

Chapter Three

Research Methodology

The third chapter describes the methodology that was used in this study. This chapter includes research design, population and sampling, research instrument, validity and reliability, data collection procedure, and data analysis.

Research Design

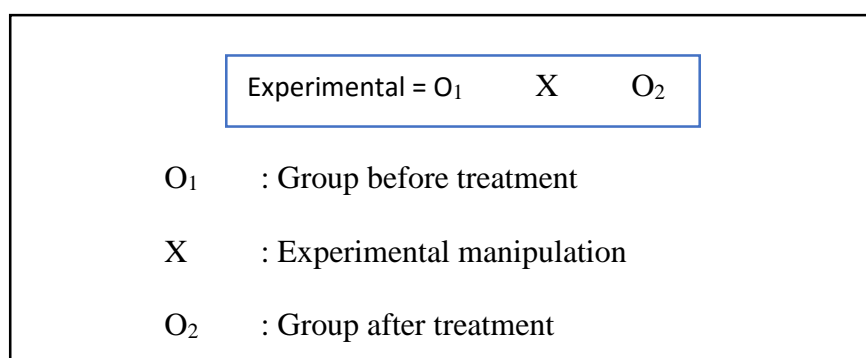
The aim of this research is to investigate the effectiveness of using audio books of ICT class at SMP Muhammadiyah 1 Yogyakarta. This research used a quantitative approach in gathering data. Quantitative research methodology was appropriate for this study because the researcher wanted to know how effective the use of audio books is to improve students' listening skill. Creswell (2012) stated that "quantitative research identifies a research problem based on trends in the field or on the need to explain why something occurs" (p.13). Additionally, quantitative research problem involved how a variable affects another.

In this quantitative research, the researcher used experiment research methodology to examine the effectiveness of using audio books in improving listening skill. An experimental design is used when the researcher wants to establish possible cause and effect between independent and dependent variable (Creswell, 2012). Similarly, Cohen, Manion, and Morrison (2011) mentioned that an experiment involves making a change in the value of one variable and observing the effect that changes on another variable. They stated that the essential feature of the experimental study is the researcher purposely control and manipulates the conditions that determine the events when the researcher introduces an intervention and measure the difference that it makes. This study had two variables such as audio

books and listening skill. The researcher used the experimental design to collect the data and answered how audio book affect listening skill.

In experimental design, the researcher chose a time series experiment. There was only one experimental group with multiple pretest and posttest. Cohen et al. (2011) stated that the repeated tests both before and after treatment enable students to become their own controls. In addition, this design helped the researcher focus on students' performance before and after treatments. Some treatments would be applied in the experimental group, so this design was appropriate for this study.

Figure 3.1 The one group pretest and posttest design according to Cohen, Manion, and Morrison (2011)



The process of a time series research has been shown in figure 3.1. The researcher measured a group on the independent variable before the treatments (O₁). Then, the researcher treated students with some interventions where the students followed experimental treatments. The researcher measured again the condition of the group after the treatments (O₂). Then, the researcher proceeded to account differences between pretest and posttest scores by seeing reference to the effects of experimental manipulation (X).

Population and Sampling

Population in this study was students of SMP Muhammadiyah 1 Yogyakarta. There were some reasons to choose this school. First, this study explored audio books as teaching and learning media with technology-based. SMP Muhammadiyah 1 Yogyakarta has ICT class that possibly in applying audio books in the classroom. Thus, students in this school already used technology-based in teaching and learning process. Therefore, the implementation of audio books would be easily accepted for students in that school. Another reason was the researcher became a volunteer as a teacher in that school during internship program in 2014. By this program, the researcher found that students in that school had problems in listening, and the researcher observed them again in November 2015. By having a discussion with an English teacher in that school, she explained that students keep facing difficulties in listening. Those issues above supported the reason to implement audio books that researcher needed in this study. Additionally, the researcher wanted to help students in developing their listening skill and exploring the use of technology there.

The researcher used purposive sampling in selecting the participant. Cohen et al. (2011) stated that purposive sampling has been chosen for a specific purpose. Additionally, the particular characteristics sample build up a satisfactory for specific needs. The sample of this research was students in grade VIII. In this case, the reason was because a narrative text was used as a treatment instrument of this study, and based on the syllabus, that kind of text is learned by students of grade VIII. Thus, students of grade VIII as a sample will be suitable with the level of this research.

In grade VIII, there are seven classes. The classes are classified into class A and B as ICT class, class C as a special class, and the rest classes are the regular

class. The researcher chose ICT class because this class was qualified with this research. There were two ICT classes that possible to implement the audio books.

The researcher only needed one group of this research. The researcher chose class VIII-A academic year 2015/2016 as a sample in this research. It was based on teacher's recommendation because students of VIII-A have big interesting in learning English. The English teacher said that some students in this class faced problems in listening comprehension. Students in this class consisted of 26 students with the same background that they used English as a foreign language. At the beginning, the sample of this research was 26 participants, but there was a student who did not complete the whole process in this research. Thus, the total sample of this study consisted of 25 participants.

Research Instrument

In this study, the researcher used three instruments to support the data collection. The instruments that the researcher used were including test, lesson plan, and audio books.

Test. The tests that were given in this study included pretest and posttest. The researcher also gave some exercises by games during the treatments. Cohen et al. (2011) argued that by using test, the researcher has a powerful number of data collection method. A numerical result of tests in gathering data is more accurate rather than verbal kind.

The researcher used formative and summative testing. Cohen et al. (2011) classified that formative testing is undertaken during a program and summative testing is given at the end of course. The researcher used formative testing during the treatments to monitor students' progress of each meeting. The type of the test was criterion referenced. This test provided the researcher with information about exactly

what students have learned. The students did exercises of each meeting. Besides, the researcher did summative testing for pretest to know students' previous condition and posttest to measure students' achievement or mastery after treatments. The type used was achievement test.

Questions of pretest and posttest were exactly same, but the sequences were rearranged. Both pretest and posttest were done in three times. This is according to Cresswel (2012) and Cohen et al. (2011) that a time series design should have repeated pretest and posttest. The repeated tests are to determine consistency and stable conditions of the students before and after treatments.

The tests were in audio files or mp3 format. The duration of each test was around 5-10 minutes. The kind of tests consisted of discrete item test or multiple-choice, task-based test or open task, and integrative test or blank word. The scoring system for every test was 1 point for a correct answer and 0 point for an incorrect answer. The maximum score of each test was 100 points. By the tests, the researcher knew whether there were any significant differences between before and after treatments.

Figure 3.2 Scoring system

$$\text{Students' score} = \frac{\text{the score gained}}{\text{maximum score}} \times 100$$

The scoring system of tests was checked by the researcher and the English teacher. After giving the score, the researcher and the English teacher analyzed where the students' level achievement was. The scoring system used listening skills rubric (table 3.1)

Table 3.1 Listening skill rubric according to Villalobos (2013)

Score	Level	Description
90 – 100	Excellent	Excellent at identifying the main idea, general and specific information. Accurately infers implied information. No problems at recognizing vocabulary and expressions.
80 – 89	Very good	Very good at identifying the main idea, general and specific information. Shows good ability to infer implied information. Almost no problems at recognizing vocabulary and expressions.
70 – 79	Good	Good at identifying the main idea, general and specific information. Shows some ability to infer implied information. Some minor problems at recognizing vocabulary and expressions.
60 – 60	Fair	Still able to identify the main idea, general and specific information. Still shows ability to infer implied information. Some problems at recognizing vocabulary and expressions.
59 or fewer	Unsatisfactory	Unable to identify the main idea, general and specific information. Fails to infer implied information. Many problems at recognizing vocabulary and expressions.

Lesson plan. A lesson plan was needed for the implementation of the treatments of this study. All the process of the treatments planned by the researcher was in the lesson plan. The lesson plan had been consulted with the supervisor and the English teacher of VIII-A. The lesson plan was designed to improve students' performance. It was also to achieve the benefits of the audio books including vocabulary development, fluency, and students' motivation. The activities of lesson

plan consisted of opening, main, and closing. Audio books and exercises in every meeting were also attached.

Audio books. Audio books was a tool used as treatments in this research. The researcher wanted to know how effective the use of audio books to improve students' listening skill was. An audio book is a set of audio file (mp3) and printed out text. Audio books used was in a short story format because it was implemented for junior high school learners. Therefore, the audio books in this study were appropriate for students' level of this study.

There were two audio books for four meetings. Audio book 1 was The Whispering Palms and Audio book 2 was The Little Pianist. Each audio book was applied for two meetings. This was based on teacher's suggestion that one audio book for a meeting is too long and hard for students. Hence, the researcher and teacher agreed that one audio book would be divided into two parts.

Validity and Reliability

The researcher needed to check the validity of instrument before conducting the research. Cohen et al. (2011) mentioned that validity is the accuration of the instruments. In quantitative data, validity could be improved through careful sampling, appropriate instruments, and appropriate statistical treatments of the data. The validity of the instruments in this research was gained from expert judgments of the researcher's supervisor and the English teacher of SMP Muhammadiyah 1 who gave their points of view and suggestions. Their suggestions were taken into consideration, and the instruments were modified accordingly as well.

The researcher also needed the reliability of research' instruments. Cohen et al. (2011) stated that reliability is essentially of dependability and consistency over

time. It is concerned with precision and accuracy of some features. The reliability of the instruments in this research was achieved through a pilot study, in which the researcher applied the test or retest method to some students. Additionally, Cohen et al. (2011) stated the instrument, which has been piloted, is reliable if the value of Cronbach Alpha more than 0,6. The calculation also calculated using SPSS.

Table 3.2 The reliability according to Cohen, Manion, and Morrison (2011)

Cronbach Alpha (α)	Description
> 0.90	Very highly reliable
0.80 – 0.89	Highly reliable
0.70 – 0.79	Reliable
0.60 – 0.69	Marginally/minimally reliable
< 0.60	Unacceptably low reliability

Data Collection Procedure

In collecting the data, the researcher implemented some following steps. The steps consisted of observation, research permit, select participants, pretests, treatments, and posttest. In addition, the pretest was done three times before treatments. Then, treatments were done four times. Each treatment took 40 minutes. Finally, the researcher examined the students in the posttest to check their level achievement after the treatments.

Table 3.3 Research Timeline

Observation	Research Permit	Select participant	Pretest 3x	Treatment 4x	Posttest 3x
During internship program in 2014 and November 2015	November, 2015	February, 2016	Middle of March, 2016	End of March, 2016	End of March, 2016

Observation. The observation is needed to know students' characteristic and students' performance generally. Cohen et al. (2011) argued that observation is an opportunity for the researcher to collect direct data from naturally occurring social situation. Actually, the researcher already observed students of SMP Muhammadiyah 1 Yogyakarta during the internship program, and the researcher observed them again in November 2015. Based on this observation, the researcher knew students' problem in listening.

Research Permit. To access the school that the researcher wanted to apply an experiment, the researcher needed research permits. There were three agreements of institutions as requirements to conduct an experiment in that school. There were from university, SMP Muhammadiyah 1 Yogyakarta, and Pimpinan Daerah Muhammadiyah.

Select participants. This research used purposive sampling. The participants in this study were based on teachers' recommendation. The researcher discussed with the English teacher of that school to select students. The researcher ignored students' level in selecting the participants, and students who became the sample of this study were students who committed with this study. In other words, those students would follow every process in this research.

The researcher explained the selective students about regulation. The researcher informed the students that they became a participant in this experiment. They automatically became the sample of this study.

Pretest. Before students received treatments, the researcher gave them the pretest three times. This test was aimed at measuring the participants' listening ability before being treated with this study instrument. Then the researcher noted students' scores.

Treatment. Treatment was the main aspect of experimental design. The treatments were done four times. The intensity of the treatments was based on discussion among the researcher, English teacher, and school management. Another reason was because listening took the smallest portion of the whole classes during the semester. Therefore, four times of treatments were fair for this study.

The treatments of this research were held on 22 and 24 of March 2016. The interval between one and other treatments was very close due to school's schedule. The duration of each treatment same with the duration of the class meeting, that is 40 minutes. The total duration of treatments were 160 minutes. The treatment was conducted at 08.20 – 09.00 and 09.00 – 09.30. There were 30 minutes for a break between the learning time. In addition, these treatments were done by the researcher. The researcher taught the students by herself, while the English teacher was also in the same classroom to monitor during the treatments.

Posttest. After treatments, students did posttest. The total of pretest and posttest were same, which were three times. The researcher collected scores of posttest to calculate the mean of the scores. Then, the researcher analyzed the differences between each test.

Data Analysis

In data analysis, the researcher analyzed students' score between pretests and posttests. The researcher input the data into Statistical Package for Social Science or is known as SPSS. It was to check the mean of each test. By this analysis, the researcher found that whether or not there is any statistically significant difference of using audio books in listening activities. There were some steps in conducting the data.

First, the researcher gave scores to each test. The test included pretest 1, 2, 3 and posttest 1, 2, 3. Thus, the researcher calculated how much the students could achieve. To see students' progress, the researcher could look at the exercises in every meeting.

The researcher analyzed the data by comparing means of pretests and posttests, analyzing the T-test, and calculating the effect size. By comparing the means, the researcher knew the differences between before and after the treatments. T-test analyzing was used to ensure the hypothesis of this research. Moreover, the calculation of effect size determined how big audio books influence toward listening skill.