THE APPLICATION OF MINIMAL PAIR
TO IMPROVE THE PRONUNCIATION
OF VOICEDAND VOICELESS SOUNDS

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Abstract

This research was aimed at proving that the application of minimal pair can improve the pronunciation of voiced and voiceless sounds of the eighth grade students of SMPN 13 Palu. The researcher applied a true-experimental research design which involved experimental and control group. The instruments of data collection were test and observation. The data was analyzed by using statistically and descriptively. The result of the data analysis was that the value of the t-$_{counted}$ was 4.093 with degree of freedom (df) of 54-2 = 52 and 0, 05 of critical value, it was found that the value of the t-$_{table}$ was 2. 0063. It showed that the t-$_{counted}$ value was higher than the t-$_{table}$ value. It means that the hypothesis of the research was accepted. Therefore, it could be concluded that the application of minimal pair technique was effective in teaching English pronunciation.

Keywords: Minimal Pair; Pronunciation; Voiced Sounds; Voiceless Sounds.

INTRODUCTION

Pronunciation is one of the language components in English which is needed to be learned to support the development of language skills mastery of the students. It has important roles in English teaching. If the students have good pronunciation, they can speak and understand what the interlocutor is saying. In other words, pronunciation is needed in developing language skill, particularly for speaking. Therefore, it is very important for the students to learn pronunciation.

In learning pronunciation, it will make the students have good communication each other. Our speech can be understood by using a good pronunciation because it controls what we say. In contrast, when we speak by using bad pronunciation, it might be difficult to understand even though we use great vocabulary and grammar.According to Rivers (1968:112):

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> Since language is a means of communication, it is not enough for our students to learn words, phrases, grammatical features, if they will not be able to produce these in a way which makes their utterance comprehensible to native speaker of the language.

This statement means that when the students want to communicate each other, their pronunciation will not be understood by the native speaker of the language if they cannot use the correct pronunciation. Furthermore, in having good pronunciation, the students do not only study about the components that involve in a language, but also have to know how to pronounce the sound itself to make the others understand easily. Jenskins (2000:117) puts forward, "Intelligibility is being understood by a listener at a given time in a given situation. It refers to comprehensibility (recognition of word and utterance meaning) and interpretability (recognition of the speaker intention)". It means that there are two components that must be known in pronunciation. The first one is comprehensibility. This component refers to recognition of words and utterance meaning. It is very important because if the listeners understand the words and the utterances which the speakers say, it will make good communication between both of them. The second one is interpretability which is related to how to recognize the speaker attention. Therefore, based on those components, someone must speak clearly to others in order to avoid misunderstanding. The words or expressions that someone uses also should be clear to make the listener understand easily what he or she says. If there is a response or feedback from the listener, it means that the communication between the speaker and the listener run well. It is also supported by Kenworthy (1987:65) states, "We need to remember that you cannot communicate with anything at all unless you can say the words in a way which the hearer can understand". In short, having good pronunciation is very important to communicate each other.

Knowing how to pronounce the sound correctly can make the students avoid misunderstanding in communication. Therefore, the important thing that the students have to learn in pronunciation is learning about the consonant and vowel sounds in English. One of the examples is consonants, particularly in voiced and voiceless sounds.Crystal (2008:514) assists, "Voiced sounds produced while the focal folds are vibrating". This statement means that in making voiced sounds, the students pronounce the sounds by using vibration in the vocal cords. Oppositely, the students do not feel vibration in the vocal cords in producing voiceless sounds. It is supported by Kelly (2000:4) who states, "If you are producing an unvoiced sound, you will not feel vibration in the vocal cords". In knowing

voiced and voiceless sounds, the students could improve their speaking skill in daily life. Moreover, the thing that the students have to do is practicing orally and frequently.

Based upon the researcher's experience in teaching activities during the community service, the researcher found the students' problem in distinguishing which sounds should be pronounced voiced or voiceless. It happened to SMPN 13 Palu. One of the examples of the sounds was that the way the students pronouncing sounds /s/ and /z/ is similar. They did not know how to distinguish the voiced or the voiceless sounds. Sometimes most of them pronounced sound /z/ instead of sound /s/. For instance, in the word *doors* in plural form, the students uttered the sound /s/ instead of /z/. It should be pronounced /z/ sound because the letter "s" at the end of the word *doors* is preceded by voiced sound /r/. Therefore, it should be pronounced by using voiced sound /z/.

Referring to the way to solve the students' problem in pronunciation above, the researcher used interesting technique which was called minimal pair. Fromkim, Rodman, & Hayms (2003:277) who state, "Minimal pair is two words with different meanings that are identical except for one sound segment that occurs in the same place in the string". It is also supported by Basri (2005:39) explains, "A minimal pair is a pair of words which differs in only one segment". Based on the two explanations of minimal pair, the researcher may conclude that the two words are called minimal pairs if there is only one sound which can make the two words are different. In teaching pronunciation by using this technique, the researcher used pair of words which differs only in one sound. It could be interesting because it was considered to understand easily and it was an effective technique in teaching pronunciation. Besides, the students would know many English words. In addition, they also could distinguish specific sounds by practicing them. Therefore, the students not only had good pronunciation but also enriched in their vocabulary.

Based on the students' problem and the way to solve it, the researcher conducted her problem statement was formulated in following question: *Can the application of minimal pair improve the pronunciation of voiced and voiceless sounds of the eighth grade students of SMPN 13 Palu?* It was to verify the application of minimal pair can improve the pronunciation of voiced and voiceless sounds of the eighth grade students of SMPN 13 Palu.

METHODOLOGY

In this study, the researcher asserted true-experimental research design. The sample consisted of two groups; experimental group and control group. The researcher gave pre-

test and post-test to both groups, but treatment was applied only to the experimental group. Then control group was taught by using the conventional teaching. The formula used in this research was recommended by Arikunto (2006:14)which as follows:

| E | O_1 | X | O_2 |
| C | O_1 | X | O_2 |

Where:

E   : experimental Group O_2 : post-test
C   : control Group   X   : treatment
O_1 : pre-test

The population of this research was the eighth grade students of SMP Negeri 13 Palu which consisted of five parallel classes. Gay (1996:112) explains:

> Population is the group of the interest to the researcher, the group to which sees or he would like the result of the study to be generally able. The defined population has at least one characteristic that differentiate it from other groups.

The total number of the population was 139 students. The researcher used random sampling technique to select the sample of this research. As the result, class VIII A was chosen as the experimental group while class VIII B was the control group.

Referring to the title of the research, the researcher used two variables presented. They were dependent and independent variables. The dependent variable was the students' ability in pronouncing voiced and voiceless sounds. Meanwhile, independent variable was the application of minimal pair technique.

The researcher used two kinds of research instruments to collect the data, they were observation and tests. She used the observation to get information about how the teaching-learning process was taking place in the classroom. Then, the test was used to examine the students' pronunciation before and after treatment.

Before conducting the treatment, the researcher administered a pre-test to know the prior knowledge of the students in pronunciation. In the pre-test, the researcher asked the students to read word by word individually. The words consisted of 5 items in every sound. These sounds were /s/, /z/, /ʃ/, and /ʒ/. Therefore, the total of the words was 20 items. The scoring system was presented in the following table:

Table 1:

The Scoring System of the Test

NO.	Sounds Tested	Number of Items	Score of Each Current Item	Score
1.	/s/	5	1	5
2.	/z/	5	1	5
3.	/ʃ/	5	1	5
4.	/ʒ/	5	1	5
	Total	20		20

After giving the pre-test, the researcher conducted the treatment in eight meetings. In every meeting, she used minimal pair that the students should be active. Moreover, the researcher also might give correction to their pronunciation in learning process. Therefore, they could pronounce the English words correctly.

In order to assess the progress of the students' pronunciation after the treatment, the researcher gave post-test at the last meeting. The post-test was designed in the same form as the pre-test.The purpose of doing the post-test was to clarify and to explain whether the treatment was efficient or not by looking at the difference between pre-test or post-test.

In analyzing the data of this research, the researcher administered two kinds of analyses. They were descriptive and simple statistic analysis. In administering them, firstly the researcher computed the score of the students individually in the formula as proposed by Sutomo (1985:123) as follows:

$$\text{Individual score} = \frac{\text{Obtained score}}{\text{Maximum score}} \times 100$$

After computing the individual score, the researcher described the ability of the students by interpreting the mean score into percentage mastery as recommended by Purwanto (1992:103)below:

Table 2:

The Ranging Order of the Students' Ability

NO.	Percentage mastery	Interpretation
1.	86 – 100%	very good
2.	76 – 85%	good
3.	60 – 75%	enough
4.	55 – 59%	poor
5.	< – 54%	very poor

After finding out their score, the researcher conducted the mean score deviation of pre-test and post-test difference from each student, the researcher applied the formula designed by Arikunto (2006: 313) as follows:

a. The formula used for experimental group: $M_x = \frac{\sum x}{N}$

b. The formula used for control group: $M_y = \frac{\sum y}{N}$

Where:

M_x = mean score of deviation of experimental group
M_y = mean score of deviation of control group
$\sum x$ = sum scores of experimental group
$\sum y$ = sum score of control group
N = number of students

Then, the researcher used the square deviation by using the formula as suggested by Arikunto (2006:312) as follows:

a. The formula for experimental group:

$$\sum_x 2 = \sum_x 2 - \frac{(\sum x)^2}{N}$$

b. The formula for control group:

$$\sum_y 2 = \sum_y 2 - \frac{(\sum y)^2}{N}$$

The last, the researcher evaluated the result of pre-test and post-test both of groups. It was applied by using t-counted suggested by Arikunto (2006:311) as follows:

$$t = \frac{M_x - M_y}{\sqrt{\left(\frac{\sum_x 2 + \sum_y 2}{N_x + N_y - 2}\right)\left(\frac{1}{N_x} + \frac{1}{N_y}\right)}}$$

Where:

t = significance difference between experimental and control groups
M_x = mean score of deviation of experimental group
M_y = mean score of deviation of control group
$\sum_x 2$ = sum of square deviation of experimental group
$\sum_y 2$ = sum of square deviation of control group
N_x = number of students in experimental group
N_y = number of students in control group

FINDINGS

The data of this research were analyzed descriptively and statistically. The researcher used descriptive analysis to describe the result of the observation while the data from pre-test and post-test were analyzed statistically.

The researcher did the observation in the first meeting. The observation was intended to know the real condition of teaching-learning process in the classroom. This process included students' performance in learning English and teacher's technique in teaching pronunciation to the students. Since doing observation, she found that the English teacher did not use minimal pair technique in teaching pronunciation. When the researcher observed the students, she was found that they had difficulties in pronouncing the words that have similar sounds to pronounce, especially voiced and voiceless sounds. The students did not know yet how to differentiate voiced or voiceless sounds. During the teaching-learning process, only few students were active asking questions to their English teacher and the rest just kept silent.

After conducting the observation, the researcher gave the pre-test to the experimental and the control groups. The aim of the test was to know and to measure the students' ability in pronouncing voiced and voiceless sounds before conducting the treatment. The researcher gave test consisting of 20 words; the words consisted of 5 items in every sound. These sounds were /s/, /z/, /ʃ/, and /ʒ/. Therefore, the total of the words was 20 items. The result of both groups can be seen in the following tables:

Table 3:

The Students' Score Deviation of Pre-test and Post-test of Experimental Group

| No. | Students' Initial | Students' Standard Score | | X^2 | X^2 |
		Pre-test X_1	Post-test X_2	$X_{2-}X_1$	
1.	AL	30	70	40	1600
2.	AB	25	80	55	3025
3.	AN	40	80	40	1600
4.	AG	45	90	45	2025
5.	DN	35	70	35	1225
6.	EG	40	85	45	2025
7.	EL	35	85	50	2500
8.	FN	45	90	45	2025
9.	FB	40	85	45	2025
10.	FR	25	65	40	1600
11.	HN	25	80	55	3025
12.	JN	35	85	50	2500
13.	KK	20	70	50	2500
14.	MH	30	90	60	3600
15.	MA	25	70	45	2025
16.	MF	30	75	45	2025
17.	MR	50	90	40	1600
18.	MK	35	80	45	2025
19.	MZ	25	75	50	2500
20.	NM	20	75	55	3025
21.	RK	25	75	50	2500
22.	RF	35	80	45	2025
23.	SH	60	95	35	1225
24.	ST	25	80	55	3025
25.	UN	50	90	40	1600
26.	WN	20	65	45	2025
27.	YD	20	80	60	3600
28.	ZN	25	75	50	2500
	Total	**915**	**2230**	**1315**	**62975**

In relating to the table 3 above, the researcher described that the students' main score of the pre-test in the experimental class. She computed the score as follow:

$$M_x = \frac{\sum x}{N}$$

$$= \frac{915}{28}$$

$$= 32, 68$$

Table 4:

The Students' Score Deviation of Pre-test and Post-test of Control Group

| No. | Students' Initial | Students' Standard Score | | Y | Y^2 |
		Pre-test Y_1	Post-test Y_2	Y_2-Y_1	
1.	AG	20	65	45	2025
2.	AD	30	60	30	900
3.	AL	35	70	35	1225
4.	AG	25	80	55	3025
5.	AA	30	60	30	900
6.	AS	20	70	50	2500
7.	AT	25	65	40	1600
8.	CC	25	60	35	1225
9.	CT	30	60	30	900
10.	EG	20	70	50	2500
11.	ES	40	85	45	2025
12.	FR	25	55	30	900
13.	FN	30	65	35	1225
14.	FR	25	65	40	1600
15.	FT	20	60	40	1600
16.	LT	25	50	25	625
17.	LI	25	70	45	2025
18.	MF	20	60	40	1600
19.	MI	20	55	35	1225
20.	MR	20	85	65	4225
21.	NN	35	50	15	225
22.	NV	25	65	40	1600
23.	NE	25	70	45	2025
24.	NS	50	80	30	900
25.	NI	35	75	40	1600
26.	RK	30	65	35	1225
27.	AR	45	75	30	900
28.	FN	30	60	30	900
	Total	**785**	**1850**	**1065**	**43225**

After finding the students' mean score of experimental group on pre-test, the researcher also calculated the pre-test mean score of the control group on the table 4.4by using the same formula in the experimental group as follows:

$$M_y = \frac{\sum y}{N}$$

$$= \frac{785}{29}$$

$$= 27,06$$

To calculate the mean score of experimental group on post-test, it could be computed as follows:

$$M_x = \frac{\sum x}{N}$$

$$= \frac{2230}{28}$$

$$= 79, 64$$

Moreover, the researcher computed the mean score of the post-test of control group as follows:

$$M_y = \frac{\sum y}{N}$$

$$= \frac{1850}{28}$$

$$= 65, 07$$

Next, the researcher computed the mean score of the deviation of pre-test and post-test of both groups.

$$M_x = \frac{\sum x}{N} \qquad\qquad M_y = \frac{\sum y}{N}$$

$$= \frac{1315}{28} \qquad\qquad = \frac{1065}{28}$$

$$= 46, 96 \qquad\qquad = 38, 03$$

After calculating the mean deviation of both groups, it showed that the mean deviation of experimental group was higher than control one. The mean deviation of experimental group on pre-test and post-test was 46, 96while the mean deviation of control was 38, 03.

Before analyzing the data by using the t-test formula, the researcher calculated the sum-squared deviation of the mean score in control and in experimental groups as stated in the following ways:

$$\sum_x 2 = \sum_x 2 - \frac{(\sum x)^2}{N} \qquad\qquad \sum_y 2 = \sum_y 2 - \frac{(\sum y)^2}{N}$$

$$= 62975 - \frac{(1315)^2}{28} \qquad\qquad = 43225 - \frac{(1065)^2}{28}$$

$$= 62975 - \frac{1729225}{28} \qquad\qquad = 43225 - \frac{1134225}{28}$$

$$= 62975 - 61758,036 \qquad\qquad = 43225 - 40508,036$$

$$= 1216,964 \qquad\qquad\qquad = 2716,964$$

The result of the sum-squared deviation of experimental group is 1216, 964 and the sum-squared of control group is 2716, 964.

After having the sum-squared deviation of the mean in control and in experimental groups, the researcher computed t-counted to find out the significant difference of the two groups.

$$t = \frac{M_{x-My}}{\sqrt{\left(\frac{\Sigma_x 2 + \Sigma_y 2}{N_x + N_y - 2}\right)\left(\frac{1}{N_x} + \frac{1}{N_y}\right)}}$$

$$t = \frac{46,96 - 37,75}{\sqrt{\left(\frac{1216,964 + 2716,964}{28+28 - 2}\right)\left(\frac{1}{28} + \frac{1}{28}\right)}}$$

$$t = \frac{9,21}{\sqrt{\left(\frac{3933,928}{54}\right)\left(\frac{2}{28}\right)}}$$

$$t = \frac{9,21}{\sqrt{(72,850519)(0,07)}}$$

$$t = \frac{9,21}{\sqrt{(72,850519)(0,07)}}$$

$$t = \frac{9,21}{\sqrt{5,0995363}}$$

$$t = \frac{9,21}{2,25}$$

$$t = 4,093$$

DISCUSSION

Referringtothe result of observation before doing the treatment, it showed that there were some differences among the English teacher, the researcher, and the students' performance in teaching-learning process in the classroom. The first difference is the technique that the English teacher and the researcher used in teaching pronunciation. In this case, the English teacher did not use any specific technique to teach the students' pronunciation. She only emphasized the topic which was taught. Moreover, the English teacher also did not give more attention to the correct pronunciation in every word and sentence during her teaching process. It is different from what the researcher did in her

teaching process. The researcher did not only focus on the topic that was taught, but also teach the students to pronounce the words and the sentences correctly. Thus, she could combine two of them in teaching and learning process. The researcher in teaching students' pronunciation used minimal pair as her technique. In this technique, the researcher provided pair of words that differs in one sound only. Fromkin et al, (2003) who argue that words are called minimal pair if they are in the same position and only one sound can change the meaning of those words. The reason of using this technique was to make the students understand easily, and also it was an effective technique in teaching pronunciation. The second different is the students' performance in their learning process. When the researcher did her observation in English, she found that most of the students could not pronounce the words and the sentences in reading text in correct pronunciation. They only studied the material which their English teacher taught. Yet, when the researcher taught the students, they did not study about the material, but also practice to pronounce the words and the sentences by using good pronunciation. Accordingly, the students got much improvement in their pronunciation and knowledge.

After doing observation, the researcher used two kinds of test to know the students' pronunciation clearly. They were pre-test and post-test. It was given twice to experimental and control groups. In the pre-test, the researcher wanted to measure the students' knowledge in pronunciation, especially in voiced and voiceless sounds before giving the treatment. The test that was given to the students consisted of 20 words. Every sound was represented by 5 words. These sounds were /s/, /z/, /ʃ/, and /ʒ/. Referring to the obtained score, it could be seen that most of the students got low score in their pronunciation. The pre-test result was that they found difficulties and did not know how to pronounce the words consisting of sound /s/, /z/, /ʃ/, and /ʒ/. Besides, the students also could not differentiate which sound that should be voiced and voiceless. Based upon the result of the test, it can be known by using the percentage of the students' score. The students who could pronounce the sounds /s/ and /z/ were 14 %. Furthermore, the students' correct pronunciation of sound /ʃ/ was 17 %. For the last one, most of the students who made many mistakes in pronouncing sound /ʒ/ were 53 %. Incidentally, the researcher compared the result of the pre-test with the standard score of the school which was 75 %. Indeed, it can be said that the students' pronunciation was very poor.

After knowing the result of the pre-test, the objective of this research was to improve the pronunciation of voiced and voiceless sounds of the eighth grade students of SMPN 13 Palu through applying minimal pair technique. Consequently, the researcher conducted the

teaching pronunciation which focused on voiced and voiceless sounds. These sounds were /s/, /z/, /ʃ/, and /ʒ/. Base on the result of the pre-test, the students were easier to pronounce sounds /s/ and /z/ than sound /ʃ/ and /ʒ/. The problem occurred because sounds /ʃ/ and /ʒ/ do not exist in Bahasa Indonesia. Though sound /s/ and /z/ occupy in Bahasa Indonesia, but the students do not accustomed to pronounce sound /z/ in the final position of the words. Besides, they still do not know yet how to distinguish the words which may be voiced and voiceless sounds. To solve the students' problem in pronunciation, the researcher applied minimal pair as her technique. It was used to make the students know how a slight difference of sounds can change the meaning. In this technique, she provided pair of words which involve the sounds that should be tested. The pair of words only has one different sound. Then, the researcher asked the students to imitate how the sounds should be pronounced. Next, the students practiced the sounds by using another pair of words which was available on their papers. In the learning-teaching process during the treatment, the researcher needed more time to teach the students in pronouncing sounds /ʃ/ and /ʒ/ because those sounds were the most difficult sounds for the students to pronounce. Meanwhile in control group, the researcher did the treatment also, but conventional teaching was applied in this class. She did not use any specific techniques which could support the teaching-learning process in control group.

To know the improvement of the students' pronunciation after giving the treatment, the researcher conducted the post-test in experimental and control group. Based on the result of the post-test, it showed that both groups had progress, but the progress itself was different. The total score of the students in experimental group was higher than the total score in control group because the learning-teaching process conducted in the class by using minimal pair technique could influence it. The result of the post-test was different from the result of the pre-test. It can be described by using the percentage. The students who can pronounce the sounds /s/ and /z/ were increased since the progress was 28 %. Moreover, the right pronunciation of sound /ʃ/ was 25 %. Besides, the students who made many mistakes in pronouncing sound /ʒ/ were decreased from 53% to 17 % in pre-test. Therefore, the result verified that applying minimal pair technique could improve the students' pronunciation of voiced and voiceless sounds.

Regarding to the findings, the researcher found that the previous studies written by Artanti (2013) used minimal pair as the technique in teaching tense and lax vowels in words. Since tense and lax vowels did not exist in Bahasa Indonesia, it was difficult for the students to distinguish it. Based on the two studies above, the researcher might conclude

that minimal pair technique was not only used to teach the students' pronunciation in vowel sounds, but also applied to solve the students' problem in pronouncing consonants sounds.

CONCLUSION AND SUGGESTIONS

After analyzing the data, the researcher makes some conclusion based on the result of the data analysis. First, the application of minimal pair can improve the pronunciation of the eighth grade students of SMPN 13 Palu. It can be seen by the result of the data analysis. The result of the pre-test was 32, 68, while the result of the post-test increased to 79, 64. Obviously, it defined that the pronunciation of the eighth grade students at SMPN 13 Palu was improved after the treatment. Second, there was significant difference between the main score value of pre-test and post-test. It was proved since $t_{counted}$ value 4.093 was higher than t_{table} value 2.063. It means that the hypothesis of this research was accepted.

In relating to the importance of pronunciation, then the researcher would like to give some suggestions for both the teachers and the readers. First, since pronunciation tends to be the component of language skill in teaching and learning English, it is very crucial to give more attention on it by providing enough time to focus on improving students' pronunciation. Second, the teacher should provide the students with more media that can support the material given, such as recording of native speaker, dictionary, and pictures. Therefore, it will help them in their learning process. Next, for the readers who want to use minimal pair technique in their research, they should provide many more pairs of words that consisted of sounds will be tested before doing the treatment. The last one is the teacher should have appropriate technique because it holds an important role to achieve the objective of teaching and learning process itself.

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