fuzzy logic, genetic algorithms, and conventional AI techniques and neurofuzzy combines the use of ANN and fuzzy logic. This system is widely used by Japanese companies such as Matsushita

and Sharp who have applied to washing machine and refrigerator products.

4. Speech Recognition (SR)

As explained in the previous section, Speech Recognition (SR) is one of the applications of AI. Using Automatic Speech Recognition machine has been the focus of research for over 40 years and this was the beginning of the science fiction computer-related HAL introduced in the 2001 Stanley Kubrick film A Space Odyssey and the R2D2 robot in George Lucas' classic Star Wars series. In the 1950s, several researchers tried to dig deeper into the acoustic-phonetic idea (Lawrence & Juang, 1993). The use of SR has the aim of creating a powerful and modern machine that can translate spoken information and process it appropriately. Even this sophisticated machine is thought to be able to approach how humans communicate (Gerber, 1995). Currently, most of the documents that have been created are archived electronically. Likewise with handwriting which has been replaced by typing from a computer, both of which require information from written language.

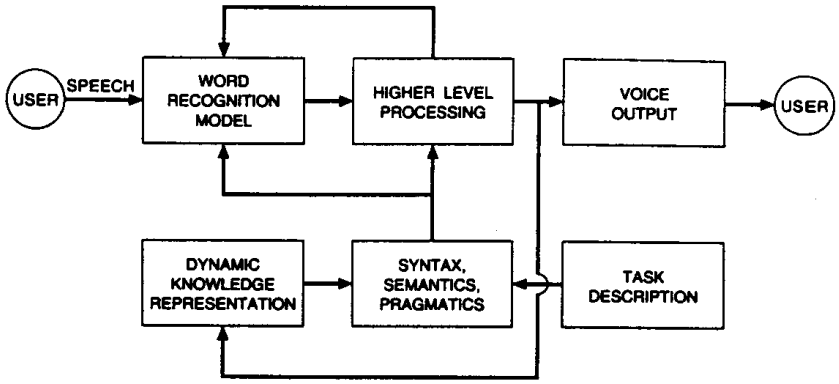


Figure 2.1 Diagram of a task-oriented speech-recognition system

A general model of speech recognition system shown in Figure 2.1 begins with a user creating a speeh signal (speaking) to accomplish a given task. The spoken output is first recognized in that the speech signal is decoded into a series of words that are meaningful according to the syntax, semantics, and pragmatics of the recognition task. The meaning of the recognized words is obtained by a higher-level processor that uses a dynamic knowledge representation to modify the syntax, semantics, and pragmatics according to the context of what it has previously recognized. The feedback from the higher-level processing box reduces the complexity of the recognition model by limiting the search for valid (acceptable) input sentences (speech) from the user. The recognition system responds to the user in the form of a voice output, or equivalently in the form of the requested action being performed (Lawrence & Juang, 1993).

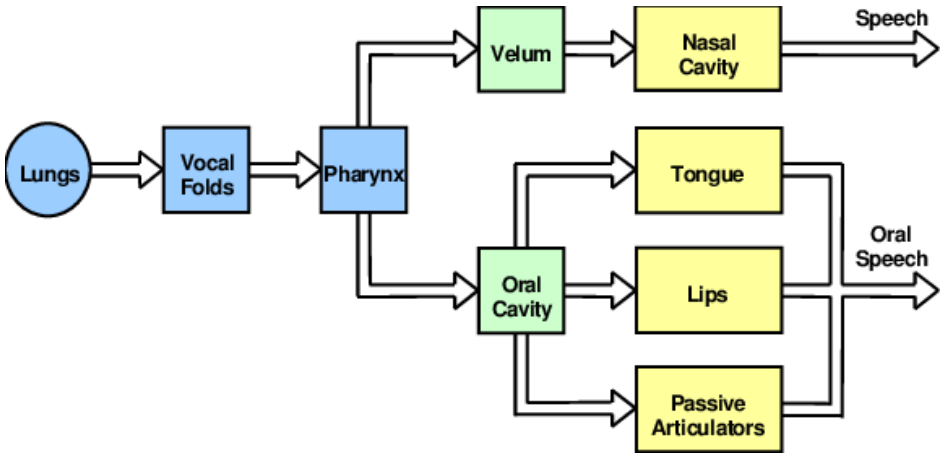


Figure 2.2 Diagram Human Speech Production

Comparing to the speech-recognition system in Figure 2.1, the human speech production is processing differently. The main organs of the human body responsible for producing speech are the lungs, larynx, pharynx, nose, mouth, lips, teeth, jaw, vocal cords and velum. Muscular force to expel air from the lungs, provides the source of energy. The airflow is then created in various ways to produce components of acoustic power in the audio frequency range. The properties of the resultant sound are modified by the rest of the vocal organs to produce speech. For each sound, there is a particular position for each of the vocal tract articulators: vocal cords and tongue (Dominguez & Kelly, 2002)

5. CAKE Android-Based Application

a. Description of CAKE

` Cake is an Android-based application that can be downloaded for free via Play Store and iOS. In Play Store, this application has been downloaded more than 50 million and received 759 thousand reviews with a rating of 4.8. This app is included in the top three popular educational apps in play store. This popular

application created by South Korea to help non-native speakers to learn English well and become a better speaker. By involving AI in its systems, users feeling so helpful when using this app in learning four skills of English especially speaking and listening. Creating fun, joyful, and easy to use interface makes the users easily to run the application. In line with this, Yanthi, (2021) stated that the application gives confidence to the students to speak confidently in daily life or in front of public. Azkia (2012) commented that it helps her to learn several skills of English; writing, listening, speaking, and grammar. Therefore, Kamendakal (2012) said that the features of the app is easy but complex. The lesson given in the app is easy to practice and understand. This application categorized the user into three level; beginner, intermediate, and advanced. In the part of pronunciation, the researcher categorized the students into beginner level because most of them make a lot of pronunciation error.

By using audio-visual interface and embedding AI in its system, CAKE greatly assists students in improving their English pronunciation. The students meet various videos from bunch of channel. The students were helped by advantages of the application such as repetition for the sentence learned, emphasis, clear transcription, and good quality video and audio. Yanthi, (2021)

b. Key Features



Figure 2.3 Interface of Cake

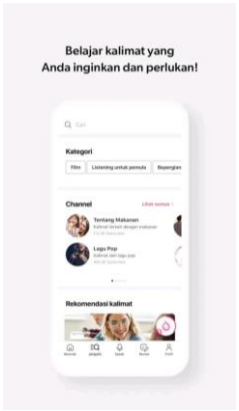


Figure 2.4 Channel and Category

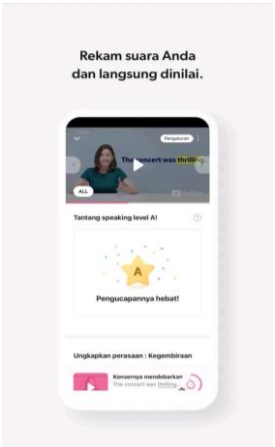


Figure 2.5 Recording Voice and Getting Score

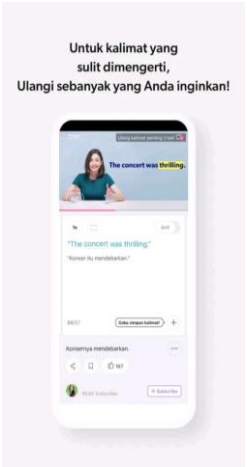


Figure 2.6 Repeating Sentence in many times

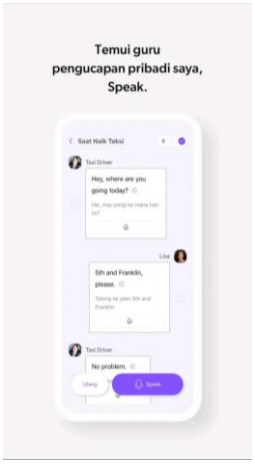


Figure 2.7 Meet Your Pronunciation Instructor

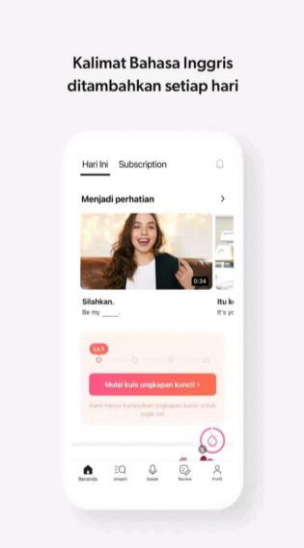


Figure 2.8 New Sentence Everyday

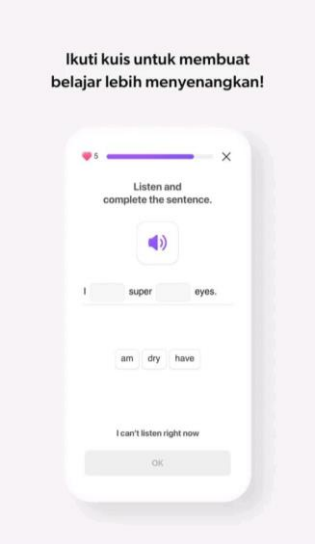


Figure 2.9 Quiz for Joyful Learning

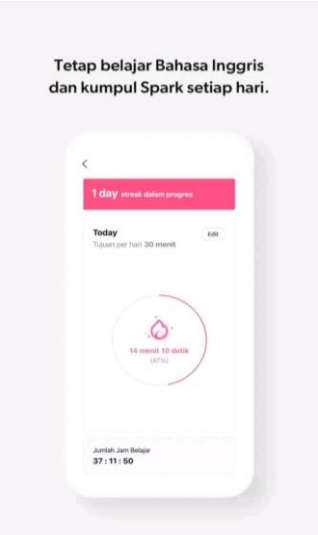


Figure 2.10 Complete Your Target

Based on the figures above, Cake has several good features for learning English in joyful atmosphere. The key features categorized into the following:

a. Channel

In figure 2.4, the application provides channel where a lot of English videos and conversation, topics of speaking, daily conversation, and English expression linked from Youtube.

a. Recording Voice and Getting Scores

In figure 2.5, the students record their voice after watching video on the channel, then repeat and speak the important word they do not know to pronounce. By involving AI speech recognition, the students can check their pronunciation and get immediate feedback. Last, the scores will be revealed based on the recording voice accepted.

b. Repeating Sentence Many Times

As shown in figure 2.6. The video can be paused specially on the word or sentence which want to be repeated. After watching the video on the channel, speak the important word.

c. Meet Your Pronunciation Instructor

In figure 2.7, the students can do a conversation with native speakers. Listening and reading what the native speaker said and replying it by record the voice. Speak and get the reply after recording voice.

d. New Sentence Everyday

In Figure 2.8, one of the advantages of this app is serving new vocabulary every day. Students will find it very helpful to enrich their daily vocabulary

e. Quiz for Joyful Learning

In figure 2.9, there are several quizzes covered by all the features of the application. Students can do the quizzes as exercise and getting the score.

f. Complete Your Target

In figure 2.10, the students can complete their target. It is a daily goals which accumulates the duration of learning English in Cake.

c. The Advantages and Disadvantages

Cake application provides assistance to students in learning English in an interesting and fun way. This application leads students to learn both receptive skills and productive skills in English. It can be

accessed for free means it is very friendly and economical for students. Students do not have to spend money to buy the app like some other English learning apps. Although it is not effective as taking an English course, this application includes several features that are summarized in one application, so students only need to download one application. In addition, the size of this application is sufficient to get a position in the students' smartphones. Most importantly, this application bridges digital learning to the digital students in an interesting, easy, fun, and very interactive way for its users. EFL students will be greatly helped by its presence. Yanthi (2012) in her qualitative study found that the students practice speaking easier by using Cake. In some features of ‘speak’, the students will overcome the speaking problems, such as lack of vocabulary, bad pronunciation, and hard to rearrange English spoken sentence. In distance learning, this application functions as a teacher assistant who can teach English to students while they are at home. Students feel like they have a personal assistant who can help them anytime and anywhere.

Besides the advantages above, this application also has drawback for the students. This application can only be accessed online to use all its features, making students have to be connected to the internet all the time wherever they are. There is no feature that allows students to use it offline.

C. Conceptual Framework

By using the AI Speech Recognition (SR) in Cake android-based application, the students’ lack of pronunciation will be solved. The output is the

result of the process of treatment. The result is solving students' pronunciation errors. The conceptual framework of this research is presented by showing the following diagram:

a. Input: In the last semester, the researcher found that the students' prior pronunciation ability still lack. They made a lot of errors pronunciation of English word or sentences. Obviously, it affected students score, especially in the
b. Process: The researcher will use the Speech Recognition of Cake Android-Based Application to help students solve their pronunciation errors. The process will conduct by giving treatment to the students. The students will use the application within 4 meetings by following the instruction of the researcher.
c. Output: After using the Cake application, the students will solve their pronunciation errors by pronouncing English word or sentences better and correctly. The students will like the application by giving positive perception about the application.

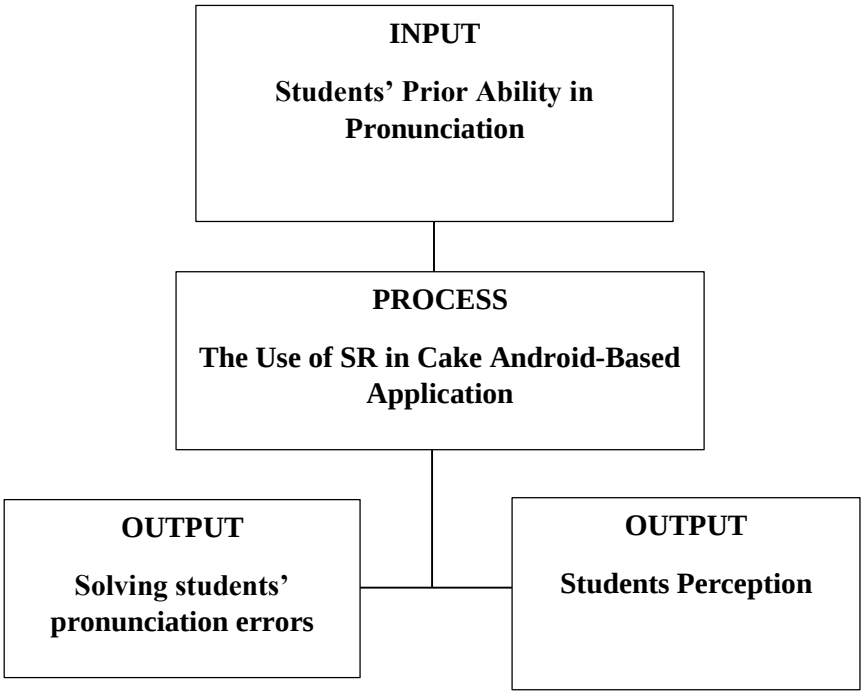


Figure 2.11 Conceptual Framework

D. Hypothesis

Based on the figure 2.11, the researcher manages forward the hypothesis of this research as the following:

1. Null Hypothesis (H_0) $\mu 1 > \mu 2$

   The students' pronunciation ability is not be better after using AI Speech Recognition of Cake Android-based Application of SMA Negeri 9 Wajo.

2. Alternative Hypothesis (H_1) $\mu 2 > \mu 1$

   The students' pronunciation ability is better after using AI Speech Recognition of Cake Android-based Application of SMA Negeri 9 Wajo.

CHAPTER III

METHOD OF THE RESEARCH

This chapter dealt with research design, research variables and operational definition, population and sample, research instrument, techniques of data collection, and techniques of data analysis.

A. Research Design

This research is quantitative research method. Quantitative research method is usually research data in the form of numbers and analysis using statistics. Quantitative research method is usually used to test a theory, to present a fact or describe statistics, to show the relationship between variables, and some are developing concepts. Experimental research methods are divided into three major groups; pre-experimental, experimental, and quasi-experimental. Sugiyono (2014), said pre-experimental method is a method that includes only one group or class that is given pre and post-test. This one group pretest and posttest design was carried out on one group without a control or comparison group. In this research, the researcher used pre-experimental method of one group pretest and posttest design.

The design outline as follows:

Table. 3.1 Research Design

SUBJECT	PRE - TEST	TREATMENT	POST-TEST
GROUP	0_1	X_1	0_2

(Gay, 2006)

Where:

O_1 : Pre-test

O_2 : Post-test

X_1 : The treatment

The paradigm of this research design is that there is a pretest before being given treatment so that the results of the treatment can be known more accurately, because it can compare with the situation before being treated.

B. Research Variables and Operational Definition

1. Variable

There are two variables involved in this research, namely independent and dependent variable. The independent variable is the AI Speech Recognition of CAKE Android-Based Application, and the dependent variable is the EFL learner's pronunciation ability.

2. Operational Definition of Variables

a. AI Speech Recognition of CAKE Android-Based Application as independent variable is the Artificial Intelligence especially focus on the Speech Recognition system that works automatically by processing the spoken language (voice of the user) as the input then translating it into the correct pronunciation.

b. Pronunciation ability as dependent variable is focusing on the ability of the students to pronounce the English words especially on the words which has one syllable, two syllables, and three syllables with focus on how students produce vowel sounds, diphthongs, triphthongs, and consonant (focused on vowel phonemes and consonant phonemes) by recording their voice after they conduct the treatments by using Speech Recognition of Cake application which is measured by American English pronunciation.

C. Population and Sample

1. Population

The population of this research is all students of XI in SMAN 9 WAJO academic year 2020/2021

2. Sample

The researcher used random sampling technique when choosing members of population to participate in the study. There are 5 classes in the second grade of SMAN 9 WAJO. The classes are XI IPA 1, XI IPA 2, XI IPA

3, XI IPS 1, XI IPS 2. In this case, the researcher chooses XI IPS 1 consisted of 20 students. In other words, this research had 20 samples.

D. Instrument of the Research

The research instruments are speaking test and questionnaire. Below are the elaboration of the instruments:

1. Pronunciation Test

The pronunciation test will be applied for pre-test and post-test. The pretest aimed at finding out the prior pronunciation ability of the students, while post-test aimed at finding out the students' pronunciation ability after treatment is given (teaching by using CAKE android-based application). This activity is also intended to find out whether the students still kept holding of the materials after the treatment.

2. Questionnaire

At the last meeting, the researcher distributes a questionnaire to measure students' perception about the CAKE application. The questionnaire is in Indonesian language to make the students easier to understand the statement and answer the question.

E. Procedure of Collecting Data

1. Pre-test

Pre-test is given at the first meeting to recognize students' pronunciation ability before getting to the next treatment and the result will be compared with the result of posttest after learning process is finished. First, the researcher give a set of pronunciation test to the students, then ask them to pronounce the

word/sentence while record it by using students' smartphone. After finishing record it, students ask to send the file of recording to be analyzed by the researcher.

2. Treatment

After giving a pre-test, the researcher treats group. The researcher gives the treatment for four meeting, each meeting runs for 90 minutes, with several different topics.

1. In the first meeting, the researcher explains about the speaking description; definition, process, and what thing affect our speaking ability, especially pronunciation. After that, introducing them CAKE application and all its features. In this meeting, the researcher gives a topic about "song" and instructs the students to watch several videos with subtitle about song and repeat it for 4-5 times. The videos watched had been chosen by the researcher. The last activity, the researcher chooses one video and asks the students to record their voice by reading the text/subtitle of the videos and send the recording to the researcher.
2. In the second meeting, the researcher raises a topic about "food" and instructs the students to watch several videos with subtitle about it and repeat it in for 4-5 times. The videos watched had been chosen by the researcher. The last activity, the researcher chooses one video and asks the students to record their voice by reading the text/subtitle of the videos and send the recording to the researcher.

3. In the third meeting, the researcher raises a topic about “holiday” and instructs the students to watch several videos with subtitle about it and repeat it in for 4-5 times. The videos watched had been chosen by the researcher. The last activity, the researcher chooses one video and asks the students to record their voice by reading the text/subtitle of the videos and send the recording to the researcher.
4. In the fourth meeting, the researcher raises a topic about “family” and instructs the students to watch several videos with subtitle about it and repeat it in for 4-5 times. The videos watched had been chosen by the researcher. The last activity, the researcher chooses one video and asks the students to record their voice by reading the text/subtitle of the videos and send the recording to the researcher.

The researcher conducts a research in every meeting or each material with time allocation is 90 minutes (2 X 45 minutes). The steps in teaching speaking by using CAKE application are:

a. The researcher introduces CAKE application and all its features and how to use it.
b. The researcher gives a topic about “song” and asks the students their prior knowledge about song.
c. The researcher instructs the students to watch several videos on CAKE application with subtitle about song and repeat it for 4-5 times. The videos watched had been chosen by the researcher.

d. The researcher chooses one video and asks the students to record their voice by reading the text/subtitle of the videos and send the recording to the researcher.

e. The researcher gives chance to each student to ask for unclear instruction.

f. The researcher instructs the students to be courage to ask or express their idea orally.

3. Posttest

After giving the treatment, the students are given a set of pronunciation test which is similar test that is used in the pre-test. The researcher ask the students pronounce the word/sentences while record it with their smartphones. Last, the students will send the recording to the researcher to be analyzed

4. Questionnaire

The researcher distributes a questionnaire to measure students' perception about the CAKE Android-based application. The questionnaire is made online by using Google Form. Then, the researcher distribute the questionnaire to the students.

F. Technique of Data Analysis

The researcher used Phyton programming language software to analyze the results of the pretest-posttest group analysis. The data collected through speaking test, the researcher uses the following techniques:

The data are collected after giving instruments of collecting data to the respondents (students). The researcher analyze the data by using quantitative

analysis. To get the score, the researcher uses scoring scale of accuracy on the students' recording. The data is analyzed by using the following procedures:

1. Scoring the result of the students' pronunciation test

Scoring the result of the students' test by converting the scores using the following formula: A Students' score = $\frac{\text{Students'gained score}}{\text{Maximal score}} \text{x } 100$

a. Classifying the score of the students

The data are classified into five classifications by referring the scoring system as follows:

Table 3.2. Level of Mastery

No	Range Percentage	Classification
1	87-100	Excellent
2	73-86	Very Good
3	59-72	Good
4	45-58	Average
5	30-44	Poor
6	0-39	Very poor

(Depdiknas,2005)

2. Calculating the mean score, standard deviation, frequency table, and the value of t-test to identify the difference between pretest and posttest by using inferential analysis in Phyton 3.10.0. To find out the increase of students pronunciation ability after giving treatment by using Cake Android based application, the researcher used inferential statistical analysis by using paired sample t-test. as follow:

$$t = \frac{\sum D}{\sqrt{\frac{n.\sum D^2 - (\sum D)^2}{n-1}}}$$

where:

D= difference score after and before (post-pre)

n= number of samples

The researcher analyzes the mean score and standard deviation of the students in pre-test and post-test using formula as follow:

Mean score formula:

$$x = \frac{\sum f x}{n}$$

where:

x = Mean Score

$\sum fx$ = Total of Students Score

n = Total of Sample

Standard Deviation Formula:

$$s = \sqrt{\frac{n\sum_{i=1}^{n} x_i^2 - (\sum_{i=1}^{n} x_1)^2}{n(n-1)}}$$

where:

s = Standard deviation

x_i =Value of the i^{th} point in the data set

x =The mean value of the data set

n=The number of data points in the data set

3. Criteria of testing hypothesis
   a. If p. value >0,05 = H_O will accepted, H_1 will rejected. It means that there is no significance improvement between the pre-test and post-test.
   b. If p. value <0,05, H_1 will accepted ,H_O will rejected. It means that there is a significance improvement between the pre-test and post-test.
4. Analyzing the data of the students' perception by using Likert Scale.

Table 3.3. Likert scale

Positive Statement		**Negative Statement**	
Category	**Score**	**Category**	**Score**
Strongly Agree	5	Strongly Agree	1
Agree	4	Agree	2
Undecided	3	Undecided	3
Disagree	2	Disagree	4
Strongly Disagree	1	Strongly Disagree	5

(Sugiono, 2008:135)

CHAPTER IV
FINDING AND DISCUSSION

This chapter dealt with the findings of the research and the discussions of the findings. Researcher analyzed the data obtained from students by applying two stages, namely pretest and posttest. The data consist of result of pre-test and post-test. The pretest is given with the aim of knowing the initial pronunciation ability of students before being given treatment, while the posttest is given with the aim of knowing whether or not an increase in students' pronunciation ability after receiving treatment by using Cake Android-based application of XI Grade of SMA Negeri 9 Wajo

A. Findings

This research used pre-experimental design to boost EFL learner's pronunciation ability by utilizing AI Speech Recognition of Cake Android-based application at SMA Negeri 9 Wajo. There were 20 students of grade XI IPS 1 participated in pre-test and post-test process.

There are 5 meetings in total, starting from 9th of August to 21st of August 2021. There were two main instrument that the researcher used to gain the data. The first instrument was pronunciation test for pre-test and post-test. The second instrument was a questionnaire to find out the students' perceptions toward the AI Speech Recognition of Cake Android-based application in their pronunciation class. The findings is described in the following explanation.

1. **Students' Pronunciation Ability**

a. Students' Pronunciation Ability in Pre-test

The researcher find out the students' prior pronunciation ability by giving them a set of pronunciation test which was consist of one text about English lyric song and two texts about descriptive text related to students' daily lives. The first text consist of 176 words, the second text consist of 94 words, and the third text consist of 111 words which means there were 381 words in total that pronounced by the student. There are some words that mispronounced by the students in this pre-test that can be seen in the following table:

Table 4.1 Mispronouncing Words in Text 1 (English lyric song)

No.	Word	Correct Pronunciation	Students Mispronounciation	Total of Students
1	try	[trī]	[tri]	5
2	but	[bət]	[but]	3
3	succeed	[səkˈsēd]	[succed]	13
			[sacced]	4
4	tired	[ˈtī(ə)rd]	[tıred]	12
			[taıred]	3
5	sleep	[slēp]	[slep]	3
6	stuck	[stʌk]	[stuk]	8
7	tears	[tırs]	[tears]	6
			[tır]	4
8	replace	[rəˈplās]	[reples]	4
			[replace]	3
9	worse	[wərs]	[worse]	9
			[wors]	4
10	mistakes	[məˈstāks]	[mistakes]	7

			[mistek]	5
11	waste	[wāst]	[waste]	5
12	could	[k͡ood]	[kould]	7
			[kuld]	6
13	lights	[līts]	[lıg]	5
			[laıg]	3
			[liget]	2
14	guide	[gīd]	[guıde]	8
			[guıd]	6
15	ignite	[igˈnīt]	[ignıte]	3
			[ignıt]	12
16	bones	[bōns]	[bon]	2
			[bones]	3
17	high	[hī]	[haıg]	15
			[hıg]	3
18	worth	[wərTH]	[wort]	18
19	learn	[lərn]	[leren]	10

The table above shows that in the text one, there were 19 words that mispronounced by the students, such as student number 6 mispronounced the words "*succeed, tired, waste. tears, replace",* student number 11 mispronounced the words *"stuck, ignite, could, lights",* student number 13 mispronounced the words *"could, guide, bones",* and the student number 15 mispronounced the words *"high, worth, learn, mistakes"*.

Then, The word *"try"* mispronounced by five students by pronouncing [tri], word *"but"* mispronounced by three students by pronouncing [but], word *"succeed"* mispronounced by seventeen students; thirteen students pronounced [succed]; four students pronounced [sacced], word *"tired"* mispronounced by

fifteen students; twelve students pronounced [tɪred]; three students pronounced [taɪred], word *"sleep"* mispronounced by three students by pronouncing [slep], word *"stuck"* mispronounced by eight students by pronouncing [stuk], word *"tears"* mispronounced by ten students; six students pronounced [tears]; four students pronounced [tɪr], word *"replace"* mispronounced by seven students; four students pronounced [reples]; three students pronounced [replace], word *"worse"* mispronounced by thirteen students; nine students pronounced [worse], four students pronounced [wors], word *"mistakes"* mispronounced by twelve students; seven students pronounced [mɪstakes]; five students pronounced [mɪstek], word *"waste"* mispronounced by five students by pronouncing [waste], word *"could"* mispronounced by thirteen students; seven students pronounced [kould]; six students pronounced [kuld], word *"lights"* mispronounced by ten students; five students pronounced [lɪg]; three students pronounced [laɪg]; two students pronounced [lɪget], word *"guide"* mispronounced by fourteen students; eight students pronounced [guɪd]; six students pronounced [guɪde], word *"ignite"* mispronounced by fifteen students; three students pronounced [ignɪte], twelve students pronounced [ignɪt], word *"bones"* mispronounced by five students; two students pronounced [bon]; three students pronounced [bones], word *"high"* mispronounced by eighteen students; fifteen students pronounced [haɪg]; three students pronounced [hɪg], word *"worth"* mispronounced by eighteen students by pronouncing [wort], word *"learn"* mispronounced by ten students by pronouncing [leren].

Table 4.2 Mispronouncing Words in Text 2 (Descriptive Text)

No.	Word	Correct Pronunciation	Students Mispronounciation	Total of Students
1	live	[lɪv]	[live]	10
			[lif]	5
2	with	[wɪð]	[wit]	18
3	family	[ˈfæm.əl.i]	[famɪli]	2
			[famɪl]	1
4	there	[ðer]	[ter]	5
			[tere]	3
5	youngest	[jʌŋggest]	[jʌŋs]	14
			[youngest]	3
			[young]	1
6	aged	[eɪdʒd]	[aged]	10
7	exercise	[ˈek.sə˞.saɪz]	[ˈek.sə˞.sɪs]	10
			[ˈek.sə˞.cɪse]	5
8	busy	[ˈbɪz.i]	[bʌsi]	7
			[busi]	9
9	manage	[ˈmæn.ədʒ]	[manage]	4
			[meneg]	3
10	dress	[dres]	[dris]	2
11	well	[wel]	[wil]	3
12	ordinary	[ˈɔːr.dən.er.i]	[ˈɔːr.din.ar.i]	7
			[ordinar]	3
13	rarely	[ˈrer.li]	[rareli]	10
			[rarel]	5
14	does	[dʌz]	[does]	8

The table above shows that in the text two, there were 14 words that mispronounced by the students, such as student number 6 mispronounced the words "*live, with, there,"* student number 15 mispronounced the words *"ordinary, busy, manage, dress, well",* student number 11 mispronounced the words *"aged, family",* and the student number 18 mispronounced the words *"youngest, rarely, exercise."*

The word *"live"* mispronounced by fifteen students; ten students pronounced [life]; five students pronounced [laif], word *"with"* mispronounced by eighteen students by pronouncing [wit], word *"family"* mispronounced by three students; two students pronounced [famili]; one student pronounced [famil], word *"there"* mispronounced by eight students; five students pronounced [ter]; three students pronounced [tere], word *"youngest"* mispronounced by eighteen students; fourteen students pronounced [jʌŋs]; three students pronounced [youngest]; one student pronounced [young], word *"aged"* mispronounced by ten students by pronouncing [eged, word *"exercise"* mispronounced by fifteen students; ten students pronounced [ˈek.sɚ.sɪs]; five students pronounced [ˈek.sɚ.cise], word *"busy"* mispronounced by sixteen students; seven students pronounced [basi]; nine students pronounced [busi], word *"manage"* mispronounced by seven students; four students pronounced [manage]; four students pronounced [meneg], word *"dress"* mispronounced by two students by pronouncing [dris], word *"well"* mispronounced by three students by pronouncing [wil], word *"ordinary"* mispronounced by ten students; seven students pronounced [ordinari]; three students pronounced [ordinar], word *"rarely"* mispronounced by fifteen students; ten students pronounced [rareli]; five students pronounced [rarel], word *"does"* mispronounced by eight students by pronouncing [does].

Table 4.3 Mispronouncing Words in Text 3 (Descriptive Text)

No.	Word	Correct Pronunciation	Students Mispronounciation	Total of Students
1	small	[smɑːl]	[smal]	3
2	puppy	[ˈpʌp.i]	[puppi]	7
3	palm	[pɑːm]	[palm]	15
4	fragile	[ˈfrædʒ.əl]	[fregel]	11
			[fragil]	4
			[fragile]	2
5	sometimes	[ˈsʌm.taɪmz]	[somtaɪms]	6
			[sometimes]	5
6	afraid	[əˈfreɪd]	[afraid]	6
7	hurt	[hɝːt]	[hurt]	8
			[hart]	2
8	comfort	[kʌm.fɚt]	[komfort]	8
			[kamfort]	2
			[comfort]	2
9	since	[sɪns]	[sɪn]	12
			[sɪnce]	3
10	body	[ˈbɑːdi]	[bodi]	9
11	football	[ˈfʊt.bɑːl]	[ˈfʊt.bal]	5
			[fotbal]	2
12	our	[ˈaʊ.ɚ]	[our]	9
			[or]	7
13	house	[haʊs]	[hous]	3
			[house]	2
14	crying	[ˈkraɪ.ɪŋ]	[kring]	5
			[cring]	3
15	decides	[dɪˈsaɪds]	[decide]	4
			[decid]	3
			[decides]	2
			[disaid]	2
16	finished	[ˈfɪn.ɪʃt]	[finis]	10
			[finisid]	4
			[finised]	3
17	come	[kʌm]	[kom]	10

			[kem]	3
			[come]	2
18	into	[ˈɪn.tuː]	[into]	8
19	ball	[bɑːl]	[bal]	13

Table 4.3 above displays mispronouncing words in the text three, there were 19 words that mispronounced by the students, such as student number 5 mispronounced the words "*small, puppy, palm, fragile",* student number 7 mispronounced the words *"afraid, hurt",* student number 11 mispronounced the words *"near, our, crying",* the student number 13 mispronounced the words *"sometimes, house,"* the student number 15 mispronounced the words *"comfort, finished, since,"* and the student number 20 mispronounced the words *"come, into."*

The word *"small"* mispronounced by three students by pronouncing [smal], word *"puppy"* mispronounced by seven students by pronouncing [puppi], word *"palm"* mispronounced by fifteen students by pronouncing [palm], word *"fragile"* mispronounced by seventeen students; eleven students pronounced [fregel]; four students pronounced [fragil]; two students pronounced [fragile], word *"sometimes"* mispronounced by eleven students; six students pronounced [somtaims]; five students pronounced [sometimes], word *"afraid"* mispronounced by six students by pronouncing [afraid], word *"hurt"* mispronounced by ten students; eight students pronounced [hurt]; two students pronounced [hart], word *"comfort"* mispronounced by twelve students; eight students pronounced [komfort]; two students pronounced [kamfort]; two students pronounced [comfort], word *"since"* mispronounced by fifteen students; twelve students

pronounced [sin]; three students pronounced [since], word *"body"* mispronounced by nine students by pronouncing [bodi], word *"football"* mispronounced by seven students; five students pronounced [futbal]; two students pronounced [fotbal], word *"our"* mispronounced by sixteen students; nine students pronounced [our]; seven students pronounced [or], word *"house"* mispronounced five students; three students pronounced [hous]; two students pronounced [house], word *"crying"* mispronounced by eight students; five students pronounced [kring]; three students pronounced [cring], word *"decides"* mispronounced eleven students; four students pronounced [decide]; three students pronounced [decid], two students pronounced [decides]; two students pronounced [disaid], word *"finished"* mispronounced by seventeen students; ten students pronounced [finis]; four students pronounced [finisid]; three students pronounced [finised], word *"come"* mispronounced by fifteen students; ten students pronounced [kom]; three students pronounced [kem]; two students pronounced [come], word *"into"* mispronounced by eight students by pronouncing [into], and word *"ball"* mispronounced by thirteen students by pronouncing [bal].

From the results of the analysis above, quantitative calculations were calculated to obtain data on pronunciation ability in the form of frequency and presentation according to the classification level that the students got in the pre-test. The results of the quantitative calculation of pronunciation ability were presented in the following table:

Table 4.4 Percentage of Students' Pronunciation Ability in Pre-test

Classification	Range of Score	Pre-test	
		F	%
Excellent	87 - 100	-	-
Very Good	73 - 86	10	50
Good	59 - 72	10	50
Average	45 - 58	-	-
Poor	30 - 44	-	-
Very poor	0 - 39	-	-
Total		20	100

The table 4.4 shows that no students classified as excellent, while 10 (50%) students were classified into very good, and 10 (50%) were classified into good. There were not any student classified average, poor and very poor. It can be concluded that most of them were in good category. In the students' pretest the researcher found that 1 student got score 60, 2 students got score 65, 4 students got score 70, 2 students got score 80, and 1 students got score 83. Based on the pronunciation test, students have difficulty in pronouncing some vowels and consonants. In vowel form, such as diphthong, central vowel, and tense vowel. Meanwhile, in consonant form, such as the -ed ending of verbs, consonant combinations, with silent letter, and letter in the suffix. It means the increasing of student's pronunciation ability is still low.

The researcher analyzed the descriptive statistic of data collected by using Phyton version 3.10.0 to find the central tendency and variability that can be seen in the table below:

Table 4.5 Descriptive Statistic of Students' Pronunciation Ability in Pre-test

Items	Value
Minimum Score	60
Maximum Score	83
Range	23
Mean Score	73,07
Standard Deviation	5,96

As seen in the table above, the lowest score is 60 which is classified as "good", the highest score is 83 which is classified as "very good". The mean score is 73,07 which categorized into "very good" classification. The table also shows the standard deviation which is 5,96. It happened because the score of the students not that varied, it started from 60 to 83. Although the spread of the data quite narrow but the students' pronunciation ability is still lack.

b. Students' Pronunciation Ability in Post-test

Unlike the pretest, the researcher found several students made any mispronunciations of the utterances production and most of them had pronounced the words correctly. There were three kinds of text that researcher gave to the students to pronounce. The first text consist of 176 words, the second text consist of 94 words, and the last text consist of 111 words which means there were 381 words in total that pronounced by the student. The result of the students post-test can be seen as follows:

Table 4.6 Mispronouncing words in Text 1 (English lyric song)

No.	Word	Correct Pronunciation	Students Mispronounciation	Total of Students
1	succeed	[səkˈsēd]	[succed]	3
2	tired	[ˈtī(ə)rd]	[tıred]	2
3	guide	[gīd]	[guıd]	3
4	ignite	[igˈnīt]	[ignıt]	4
5	high	[hī]	[hig]	2

The table 4.6 displays mispronouncing words in text 1, there were 5 words that mispronounced by the students, such as student number 6 mispronounced the words "*succeed, tired",* student number 11 mispronounced the words *"ignite",* student number 13 mispronounced the words *"guide",* and the student number 15 mispronounced the words *"high"*.

The word *"succeed"* mispronounced by three students by pronouncing [succed], word *"tired"* mispronounced by two students by pronouncing [tired], word *"guide"* mispronounced by three students by pronouncing [guid], word *"ignite"* mispronounced by four students by pronouncing [ignite], word *"high"* mispronounced by two students by pronouncing [hig].

Table 4.7 Mispronouncing word in Text 2 (Descriptive Text)

No.	Word	Correct Pronunciation	Students Mispronounciation	Total of Students
1	with	[wıð]	[wit]	5
2	busy	[ˈbız.i]	[busi]	3
3	aged	[eıdʒd]	[eged]	1
			[aged]	2
4	youngest	[jʌŋggest]	[youngest]	3
5	rarely	[ˈrer.li]	[rareli]	2

The table above shows mispronouncing words in the text two, there were 5 words that mispronounced by the students, such as student number 6 mispronounced the words "*with"* student number 15 mispronounced the words *"busy",* student number 11 mispronounced the words *"aged,",* and the student number 18 mispronounced the words *"youngest, rarely."*

The word *"with"* mispronounced by five students by pronouncing [wit], word *"busy"* mispronounced by three students by pronouncing [busi], word *"aged"* mispronounced by three students; one student pronounced [eged]; two students pronounced [aged], word *"youngest"* mispronounced by three students by pronouncing [youngest], word *"rareli"* mispronounced by two students by pronouncing [rareli].

Table 4.8 Mispronouncing Words in Text 3 (Descriptive Text)

No.	Word	Correct Pronunciation	Students Mispronounciation	Total of Students
1	fragile	[ˈfrædʒ.əl]	[fragil]	2
			[fragile]	1
2	comfort	[kʌm.fɚt]	[komfort]	1
			[comfort]	1
3	since	[sɪns]	[since]	1
4	decides	[dɪˈsaɪds]	[decides]	2

The table above shows mispronouncing words in the text three, there were 4 words that mispronounced by the students, such as student number 5 mispronounced the word "*fragile",* student number 15 mispronounced the words *"comfort, since,"* and the student number 20 mispronounced the word *"decides."*

The word *"fragile"* mispronounced by three students; two students pronounced [fragil]; one student pronounced [fragile], word *"comfort"* mispronounced by two students; one students pronounced [comfort]; one students pronounced [comfort], word *"since"* mispronounced by one student by pronouncing [since], word *"decides"* mispronounced by two students by pronouncing [decides].

From the results of the analysis above, quantitative calculations were calculated to obtain data on pronunciation ability in the form of frequency and presentation according to the classification level that the students got in the pretest. The results of the quantitative calculation of pronunciation ability were presented in the following table.

Table 4.9 Percentage of Students' Pronunciation Ability in Post-test

Clasification	**Range of Score**	**Post-test**	
		F	**%**
Excellent	87-100	11	55
Very Good	73-86	8	40
Good	59-72	1	5
Average	45-58	-	-
Poor	30-44	-	-
Very poor	0-39	-	-
Total		20	100

Table 4.9 shows that 11 (55%) students were classified into excellent, 8 (40%) were classified into very good, 1 (5%) were classified into good. There were not any student classified average, poor and very poor. It can be concluded that most of them were in good category. In the students' posttest the researcher

found that 2 student got score 98, 3 student got score 85, and 1 students got score 70. Based on the test, students got easier in pronouncing some vowels and consonants. In vowel form, such as diphthong, central vowel, and tense vowel. Meanwhile, in consonant form, such as the -ed ending of verbs, consonant combinations, with silent letter, and letter in the suffix.

The researcher analyzed the descriptive statistic of data collected by using Phyton version 3.10.0 to find the central tendency and variability that can be seen in the table below:

Table 4.10 Descriptive Statistic of Students' Pronunciation Ability in Post-test

Items	**Value**
Minimum Score	69
Maximum Score	98
Range	28
Mean Score	88,94
Standard Deviation	7,81

As seen in the table above, the lowest score is 69 which is classified as "good", the highest score is 98 which is classified as "excellent". The mean score is 88,94 which categorized into "excellent" classification. As a result, the standard deviation of the data is 7,81 which means the spread of the data quite wide rather than in pre-test (5,96). It happened because the range score of the students were varied.

c. Data Range between Pre-test and Post-test

The researcher compared the mean score between students' pre-test and post-test, the result shown in the graphic below:

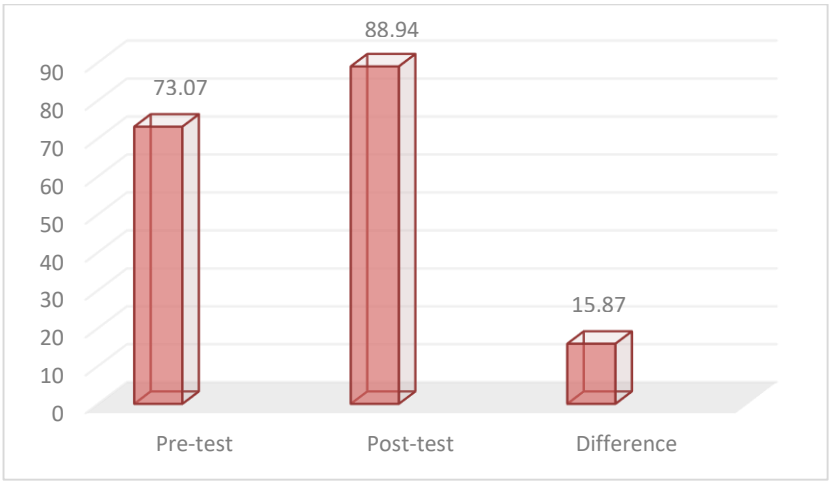


Figure 4.1 Students' Mean Score Difference

The figures displays that the range score between pre-test and post-test is 15,87 in which the post-test score of the students' pronunciation ability is higher than their pre-test score. In the pre-test the score classified as "very good" and in the post-test, the mean score is classified as "excellent". It indicates that the AI Speech Recognition of Cake Android-based application boost students' pronunciation ability.

Meanwhile, the researcher also provided graphic to show the standard deviation in pre-test and post-test as follow:

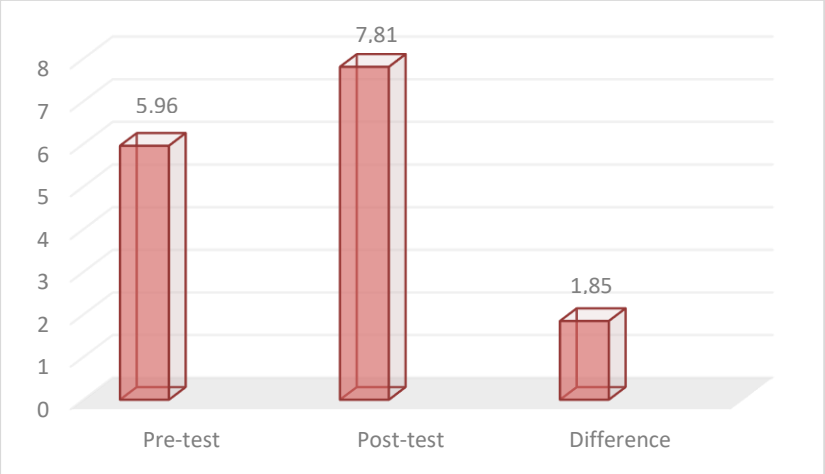


Figure 4.2 Standard Deviation Difference

This figure reveals the standard deviation of each test and it's range, it can be seen that the standard deviation of the pre-test. The data in pre-test is homogenous rather than in post-test with a difference 1,85. It can be seen that the spread of the data in pre-test is smaller because the students' score were not varied. Meanwhile, the data in post-test is spread wider because the students' score more heterogenous. Although the standar deviation of the post-test spread far out, but as can be seen in the Table 4.11, the data distribution is normally.

2. **Testing Hypothesis**

a. Normal Distribution

The researcher analyse the data distribution by using *Shapiro Wilk* (Phyton 3.10.0) to determine which was the data is distributed normal or not. The

researcher executing the hypothesis with the term if all of the *Asymp significance* is greater than the significance level (α=0,05). The data is considered distributing normal, as can be seen in the table below:

Table 4.11 Test of Normality

Data	Sig. of Shapiro Wilk
Pre-test	0,530
Post-test	0,084

The table above reveals the significant value of the normality test, it can be seen that the *Asymp Sig. of Shapiro Wilk* in both pre-test (0,530) and post-test (0,084) are greater than α (0,05). Based on the result, it can be concluded that the data distribution is normal, which means hypothesis will be tested by using *Paired Sample Test.*

b. Hypothesis Result

This research used only one group of the sample, the researcher used *Paired Sample Test* to test the hypothesis with the level of significant value (α= 0,05) for *one tailed* by using Phyton 3.10.0 with the formula of degrees of freedom (df) is N-1. The result can be seen as follows:

Table 4.12 Paired Sample T-test

Paired Differences							
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Differences		T	df	Sig (1-tailed)
			Lower	Upper			
15,862	4,701	1,051	18.062	13.661	13.6616	19	,000

The table above revealed the students' pronunciation ability before and after the treatment. First, to resolve that hypothesis is accepted by comparing *significance value (sig.value)* and *probability value (p-value).* As seen in the table above, the *p-value* for a 1-tailed statistical hypothesis is 0,000. Because of the *Sig.value* (0,05) is greater than (>) *p-value* (0,000) according to Sugiyono (2015) that the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_a) is accepted.

Meanwhile, the other way to decide the hypothesis is by comparing the *t-value* and *t-table*. *T-value* for 2-tailed is 13,661, it means *t-value* for 1-tailed is 13,661/2= 6,830. Moreover, *t-table* with α=0,05 (*1-tailed)* and df=19 is 1,720 (Gay, et al., 2012,p.587). *T-value* (6,830) is greater than (>) *t-table* (1,720). It indicates that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted.

In conclusion, that there is significant improvement in the students' pronunciation ability after they were given treatment. Besides, it indicates that the utilizing AI Speech Recognition of Cake Android-based application boost students' pronunciation ability.

3. Perception towards AI Speech Recognition of Cake Android-based application in boosting students' pronunciation ability.

The researcher distributed questionnaire to know students' perception toward Cake Android-based application in boosting students' pronunciation ability. The data was analyzed by using Likert Scale.

1. Cake app helps students pronounce the letters correctly

Most of the students agree that this application help them to pronounce letters correctly. There were 30% students strongly agree, 65% students agree, and 5% students undecided.

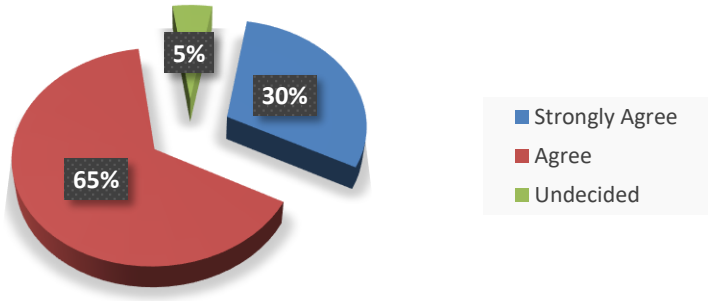


Figure 4.3 Cake helps students pronounce the letters correctly

2. Cake application helps students pronounce consonant correctly

In this statement, there were only 3 statements answered by the students; strongly agree, agree, and undecided. There are 10% students answered strongly agree, 85% students answered agree, and the rest of students, 5% answered undecided.

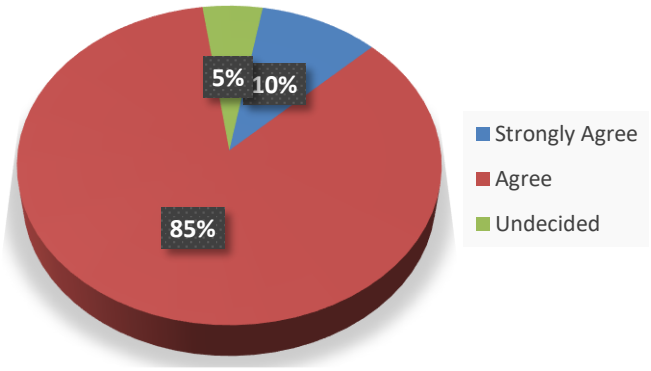


Figure 4.4 Cake helps students pronounce the consonants correctly

3. Cake application helps students pronounce vowel sounds correctly.

All the students agreed that this application helps them to pronounce vowel (single vowel sound) correctly. There were 35% students strongly agree and 65% students agree.

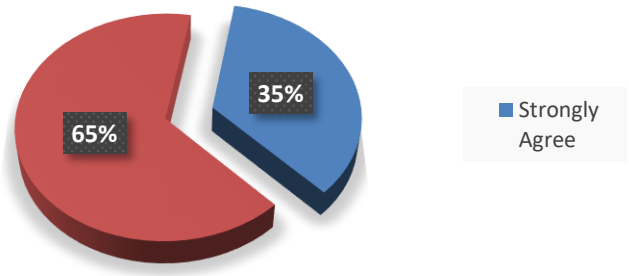


Figure 4.5 Cake helps students pronounce the vowel correctly

4. The cake application helps students pronounce the diphthong sounds correctly.

There were 30% students strongly agree, 60% students agree, 5% students undecided, and 5% students disagree.

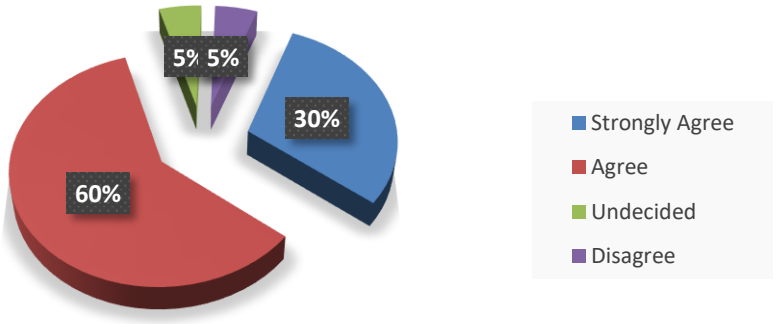


Figure 4.6 Cake helps students pronounce diphthong sounds correctly

5. Cake application helps students pronounce sentences correctly.

Almost all the students agreed that this application helps them to pronounce sentences correctly. There were 25% students strongly agree, 70% students agree, and 5% students undecided.

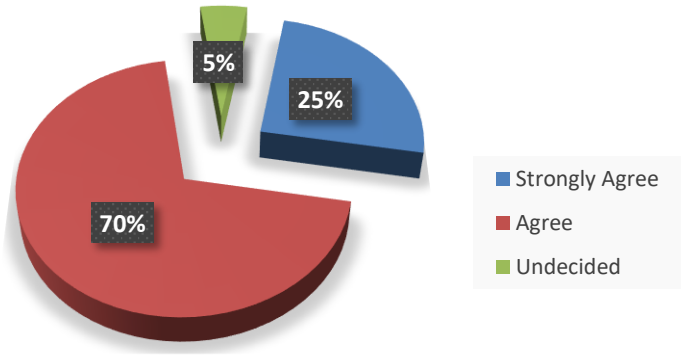


Figure 4.7 Cake helps students pronounce sentences correctly

6. Cake application helps students reduce first language accent.

First language accent is not easy to reduce because it formed by habituation by its speaker. Relating to this, there were 55% students agree, 20% students undecided, and 25% students disagree.

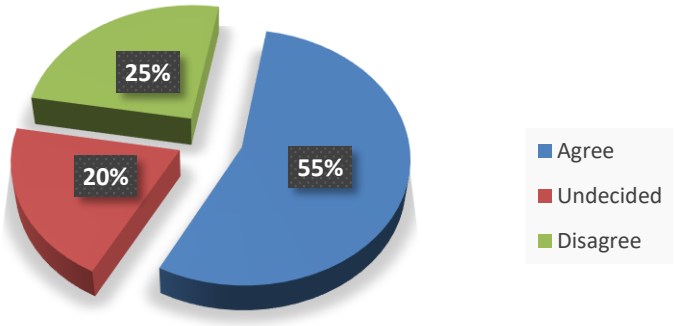


Figure 4.8 Cake helps students reduce their first language accent

7. Cake application helps students reduce nervousness when pronouncing words/sentences in English

Most of the students agree that this application can reduce their nervousness. There were 5% students answered strongly agree, 90% students answered agree, and 5% students answered undecided.

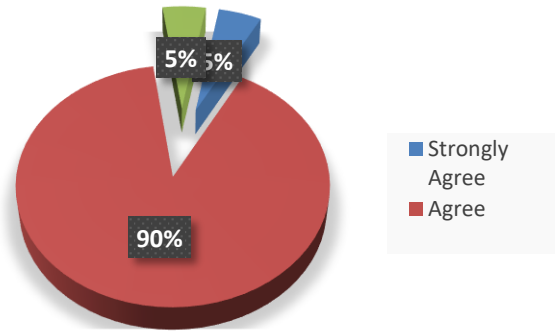


Figure 4.9 Cake application helps students reduce nervousness

8. Android-based Cake application helps me reduce anxiety when pronouncing words/sentences in English.

All of the students agree that this application can reduce their nervousness. There were 10% students answered strongly agree, 90% students answered agree.

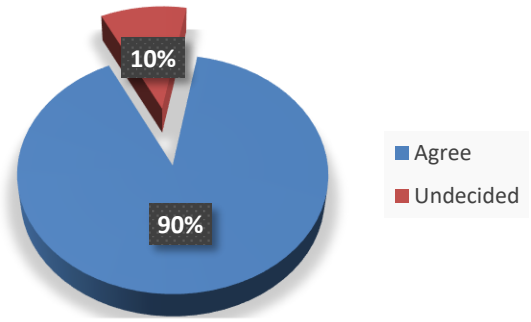


Figure 4.10 Cake application helps students reduce anxiety

9. Cake application helps students to increase confidence when pronouncing words/sentences in English.

Most of the students agree that this application can increase confidence when pronouncing words/sentences in English. There were 10% students answered strongly agree, 75% students answered agree, and 15% students undecided.

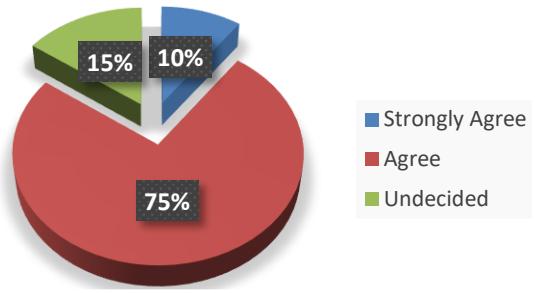


Figure 4.11 Cake application increase students' confidence

10. Cake application is an easy application to learn pronunciation.

Most of students agree that this application is an easy application to learn pronunciation. There were 50% students answered strongly agree, 40% students answered agree, and 10% students answered undecided.

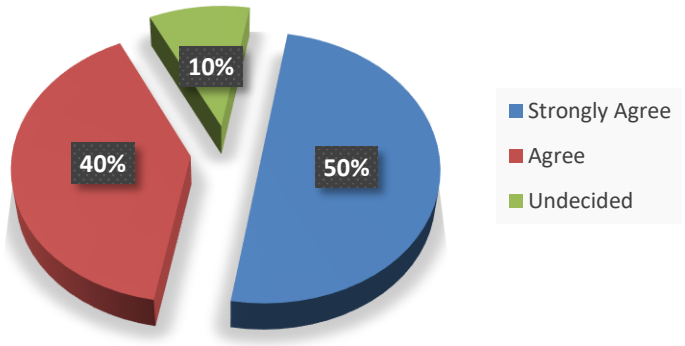


Figure 4.12 Cake application is an easy application

11. Cake application has complete features to use for learning English pronunciation.

Most of students agree that this application has complete features to use for learning English pronunciation. There were 20% students answered strongly agree, 75% students answered agree, and 5% students answered undecided.

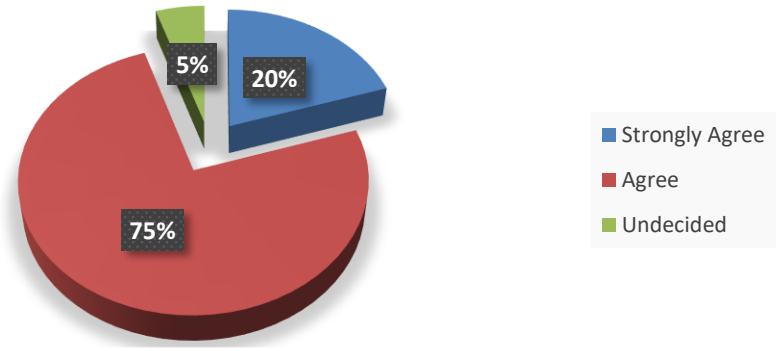


Figure 4.13 Cake application has complete features

Based on the result of the questionnaire above, most of the students showed positive perception about Cake Android-based application.

B. Discussion

This research was aimed to find the increasing of students' pronunciation ability by using Cake Android-based application. The researcher used this application to boost students' pronunciation ability at XI Grade of SMAN 9 Wajo. The researcher applied pre-experimental method (Gay et.al, 2006) with one group pre-test and post-test design by using one class as the sample. The interpretation of the findings derived from the result of statistical analysis of students' pronunciation ability of pre-test and post-test result. Meanwhile, the description of data gained from the questionnaire based on the students' perception toward Cake Android-based application.

These results not only become the existing evidence about the students' low pronunciation ability but also answering those two questions in chapter 1. In order to meet the digital era, the researcher introduced AI Speech Recognition

application called Cake Android-based application. By using this application, students will motivate and engage to practice their pronunciation.

1. Boosting students' pronunciation ability by using Cake Android-based application

The researcher conducted a pre-test to measure prior pronunciation ability of the students. The result of pre-test analysis showed that students' lack of pronunciation by making mistakes in pronouncing word or sentences. The score considered as a good level which is referring to Depdiknas classification (2005). Thus, based on the result of pre-test, the researcher categorized that students faced two problems relating to their pronunciation ability. The first is the students have difficulty in pronouncing kind vowels such as diphthong, central vowel, tense vowel, and consonants such as the -ed ending of verbs, consonant combinations, with silent letter, and letter in the suffix. The second problem is the affective factor that affect students in pronouncing word or sentences such as low of self-confidence, high anxiety, getting nervous contributed to the students' poor pronunciation.

All the problems that faced by students is treated by conducting four meetings by using Cake Android-based application. During the treatments, students used all the pronunciation features of the application. There are total seven features that were used by the students. Then, a post-test was conducted by the researcher to find out the students' improvement in their pronunciation ability.

As can be seen in Findings (Table 4.1;Table 4.2;Table 4.3), the students made 52 words error pronunciations including pronouncing kinds of vowel and

consonant. The words that mispronounced by students categorized into daily words that they used in their daily communication which consist of verb, noun, adjective, pronoun, and adverb. Therefore, it indicates that the students have really poor pronunciation ability. Meanwhile, the result of post-test (Table 4.6;Table 4.7;Table 4.8) shown that the students made 14 words error pronunciation. It revealed that the students successfully in decreasing their pronunciation errors. In conclusion, the use of Cake application is effective in boosting students' pronunciation ability.

Based on the t-test result analysis, the mean score students in the post-test is higher than in the pre-test. Meanwhile, it was revealed that the standard deviation score in post-test (7,81) is higher than in the pre-test (5,96) which means that the score in the post-test spread out far from the mean score. The standard deviations indicates that the pre-test score are closer together (i.e., clustered around the mean) compared to the post-test score which means there is much more variability among the pre-test than among the post-test (Gay, et al 2012). Thus, by using *Sig. of Shapiro Wilk,* the data distribution was normal. It indicates that the data would be tested using *Paired sample T-test.* Because the result test accepted the Alternative hypothesis (H_a) which means there is significant improvement in the students' pronunciation ability after they were given treatment. There was an improvement on the students' pronunciation ability after applying Cake Android-based application to boost students' pronunciation ability at the XI Grade of SMAN 9 Wajo. The improvement get exist because the Cake itself is supported by several complete features that students can get in one

application. There are 7 features in total that students can use to elevate their pronunciation ability.

The researcher stated that the features such as hundred channels which is present many different topics with automatic subtitle, students read available text or conversation from different topics and record it and get the correction from the AI native speaker from the Cake, students meet their pronunciation instructor and built conversation then get correction automatically if the students mispronounce the word/sentences and many more features contribute more to engage students with this application. Moreover, Elimat & AbuSeileek (2014) used ASR system to the sixty-four Third Grade students in the second semester. The result of the study shown that the ASR system was effectively to help students in learning foreign language pronunciation.

There are some advantages that students revealed after using the Cake application such as the students have their English learning assistant, the application will record students' voice while pronouncing the word/sentences and getting the correct pronunciation from the app, so the students can identify their mistakes. Besides improving students' pronunciation ability, the use of the application bring the joyful feeling to the students while practicing it, so they can get rid their low of self-confidence when pronouncing the English word/sentences. Besides that, the students can overcome their low of self-confidence because they have a less mispronouncing words rather than in pretest.

In line with this result, engaging AI technology such as Automatic Speech Recognition (ASR) system in learning application contribute more to boost

students' pronunciation ability. Using an interesting and fruitful application can make students feel that learning English pronunciation is no longer as difficult as it used to be like using conventional learning media. A study conducted by Kim in 2006 by examining the FluSpeak software, an automatic speech recognition (ASR) software used to teach English pronunciation. By involving thirty-six Korean English as a Foreign Language (EFL) college students and asked them to record their voices, repeating sentence by sentence. This software found very useful for student practice in the aspects of pronunciation (Kim, 2006).

The SR application is an alternative that can really help students in learning pronunciation in the digital era like today. This makes it easier for students because they can be good learning assistants that can be accessed anytime anywhere using only a smartphone. In addition, by using this kind of application, teacher bridges technology and language learning either into the students' home or students' classroom. Involving Speech Recognition systems in elevating pronunciation ability of students become more effective than other conventional media or method.

Moreover, this application build a joyful and enjoyable learning pronunciation to the students' classroom. The researcher admitted that learning English such as English pronunciation should make the students feeling happy, enjoyable, and fun. These conditions will make students easier to understand the material that is explained by the teacher. Silalahi, (2017) investigated factors contributing to the students' pronunciation errors. It categorized into internal factors, external factors,

and interlingual factors. The internal factors include less preparation and practicing on performing speech and anxiety of performing the speech.

Based on the explanation above, the researcher concludes that there are varied media or applications in order to improve pronunciation ability, but the existence of ASR systems become one good recommendation that help students effectively in learning pronunciation

2. Students' perception towards Cake Android-based application.

The researcher measured the students' perception by distributing questionnaire to the students. There are 11 questions in total related to the use of Cake Android-based application. The first until five questions asked about how this application improve students' pronunciation ability when pronouncing letters, consonants sounds, vowels sounds, diphthong sounds, and sentences. The result of questionnaire showed that more than a half of students agreed that Cake Android based-application solved their pronunciation problems related to the aspect mentioned above. In line with this, according to Lestari, et al (2020) students often made errors in vowels, consonants, and diphthongs. These kinds of errors commonly found when students practice their pronunciation ability but by the existence of great features of Cake, students can decrease more their pronunciation errors. Cake serves hundreds of channel that consist of English video with the pronunciation of native speaker. Students watched and repeated more the videos and followed its correct pronunciation.

In the question number six, 55% students agreed that this application helped them to reduce their first language (L1) accent when pronouncing English

word/sentences. This could be happened because Cake provides pronunciation of native speakers in their key features, for instance, students can watch English videos with the native speaker' pronunciation (American pronunciation) and repeat it many times, so it will affect and reduce their L1 accent.

Meanwhile, question number seven to nine asked about how the students feel when using the application. There were 90% students agreed that this application get rid their nervousness when pronouncing English word/sentences, 90% students agreed that using this application reduce their anxiety when pronouncing English word/sentences, and 75% agreed that this application make them feeling confidence when pronouncing English word/sentences. In line with this, Cake application used by Yanthi (2021) in teaching speaking to Senior High School students by using qualitative method. All the key features of Cake is created to collect enjoyment and comfort from the EFL users by visualizing the features with fun and interesting visual. The students feel that they do not learn pronunciation like the way they learn conventionally in the classroom, but they feel that using Cake make them enjoy and feeling like playing games while learning pronunciation, so students can reduce their anxiety and nervousness, and make them feel more confidence when pronouncing word or sentences. However, Silalahi, (2017) investigated factors contributing to the students' pronunciation errors. It was categorized into internal factors, external factors, and interlingual factors. The internal factors include less preparation and practicing on performing speech and anxiety of performing the speech. External factors cover lack of time and opportunity to use English in daily lives, whereas interlingual factor is the

interference from the mother tongue. Students own some factors that contributing to their pronunciation ability, but the good and enjoyable features of Cake make the students can get rid some of the factors, especially internal and interlingual factors.

Moreover, question number ten asked about the effectiveness of the application. There were 50% students answered that this application is easy to use. Cake application can be used in many languages, so students could change it into their first language (L1) if it makes them easier to understand the instruction of the application. Moreover, each feature of Cake has easy instruction to use because it is similar settings and instruction with other commonly used application such as Youtube, Facebook, and any other learning application of Android.

In question number eleven, there were 75% students agreed that this application has complete features that can help students to improve their pronunciation ability. The all key features of Cake is very helpful to boost their pronunciation ability. Students can get direct correction of their pronunciation after their voice is processed by the application. Beside of that, students get their personal assistant of pronunciation that can help them to practice their pronunciation anytime anywhere. This feature made by a form of conversation of daily life, so the students get easier to engage and understand the conversation. These kind example of Cake features, there are many more features that help students to improve their pronunciation ability.

In conclusion, based on the explanation above, the researcher concluded that students give positive perceptions toward the Cake Android-based application which means they are feeling very helpful with the involving of the application in order to boost their pronunciation ability.

CHAPTER V

CONCLUSION AND SUGGESTION

This chapter dealt with the conclusion of the research based on the findings and discussion of the findings, and suggestion regarding with the conclusion.

A. Conclusion

Based on the findings and discussion in the previous chapter, the researcher concluded:

1. The use of Cake Android-based application was significant. It was indicated by the mean score they got on posttest was higher than pretest. The result of hypothesis testing showed significant score between p-value and significant value which is p-value was lower than significant value. The Cake Android-based application is really helpful to boost students' pronunciation because of the complete features in it. The main feature is the Automatic Speech Recognition (ASR) system of Cake that works by giving direct correction to the students' input (students' pronunciation). The application is processing the input and directly scoring it, so the students get to know whether their pronunciation correct or incorrect. It is proven by the post-test result of the students, they pronounce the words (vowel, consonant, and diphthong) better rather than in pre-test result. In conclusion, the use of Cake Android-based application in learning pronunciation is effective to boost students' pronunciation ability.

2. There are some advantages and disadvantages using Cake Android based-application as a learning media for students. Some of advantages are this application is effective to use and efficient regarding to time and place. Students can engage more with the sophisticated technology that they have in their smartphone, so they can learn pronunciation by themselves by having English pronunciation assistant that can help them anytime anywhere. Some of disadvantages found by the researcher such as the connectivity, some of the students' district have limited access to the internet, so they should go to other place to look for the stable network.
3. Based on the analysis of questionnaire, there are some perceptions of students toward the Cake Android-based application. Most of students agree that this application help them to pronounce letter, consonant, vowel, diphthong, and sentences correctly, reduce students' first language accent, nervousness, and anxiety, increase students' confidence. Besides that, this application also easy to use for the students and has complete features to learn pronunciation.

B. Suggestion

Based on the conclusion, the researcher gives some suggestions as follows:

1. For English teachers, (a) researcher suggests using Cake application when teaching English, especially productive skill such as speaking which will be deeper in teaching how students' pronunciation can be improved. Students will feel that learning pronunciation feels more fun and enjoyable, (b) teachers

should use clear instructions when they want to use this application because there are many features available in it. Students may feel confused when they do not get clear directions and instructions from the teacher, (c)by using this application, teachers can combine conventional learning with technology based learning to anticipate boredom that occurs in the classroom. The researcher realizes that the existence of technology such as SR in the Cake application is very helpful in the pronunciation learning process but it cannot be denied that this application is very good if it is combined with other methods or learning media.

2. For students, they can use this application while studying independently at home. After getting clear instructions from the teacher at school, students can use various features in the application when learning pronunciation at home. This is certainly very helpful for students because this application becomes a learning assistant for them

3. For further research related to this application, the researcher suggests susing this application at various levels, such as elementary school, junior high school, and also high school, both general and vocational. Because this application can be used at various levels such as beginner, intermediate, and advanced.

BIBLIOGRAPHY

AI, I. D. A. I. (2011). Kecerdasan Buatan.

Ali, S. (2016). Developing a comprehensive pedagogical framework for pronunciation training based on blended learning and adapted Automatic Speech Recognition systems. *In EUROCALL 2016: CALL, Communities and Cultures.*

Al-Qudah, F. Z. M. (2012). Improving English pronunciation through computer-assisted programs in Jordanian universities. *Journal of College Teaching & Learning (TLC)*, 9(3), 201-208.

Al-Zayed, N. N. (2017). Non-native pronunciation of English: Problems and solutions. *American International Journal of Contemporary Research*, 7(3), 86-90.

Amir, Slamet, Y. (1996). *Peningkatan Keterampilan Berbahasa Indonesia (Bahasa Lisan dan Bahasa Tertulis)*. Surakarta: Universitas Sebelas Maret.

Alip, F. B. (2016). *Language: Theory, acquisition, and application*. Yogyakarta: English Letter Department Universitas Sanata Dharma.

Arikunto, S. (2003a). *Manajemen Penelitian*. Jakarta: Rineka Cipta.

Arfani, J. W., Sugiyono, S. (2014). Manajemen Kelas Yang Efektif: Penelitian Di Tiga Sekolah Menengah Atas. *Jurnal Akuntabilitas Manajemen Pendidikan*, 2(1), 44-57.

Atkins, M., Brown, G. (2002). *Effective teaching in higher education.* Routledge.

Azkia, N. S (2021, June 18). Cake app Reviews. Retrieved from Google Play: https://play.google.com/store/apps/details?id=me.mycake&hl=en_US&showAllReviews=true

Bailey, K. M. (2003). *Speaking. Practical English language teaching*, 47-66.

Brown, H. D. (2000). *Principle of Language Learning and Teaching*. San Francisco, NY: Longman.

Cilliers, E. J. (2017). The challenge of teaching generation Z. PEOPLE: *International Journal of Social Sciences*, 3(1), 188-198.

Cody, S. (2016). *The art of writing and speaking the English language*. Lulu.com.

Consultancy.uk. (2015). *Generation Y less satisfied than other generations*. http://www.consultancy.uk/news/2061/generation-y-less-satisfied-thanother- generations. Date of access 5 July.

Dauksevicuite, I. (2016). *Unlocking the full potential of digital native learners.*

Depdiknas. 2005. *Standar Nasional Pendidikan*. Jakarta: Depdiknas.

Dominguez, R., & Kelly, S. W. (2002). Speech Rehabilitation using the SNORS+ System incorporating EMG: Phonetic Analysis.

Elimat, A. K., & AbuSeileek, A. F. (2014). Automatic speech recognition technology as an effective means for teaching pronunciation. *JALT CALL Journal*, 10(1), 21-47.

Fisk, P. (2017*). Education 4.0… the future of learning will be dramatically different, in school and throughout life*.

Fraser, H., & Perth, H. F. (1999). *ESL pronunciation teaching: Could it be more effective*. Australian Language Matters, *7*(4), 7-8

Gaston, J. (2006). *Reaching and teaching the digital natives.* Library Hi Tech News, 23(3), 12–13. https://doi.org/10.1108/07419050610668124

Gay, L. R., Mills, G. E., & Airasian, P. (2006*). Educational Researcher: Competencies for Analysis and Application*. New Jersey: Prentice Hall.

Gay, L. R., Mills, G. E., & Airasian, P. (2012). *Educational Research Competencies for Analysis and Applications* (10th ed.). London: Pearson Education.

Gavran, S. (2013). *The Importance of English Language Learning and Teaching in South Korea.*

Gerber, C. (1995). A general approach to speech recognition. *In Proceedings of the Final Workshop on Multimedia Information Retrieval* (Miro'95) (pp. 1-12).

Giegerich, H. J. (1992). *English phonology: an introduction*. Cambridge: Cambridge University Press.

Gilbert, J. B. (2008). *Teaching pronunciation: Using the prosody pyramid*. New York, NY: Cambridge University Press.

Haag, S., & Keen, P. (1996). *Information Technology: Tomorrow's Advantage Today*. McGraw-Hill Companies, Inc., PO Box 545, Blacklick, OH 43004, Attn: Order Service.

Halimah, H., Lustyantie, N., & Ibrahim, G. A. (2018). Students' Perception on the Implementation of ORAI Application in CLL Method in Teaching Speaking. *JEELS (Journal of English Education and Linguistics Studies)*, 5(1), 1-22.

Hariharasudan, A., & Kot, S. (2018). *A scoping review on Digital English and Education 4.0 for Industry 4.0*. Social Sciences, 7(11). https://doi.org/10.3390/socsci7110227

Harmer. Jeremy. 2007. *The Practice of English Teaching*. Essex; Pearson Education Limited

Harris, M. S., & Umeda, N. (1974). Effect of speaking mode on temporal factors in speech: vowel duration. *The Journal of the Acoustical Society of America*, 56(3), 1016-1018.

Hincks, R. (2002). Speech recognition for language teaching and evaluating: A study of existing commercial products. *In Seventh International Conference on Spoken Language Processing.*

Horn, B., Klaus, B., & Horn, P. (1986). *Robot vision*. MIT press.

Hussin, A. A. (2018). Education 4.0 made simple: Ideas for teaching. *International Journal of Education and Literacy Studies*, 6(3), 92-98.

Jaya, H., Sabran, Idris, M. M., Djawad, Y. A., Ilham, A., & Ahmar, A. S. (2018). *Kecerdasan Buatan*. In Fakultas MIPA Universitas Negeri Makassar.

Jovanovich. Poole, S. C. (1999). *An introduction to linguistics*. New York: St. Martin's Press

Kamendakal, A (2021, July 02). Cake app Reviews. Retrieved from Google Play: https://play.google.com/store/apps/details?id=me.mycake&hl=en_US&showAllReviews=true

Kim, I. S. (2006). Automatic speech recognition: Reliability and pedagogical implications for teaching pronunciation. *Journal of Educational Technology & Society*, 9(1), 322-334

Kurzweil, R., Richter, R., Kurzweil, R., & Schneider, M. L. (1990). *The age of intelligent machines* (Vol. 580). Cambridge: MIT press.

Ladefoged, P. (1993). *A course in phonetics* (3rd ed.). USA: Harcourt Brace

Lawrence, R., & Juang, B. H. (1993). *Fundamental of Speech Recognition Prentice-hall International.*

Lestari, D. D., Suryani, F. B., & Nuraeningsih, N. (2020). *Pronunciation Errors Made by EFL Student Teachers in Speech Performance.* Prominent, 3(2).

Li, J., Deng, L., Haeb-Umbach, R., & Gong, Y. (2016). Fundamentals of speech recognition. In Robust Automatic Speech Recognition (pp. 9–40). https://doi.org/10.1016/b978-0-12-802398-3.00002-7

Li, W. A. N. G. (2005). The advantages of using technology in second language education. *THE Journal*, 32(10), 38-42.

Luger, G. F., & Stubblefield, W. A. (1993). Artificial intelligence: its roots and scope. *Artificial intelligence: structures and strategies for*, 1-34.

Luo, B. (2016). Evaluating a computer-assisted pronunciation training (CAPT) technique for efficient classroom instruction. Computer assisted language learning, 29(3), 451-476.

Mabruri, Z. K., & Aristya, F. (2017). Peningkatan Keterampilan Berbicara Pembelajaran Bahasa Indonesia Kelas IV Melalui Penerapan Strategi

Role Playing SDN Ploso 1 Pacitan:. Naturalistic: *Jurnal Kajian Penelitian Pendidikan dan Pembelajaran*, 1(2), 112-117.

Moreno, A. I., & Vermeulen, A. (2015). Using VISP (Videos for Speaking), a mobile App based on Audio Description, to promote English Language Learning among Spanish Students: a case study. *Procedia-Social and Behavioral Sciences*, 178, 132-138.

Parsiani, M., Rohani, G. R., & Ravand, H. (2020). CAPT and its Effect on English Language Pronunciation Enhancement: Evidence from Bilinguals and Monolinguals. *Journal of Teaching Language Skills*, 39(2 (Summer 2020)), 121-167.

Politakis, P., & Weiss, S. M. (1984). Using empirical analysis to refine expert system knowledge bases. *Artificial Intelligence*, *22*(1), 23-48.

Prensky, M. (2001). *Digital natives, digital immigrants part 2: Do they really think differently?*. On the horizon.

Prensky, M., & Berry, B. D. (2001). Do they really think differently. On the horizon, 9(6), 1-9.

Rich, E., & Knight, K. (1991). Introduction to Artificial Networks. *Mac Graw-Hill Publications, New York*.

Rofi'uddin, A., & Zuhdi, D. (2002). *Pendidikan bahasa dan sastra indonesia*.

Saleh, A. J., & Gilakjani, A. P. (2021). Investigating the impact of computer-assisted pronunciation teaching (CAPT) on improving intermediate EFL learners' pronunciation ability. *Education and Information Technologies*, 26(1), 489-515.

Schalkoff, R. J. (1990). *Artificial intelligence engine*. McGraw-Hill, Inc..

Silalahi, R. M. P. (2017). Pronunciation problems of Indonesian EFL learners: An error analysis. *Journal of English Language and Culture*, 6(2).

Sugiyono, D. (2008). *Metode penelitian bisnis*. Bandung: Pusat Bahasa Depdiknas.

Tarigan, H. G. (2008). *Menulis sebagai keterampilan berbahasa*. Bandung: angkasa.

Thompson, P. (2013). The digital natives as learners: Technology use patterns and approaches to learning. *Computers & Education*, 65, 12-33.

Tsai, P. H. (2006). Bridging pedagogy and technology: User evaluation of pronunciation oriented CALL software. *Australasian Journal of Educational Technology*, 22(3).

Vanderkevent, T. (1990). *Teaching Speaking and Component of Speaking*.

Willmott, S., Dale, J., Burg, B., Charlton, P., & O'Brien, P. (2001). Agentcities: a worldwide open agent network. *Agentlink News*, *8*

Yanthi, W. (2021). The Use of Cake Application in Teaching Speaking to Senior High School's Students. *In Bogor English Student and Teacher (BEST) Conference* (Vol. 2, pp. 165-170).

Yong, S. T., & Gates, P. (2014). Born Digital: Are they really digital natives?. *International Journal of e-Education, e-Business, e-Management and e-Learning*, 4(2), 102.