

Effect of Students' Worksheet Based on Scientific Approach in Listening Skills for the Tenth Grade of SMA Negeri 6 Medan

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ABSTRACT

The objectives of this research are to know the effect of scientific approach in increasing students' ability in listening skills in SMA Negeri 6 Medan. The method of this research is quantitative experimental. Population in this research is the first grade of SMA Negeri 6 Medan which are 120 students, and the sample are 60 students as group that applied the scientific approach. The result of this research found that the grade X students of SMA Negeri 6 Medan taught by students' worksheet based on scientific approach in listening skills is good and after calculating and analyzing the data of the research, is found that the grade X students of SMA Negeri 6 Medan taught by students' worksheet based on scientific approach in listening skills is fair and also the use of students' worksheet based on scientific approach increase the students' listening skills to the grade X students of SMA Negeri 6 Medan, it proved on the t-table with df 58 ($n = n - 2 = 30 + 30 - 2 = 58$) at t-critical 0.05 it obtained 1,67. If compared the value of t-tale ($2,17 > 1,67$). It stated that the hypothesis is accepted. It means that the grade X students of SMA Negeri 6 Medan which taught by students' worksheet based on scientific approach in listening skills is higher than those without students' worksheet based on scientific approach and there were some effectiveness of using students' worksheet in teaching listening.

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INTRODUCTION

The teaching and learning process of teachers plays an important role in the world of education and creates a smart generation in the next generation. Currently, many teachers lack innovation in the world of education and only teach with conventional methods that make students not enjoy the learning implemented (Darma et al., 2022). The English teaching and learning process in senior high schools was aimed at developing the students' competence in English, spoken and written, to achieve the level of functional literacy. Besides, it was also aimed at raising the students' awareness of the nature and importance of English that can improve their nation's competitiveness in the global society. The English teaching and learning process was also aimed at developing the students' understanding of the relationship between language and culture (Tomlinson, 2011).

The target of teaching and learning English at senior high school was to enable the learners to achieve the functional level to communicate orally and written. To reach the target, the senior high school students had to master the four skills of English (Aini Sinaga et al., 2022). According to many researchers, listening is one of the important skills that should be mastered because it helps students to improve other English skills. In the daily life, people listen more than they read, speak or write. The first grade students of senior high schools have to master the listening skills so that they can understand some instructions from their teacher in the English teaching and learning process and they can finally respond to them well (Brown, 2001).

However, it was not easy for English teachers to teach the students to reach the primary goal. It can be seen from their scores of their final exam. Many of them failed to meet the minimum standard score. It happened because they were unable to listen to the English text well in the class (Lubis & Asnawi, 2022). When they can listen to the sentence, they sometimes fail to write what they hear. Some of them even fail to find the main idea and also some supporting ideas or details from the recording .

There were some problems found at SMAN 6 Medan in the context of the English teaching and learning listening, especially at grade X. For example, the listening class was seldom conducted there it was just conducted in two or three times in a month. It made the students become unfamiliar with the listening itself and also unfamiliar with listening to the English native speaker. (Aini & Asnawi, 2022) The students then also had a problem in the spelling words. They could not write what they hear correctly. The last problem was that the listening input given by the teacher is rudimentary.

To overcome those problems, it is important for the teacher to find a new strategy in the listening teaching to help the students to be more active in the learning process. There are many kinds of strategies in teaching listening. A good method must be support by the appropriate approach. The success of learning process is determined by teacher, learning method, learning media, and learning resources, which in this study is students' worksheet based on scientific approach. All of these components must be able to support the learning process to achieve a success in the learning process (Yahmun et al., 2020).

According to (Daryanto, 2013) defines scientific approach as an approach to teach the students when they are conditioned for being active to make a concept, idea or principle by certain steps including observing, formulating the problem, formulating hypothesis, collecting the data analyzing the data, drawing the conclusion, and networking the concept about the principle which is found.

Since 2016, SMAN 6 Medan is one of the Senior High School which has been applying K13 as the curriculum and scientific approach learning process especially in teaching English. Result of interview with teacher English, they are said that were some problems implemented scientific approach as follow (1) they did not always apply all of components of approach in teaching English because some teaching materials were less relevant if they were implemented by using scientific approach, (2) the teachers still had difficulties to involve every activity of scientific approach in teaching, (3) the teachers had difficulty in designing lesson plan covering all components of scientific approach activities in detail.

All of the problems appeared from the teachers because they were still in the process of learning how to use this approach effectively. Although they had tried to use scientific approach as good as possible but they realized that there were still many weaknesses in implementing it. There were studies about scientific approach as the related previous studies. (Daryanto, 2013) defines that scientific approach is effective in Indonesian teachers.

Based on the explanation above the researcher conduct the researcher with the title "The Effect of Students' Worksheet based on Scientific Approach in Listening Skill for The Tenth Grade in SMAN 6 Medan".

RESEARCH METHODS

This research designed by using the quantitative method. It means that the research accumulated and calculated the data which was got from the research (Sugiyono, 2013). The type of this research was experimental designed. It means that in collecting the data of the research, the writer divided the sample into two groups. Those were experiment and control group. The experimental group exposed to the influence of the factor under consideration; the control group was different. It mean that in this research, experimental group was taught by students' worksheet based on scientific approach, while control group was without students' worksheet based on scientific approach. The design was applying in order to find out a students' worksheet based on scientific approach to increase the students' ability in listening skills (Sugiyono, 2015). Design figure can be applying as follows:

Table 1 Research Design

No	Group	Pre-Test	Treatment	Post-Test
1.	Experimental	✓	Teaching listening through students' worksheet based on scientific approach	✓
2.	Control	✓	Teaching speaking without students' worksheet based on scientific approach.	✓

The writer state that the population of this research is the first year students of SMA Negeri 6 Medan. (Arikunto, 2019) also stated if population was less than 100, it was better to take all the population as the subject of the research. The writer decided to take 60 students or 50 % from the total population as the sample in this research. After that, the sample divided into two groups, those were experimental group and control group, which consists of 30 students. In selecting the sample, the researcher used purposive sampling technique. This technique was used to determine the sample with certain consideration. There were two classes that were taken from three regular classes as the sample, namely class X1 as the experimental class and class X2 as controlled the class (Rukajat, 2018).

For this case the writer used an essay test. The form of the test was the students' worksheet test. The test was conducted to get the students' scores both the scores of developing students' worksheet based on scientific approach in listening skills and by using video. The scores of students used as the data of this research. The number of the test items were 20 items. The score of each test was 5 and the range of score will 0-100. The indicator of reading could be seen as below:

TABLE 2. THE INDICATOR OF LISTENING

No.	Indicator	Number Test	Score
1.	Determining the general idea or specific/detailed information of a formal or informal interpersonal / transactional conversation	2	10
2.	Determining the appropriate response to a formal or informal transactional/interpersonal conversation	8	40
3.	Determining the appropriate picture suitable with the information in a formal or informal interpersonal/transactional conversation	5	25
4.	Determining the general idea or specific/implied/detailed information of a monolog text that is played	5	25
Total			100

The items of the test for the two groups above were the same. The materials of there were adjusted to the curriculum used in the school through the books used by the students. The scores got from the test are made as the data in order to compare the result of the developing students' worksheet based on scientific approach in listening skills and teaching by using video.

After collecting the data from experimental and control groups, the result of test was corrected accurately. The following steps were taken to analyze the data:

- 1) Scoring the sample's steps answers.
- 2) Groups their scores into two groups, namely the experimental group scores as the X and the control group as Y variable.
- 3) Computing statistically the mean of experimental and control group.
- 4) Computing the standard deviation from both groups.
- 5) Applying the statistic test of t as the following formulate researcher uses formula, applied as :

$$t = \frac{x_1 - x_2}{\left(\sqrt{\frac{\sum x^2 + \sum x^2}{n_1 + n_2 - 2}} \right) \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}$$

Where:

- X₁ : The mean of experimental group
- X₂ : The mean of control group
- X₁² : The deviation of experimental
- X₂² : The deviation of control group
- n₁ : The total sample of experiment group
- n₂ : The total sample of control group

Reliability of the test was one the characteristics of a good test: reliability refers to the consistency of the measurement. To obtain the reliability of the test, the researcher used formula that was:

$$r = \frac{\sum xy - \frac{(x)(y)}{n}}{\sqrt{\left[\sum y^2 - \left(\frac{\sum x}{n}\right)^2\right] \left[\sum x^2 - \left(\frac{\sum y}{n}\right)^2\right]}}$$

Where:

- X : The number of items in the test
- Y : The mean of the scores
- N : The number of the students
- X² : The Square of the deviation scores of experimental group
- Y² : The Square of deviation scores of control group (Creswell, 2016)

The criteria of value is:

1. If t_{count} more bigger than t_{table} on significance level 0.05% it means: "Through a students' worksheet based on scientific approach improve the students' listening skills, and the hypothesis was accepted.
2. If t_{count} more less than t_{table} on significance level 0.05% it means: "Through a students' worksheet based on scientific approach does not improve the students' listening skills, and the hypothesis was rejected.

DISCUSSION

Based on the result of the Experimental group, it can be concluded that the sum of the students' score of pre-test was 1505 and post-test was 2230, the highest score of the students' was 90 and the lowest was 40. To find out the frequency of the distribution of the students in score of pre-test and post-test of experimental group the formula which was used as follow:

$$R: 90 - 40 = 50$$

$$K = 1 + (3,3) \times \text{Log } N$$

$$i = \frac{R}{k}$$

Thus:

$$k = 1 + (3,3) \times \log 60$$

$$= 1 + (3,3) \times 1.778151$$

$$= 1 + 5,8678983$$

$$= 7$$

It means that:

$$i = \frac{50}{7}$$

$$= 7,14$$

$$= 7$$

Based on the calculation above, it can be applied into table of distribution the frequency was as follow:

TABLE 3. THE FREQUENCY DISTRIBUTION SCORE OF EXPERIMENTAL GROUP

NO	Interval	Median	Frequency	Percentages
1	89 – 90	89,5	2	3,33%
2	82 – 88	85	5	8,33%
3	75 – 81	78	8	13,33%
4	68 – 74	71	10	16,66%
5	61 – 67	64	3	5%
6	54 – 60	57	12	20%
7	47 – 53	50	8	13,33%
8	40 – 46	43	12	20%
Total			60	100%

Based on the table above, the students score of experimental group can be drawn at histogram as below:

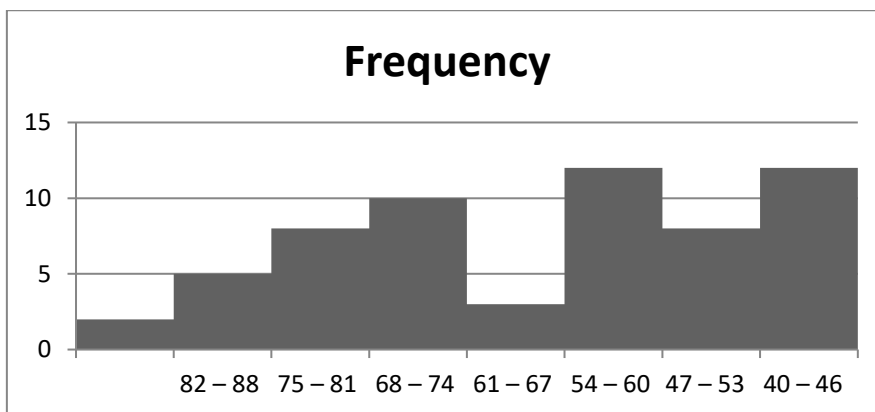


Figure 1: Histogram of Experimental Group

Based on the result of control group table, it can be known that the sum of the students' score of pre-test was 1628 and post-test was 2065. It can be concluded that the highest score the students was 90 and the lowest score was 15.

To find out the distribution of the students' score in pre-test and post-test of control group, the formula which used was as follow:

$$R: 90 - 15 = 75$$

$$K = 1 + (3,3) \times \text{Log } N$$

$$i = \frac{R}{k}$$

Thus:

$$\begin{aligned} k &= 1 + (3,3) \times \log 60 \\ &= 1 + (3,3) \times 1.778151 \\ &= 1 + 5,8678983 \\ &= 6,8678983 \\ &= 7 \end{aligned}$$

It means that:

$$\begin{aligned} i &= \frac{75}{7} \\ &= 10,71 \\ &= 11 \end{aligned}$$

Based on the calculation above, it can be applied into the table of the frequency distribution it was as follows:

TABLE 4. THE FREQUENCY DISTRIBUTION SCORE OF CONTROL GROUP

NO	Interval	Median	Frequency	Percentages
1	81 – 90	85,5	8	13,33%
2	70 – 80	75	17	28,33%
3	59 – 69	64	10	16,66%
4	48 – 58	53	9	15%
5	37 – 47	42	14	23,33%
6	26 – 36	31	0	0%
7	15 – 25	20	2	3,33%
Total			60	100%

Based on the table above, the students score of the control group can be drawn in a histogram it was as follow:

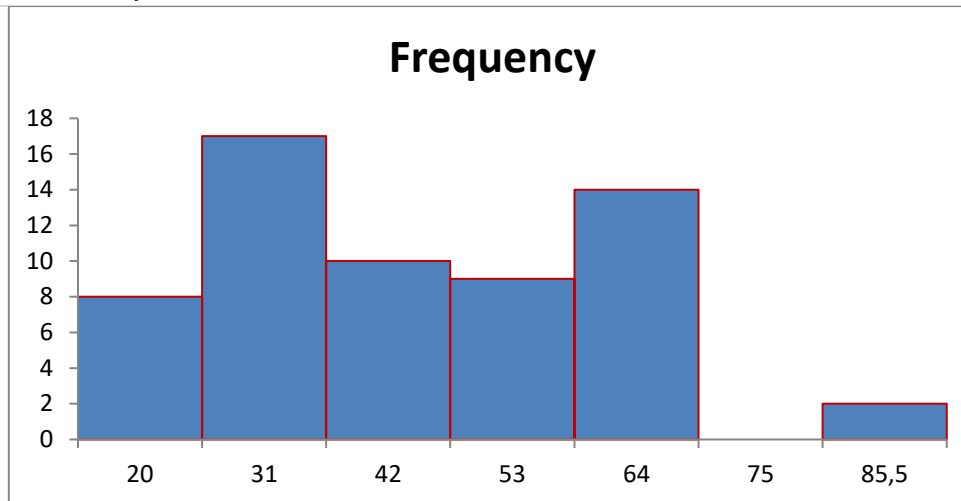


Figure 2: Histogram of Control Group

Analyzing the Data

After getting the data based on the result of test, then the data was analyzed by applying test to prove a hypothesis by calculating data, it can be counted that total score of $Y = T1 - T2$ was 725, in order to find out the mean of experimental group the score was calculated as below:

$$\begin{aligned} M_x \text{ or } M_1 &= \frac{\sum x}{N_1} \\ &= \frac{725}{30} = 24.16 \end{aligned}$$

Then, from the different score of pre-test and post-test Control Group, it can be counted that the total score of $X = T1 - T2$ is 437, in order to find out the mean of control group, the score was calculated as below:

$$\begin{aligned} M_x \text{ or } M_1 &= \frac{\sum x}{N_2} \\ &= \frac{437}{30} = 14,57 \end{aligned}$$

in order to know the standard derivation, standard error of experimental and control group, the writer calculated the data with the formula as below:

$$\begin{aligned} SD_x \text{ or } SD_1 &= \sqrt{\sum \frac{x^2}{N_1}} \\ &= \sqrt{\frac{20425}{30}} \\ &= \sqrt{680,8} \\ &= 26,0927832 \end{aligned}$$

$$\begin{aligned} SD_y \text{ or } SD_2 &= \sqrt{\sum \frac{y^2}{N_1}} \\ &= \sqrt{\frac{8149}{30}} \\ &= \sqrt{271,6} \\ &= 16,4802913 \end{aligned}$$

$$\begin{aligned} SE_{MX} \text{ or } SE_{m1} &= \frac{SD_1}{\sqrt{N_1 - 1}} \\ &= \frac{26,0927832}{\sqrt{30 - 1}} \\ &= \frac{26,0927832}{\sqrt{29}} \\ &= \frac{26,0927832}{5,385164807} \\ &= 4,8453082 \end{aligned}$$

$$\begin{aligned}
 SE_{M_1} \text{ or } SE_{M_2} &= \frac{SD_1}{\sqrt{N_2-1}} \\
 &= \frac{16,4802913}{\sqrt{30}-1} \\
 &= \frac{16,4802913}{\sqrt{29}} \\
 &= \frac{16,4802913}{5,385164807} \\
 &= 3,0603132 \\
 SE_{M_1 - M_2} &= \sqrt{SE_{M_1}^2 + SE_{M_2}^2} \\
 &= \sqrt{4,8453082^2 + 3,0603132} \\
 &= \sqrt{23,476528 + 9,3655169} \\
 &= \sqrt{32,842045} \\
 &= 5,7307979 \\
 \text{to} &= \frac{M_1 - M_2}{\frac{SE_{M_1 - M_2}}{9,59}} \\
 &= \frac{24,16 - 14,57}{\frac{5,7307979}{9,59}} \\
 &= \frac{9,59}{5,7307979} \\
 &= 1,67341444
 \end{aligned}$$

Based on the calculation of the score above, the following formula of t-test basic implementation to the hypothesis of this research.

$$t = \frac{x_1 - x_2}{\left(\sqrt{\frac{\sum x^2 + \sum x^2}{n_1 + n_2 - 2}} \right) \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}$$

Its means that:

$$\begin{aligned}
 X_1 &: 24,16 \\
 X_2 &: 14,57 \\
 \sum X_1^2 &: 20425 \\
 \sum X_2^2 &: 8149 \\
 n_1 &: 30 \\
 n_2 &: 30
 \end{aligned}$$

After getting the value as stated above. Thus, the each value was calculated as follows:

$$\begin{aligned}
 t &= \frac{24,16 - 14,57}{\left(\sqrt{\frac{20425 + 8149}{30 + 30 - 2}} \right) \left(\frac{1}{30} + \frac{1}{30} \right)} \\
 t &= \frac{9,59}{\left(\sqrt{\frac{28574}{58}} \right) \frac{1}{3}} \\
 t &= \frac{9,59}{4,4} \\
 t &= 2,17
 \end{aligned}$$

Testing the hypothesis should be done on order to know whether the hypothesis was accepted or rejected. Based on t-table with df 58 (n + n - 2 = 30 + 30 - 2 = 58) at t- critical 0.05 the figure of 1.67 is obtained. If the value of t^o and t_t, are compare, so it shown that the value of t-observed was bigger than the value of t-table or 2,17 = 1,67. It means that the Ha is accepted and Ho is rejected.

Based on the calculation and explanation above, it can be concluded that through the effect of students' worksheet based on scientific approach in listening skills of SMA Negeri 6 Medan and the hypothesis was accepted,

on the other word, the students' achievement in listening skill taught by students' worksheet based on scientific approach in listening skills was higher than those without students' worksheet based on scientific approach.

CONCLUSION

After calculating and analyzing the data of the research, it found that the grade X students of SMA Negeri 6 Medan taught by students' worksheet based on scientific approach in listening skill is good. After calculating and analyzing the data of the research, it found that the grade X students of SMA Negeri 6 Medan taught by students' worksheet based on scientific approach in listening skill is fair. The use of students' worksheet based on scientific approach increase the the students' listening skill to the grade X students of SMA Negeri 6 Medan, it proved on the t-table with $df = n - 2 = 30 + 30 - 2 = 58$ at t-critical 0.05 it is obtained 1,67. If compared the value of t_o and t_t , so it show that the value of t-observed is bigger than the value of t-table ($2,17 > 1.67$). it stated that the hypothesis is accepted. It means that the grade X students of SMA Negeri 6 Medan which taught by students' worksheet based on scientific approach in listening skills is higher than those without students' worksheet based on scientific approach and there was some effectiveness of using students' worksheet in teaching listening..

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