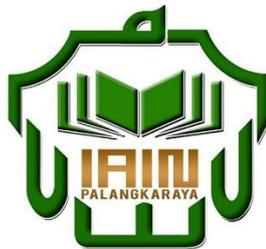


**THE EFFECT OF GRAMMAR DISCOVERY TECHNIQUE ON
STUDENTS' PASSIVE VOICE MASTERY AT MA MUSLIMAT NU
PALANGKA RAYA**



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2017 M / 1439 H**

**THE EFFECT OF GRAMMAR DISCOVERY TECHNIQUE ON
STUDENTS' PASSIVE VOICE MASTERY AT MA MUSLIMAT NU
PALANGKA RAYA**

THESIS

Presented to

State Islamic Institute of Palangka Raya

In partial fulfillment of the requirements

For the degree of *Sarjana* in English Language Education



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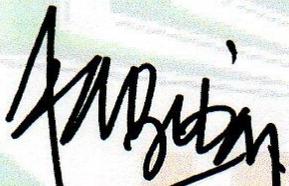
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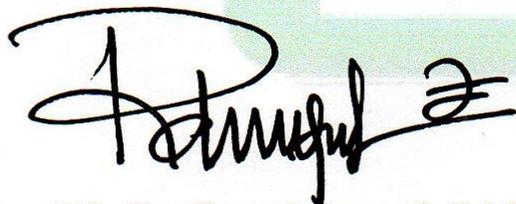
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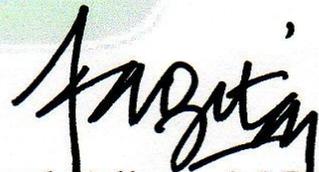
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MOTTO AND DEDICATION

“ Life is short. Time is fast. No replay. No rewind. So enjoy every single moment as it comes..”

This Thesis is dedicated to:

My beloved parents Anang Muradi and Zubaidah for their pray, support, and believe in me, my beloved brothers and sister Abdul Kadir, M.Arsyad, and Rosmayati for their suggestion. beloved friends for their support, and my all of my beloved friends, especially Marfu'ah, Nurhalifah, Dwi Warochmah, Eka Saputri, Dyah, Melinda, Yoyi, Maya, Eni, Bona, Sifa, Mika, Atul, and Andre for their help and suggestion in completing my weaknesses.

DECLARATION OF AUTHORSHIP

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Declare that:

1. This thesis has never been submitted to any other tertiary education institution for any other academic degree.
2. This thesis is the sole work of author and has not been written in collaboration with any other person, nor does it include, without due acknowledgement, the work of any other person.
3. If at later time it is found that this thesis is a product of plagiarism, I am willing to accept any legal consequences that may be imposed to me.

Palangka Raya, October 2017

Yours Faithfully



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ABSTRACT

Hadijah, S. 2017. *The Effect of Grammar Discovery Technique on Students' Passive Voice Mastery at MA Muslimat NU Palangka Raya*. Thesis, Department of Language Education, Faculty of Teacher Training and Education, State Islamic Institute of Palangka Raya. Advisors: (I)Santi Erliana, M.Pd., (II) Akhmad Ali Mirza, M.Pd.

Key words: grammar discovery technique, students' passive voice mastery, passive voice

This study was aimed at finding out the effect of grammar discovery technique on students' passive voice mastery at MA Muslimat NU Palangka Raya in academic year 2017/2018. The population of this study was all of the eleventh grade students which consist of 88 students. The samples of this study were: XI-IPA as experimental group which consists of 44 students and XI-IPS as control group which consists of 44 students as well. Experimental group was taught passive voice by using grammar discovery technique whereas control group was taught by using grammar translation method. The researcher gave pre-test, treatment, and post-test to collect the data and used t-test formula to examine the hypothesis.

This study was quasi-experimental study with quantitative approach, where the researcher used nonrandomized control group, pre-test post-test design. The instrument of this study was test. For test drive the instrument, it was used: instrument validity, instrument reliability, discrimination power, index of difficulty, and distractor analysis. To analyze the data, it was through the same techniques: normality test, homogeneity test, and testing hypothesis.

The result of t-test using manual calculation showed that t_{observed} was higher than t_{table} at 5% and 1% significant level ($1.988 < 3.456 > 2.634$). It meant H_a was accepted and H_o was rejected. This finding indicated there is a significant effect of grammar discovery technique on students' passive voice mastery of the eleventh grade at MA Muslimat NU Palangka Raya.

ABSTRAK (Indonesian)

Hadijah. S. 2017. *Pengaruh Teknik Grammar Discovery pada Penguasaan Kalimat Pasif Siswa di MA Muslimat NU Palangka Raya*. Jurusan Pendidikan Bahasa, Fakultas Tarbiyah dan Ilmu Keguruan, Institut Agama Islam Negeri Palangka Raya. Pembimbing: (I) Santi Erliana, M.Pd., (II) Akhmad Ali Mirza, M.Pd.

Kata Kunci: teknik grammar discovery, penguasaan kalimat pasif siswa, kalimat pasif

Penelitian ini bertujuan untuk mengukur pengaruh teknik grammar discovery pada penguasaan kalimat passive voice siswa di MA muslimat NU palangka Raya pada tahun ajaran 2017/2018. Pupulasi penelitian ini adalah seluruh siswa kelas sebelas yang berjumlah 88 siswa. Sample penelitian ini adalah: XI-IPA sebagai kelompok eksperimen yang terdiri dari 44 siswa dan XI-IPS sebagai kelompok control yang terdiri dari 44 siswa juga. Kelompok eksperimen diajarkan kalimat pasif menggunakan teknik grammar discovery sedangkan kelompok control diajarkan menggunakan metode grammar translation. Peneliti memberikan pre-test, perlakuan, and post-test untuk mengumpulkan data dan menggunakan t-test untuk menguji hipotesis.

Penelitian ini adalah penelitian kuasi eksperimen dengan pendekatan kuantitatif, dimana peneliti menggunakan desain pra uji pasca uji, tidak mengacak kelompok kontrol. Untuk pengumpulan data digunakan instrument yaitu tes. Untuk menguji instrument digunakan: tes validitas, tes reliabilitas, daya beda, tingkat kesukaran, dan analisis pengecoh. Untuk menganalisis data, digunakan teknik antara lain: tes normality, tes homogeniti, dan tes hipotesis.

Hasil penelitian ini menunjukkan bahwa t_{hitung} lebih tinggi dari pada t_{table} pada taraf signifikansi 5% dan 1% ($1.988 < 3.456 > 2.634$). Berarti H_a diterima dan H_o ditolak. Hasil inimenandakan bahwa ada pengaruh teknik grammar discovery pada penguasaan kalimat pasif siswa di MA muslimat NU Palangka Raya.

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Palangka Raya, October 2017
The writer,

Siti Hadijah
NIM 1301120866

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LIST OF ABBREVIATION

Ha : Alternative Hypothesis

Ho : Null Hypothesis

CHAPTER I

INTRODUCTION

This chapter consists of the background of the research, research problem, the objective of the research, assumption, scope and limitation, significance of the research, and definition of key terms.

A. Background of the Research

Almost all aspects of life recommend people to master English, such as education, health, occupation, communication, and so on. In educational aspect, English is one of the important compulsory subjects that have to be learnt in Indonesian school (Kurniasih, 2013, p. 14). In Indonesian school, every student is drilled on and on in order to develop his communicative competency. In this case, if the students want to graduate from their junior and senior high school, the exam of English subject which is one of criteria should be well passed by them.

There are four major skills in English, namely, listening, speaking, reading, and writing. Listening and reading skills are classified into receptive skills; meanwhile speaking and writing skills are productive skills. In learning language, those skills must be mastered by the students. Besides that, they must also be capable of grammar. Cowan (2008, p.3) believes that grammar is the set of rules that describes how words and groups of words can be arranged to form sentences in a particular language. It is in line with Ur (1998, p. 4) statement, that a learner who knows grammar is the one who has mastered and could apply these rules to express him or herself in what would be considered acceptable language forms. Both of those statements are similar with Thorn burry (1999, p.1), he

comments that grammar is a description of the rules that govern how a language's sentences are formed and it attempts to explain why the following sentence are acceptable. From some statements above, the researcher conclude that grammar will help students to communicate properly because it is the basic knowledge of English.

Hence, in learning a language student should know how language works (language usage) and how to learn its use (language use). It is the same case as learning musical instruments, a student who has been taught a lot of grammar but cannot use the language is the same as a guitarist who has learnt a lot about harmony but cannot play the guitar (Simbolon, 2015, p. 71). So, when students learn English, their first and target language could be mix and influence each other. The patterns of the English can be very different from their Indonesian. Mostly, students are using the Indonesian sentence patterns unconsciously when they write English sentence without paying attention to the rules. However, learning grammar cannot be avoided because it is a basic element which is used in every English skill, such as Speaking, Writing, Reading, or Listening. The purpose of teaching grammar in senior high school is to enable the students communicate each other by using correct grammar in daily life and their work environment. Besides that, by understanding English Grammar well, students can understand a message or information which will be conveyed by an author or speaker to the reader or listener in order to avoid misunderstanding.

Therefore, the use of correct and appropriate grammar in the written and spoken form can minimize misunderstanding between the author-reader and

speaker-listener. In the sense of learning grammar consecutively students have to be an active, creative, effective and fun learner taught by the teachers.

Therefore, it is important for English learners to have a good understanding on it. Based on 2013 curriculum, passive voice should be learnt to eleventh grade students at Senior High School. It means that passive voice is one of important grammar to be mastered by students. However, Indonesian students seem to have problem in constructing passive voice.

In learning Passive Voice, the students need to pay attention into tenses before change an active sentence into passive. The students still faced a lot of difficulties in using tenses, and tenses are generally still a big problem for Indonesian students. Moreover, the students who have low mastery at English do not master all the tenses well. As the result, Passive Voice has become one of grammar problem in the class. In this case, according to White (2009, p.188):

“Teaching the use of the Passive Voice constitutes a problem area in many language courses. Often it is treated as transformation exercises, the students being required to rewrite active statements as passive ones. The result can be a confusion of forms, with a combination of elements which are neither active nor passive. Furthermore, the actual function of the passive, as a means of describing a sequent overtired process, may not be obvious to the students as a result of such practice exercises”.

In relation to the statement above, in learning passive voice sentences, many students have some common difficulties, i.e. which tenses that will be used. It is known that there are four kinds of main tense: there are present tense, past tense, future tense, and past future.

Based on preliminary research while the researcher did teaching practice II (PM II) on October 2016, some problems faced by the students of MA

MuslimatNU Palangka Raya are found. First, they have difficulty in identifying the form of passive voice; second, they have difficulty in identifying the form of verbs; and third, they have difficulty in changing active voice into passive. For example, **he reads the book*. The students were asked to transform this sentence into a passive sentence and they wrote **book reads by he*. Passive voice in English has *be + past participle* (regular and irregular verbs), while their first language does not have such rules. Therefore, the correct answer should be written **book is read by him*.

Because of the English passive voice is important, but difficult to be learnt, some efforts have been done to solve the problem. The main objective is to make English passive voice become easier to be learnt, so that teacher has to have an interesting teaching technique. In other hand, the teacher should choose the best technique in teaching grammar in order to make students easier to master passive voice.

Based on the phenomena in this research, the researcher used Grammar Discovery technique to solve this problem. It is included in Discovery Learning model which emphasize more on the learning process, rather than the result of the learning. So in this case, students are as problem solver because the model is going to be students-centered. This teaching technique has synchronized with the 2013 curriculum in Indonesia especially in teaching and learning Passive Voice. Grammar discovery technique is the discovery learning which is used for teaching grammar, for this case is Passive voice.

For example, there is a research entitled *The Effect of Using Discovery Learning Strategy in Teaching Grammatical Rules to First Year General Secondary Student on developing Their Achievement and Metacognitive Skill* by Prof. Dr. AbdelrahmanKamel Abdelrahman Mahmoud (2014). He is the Professor of curriculum and teaching methods, Faculty of Education, Fayoum University, Egypt. The purpose of this research is to determine the effectiveness of discovery learning strategy in the teaching of grammatical rules in the development and skills beyond the knowledge of students in the first grade secondary. The result of this research is Discovery learning strategy succeeded in teaching grammatical rules in the development of skills beyond the knowledge of students in the first grade secondary school year, which is reflected in the level of the students in the test scores.

In conclusion, the Grammar discovery technique is a teaching technique where students are given a chance to observe, think, ask, and discover the grammar material by themselves. The role of teacher is a facilitator and informant.

Based on the explanation above, it can be seen that how important grammar for Indonesian learners, especially in mastering passive voice. It is one of grammar point that is often learned in Senior High School. In this case, passive voice should be learned by students of MA Muslimat NU. While Grammar discovery technique is one of motivating learning and it can be used to find out the students' mastery on passive voice. Therefore, the researcher is interested to do a research entitled: "The Effect Grammar Discovery Technique on Students' Passive Voice Mastery at MA Muslimat NU Palangka Raya".

B. Research Problem

Based on the background of research above, the problem of the research is “Is there any effect of Grammar discovery technique on students’ passive voice mastery at MA Muslimat NU Palangka Raya?”

C. Objective of the Research

The objective of the research is to find out the effect of grammar discovery technique on students’ passive voice mastery at MA Muslimat NU Palangka Raya.

D. Hypothesis of the Research

Ha : There is a significant effect of using grammar discovery technique on the students’ passive voice mastery of the eleventh grade at MA Muslimat NU Palangka Raya.

Ho : There is no significant effect of using grammar discovery on the students’ passive voice mastery of the eleventh grade at MA Muslimat NU Palangka Raya.

E. Assumption

There are two researchers’ assumptions in this research, they were:

Firstly, Grammar discovery technique could be applied in teaching grammar, especially Passive Voice. Secondly, the students’ Passive Voice mastery would be better by using Grammar discovery technique.

F. Scope and Limitation

This research belonged to quasi-design (experimental) which used the quantitative method. It would be focused on the effect of grammar discovery

technique on students' passive voice mastery at MA Muslimat NU Palangka Raya. The researcher used only test to find out the students' mastery on passive voice. In this research, the researcher took the eleventh grade student at MA Muslimat NU Palangka Raya as the sample of the research and it consists of two classes and the numbers of students were 88 students: there were 44 students at XI-IPA class as the experimental group and there were 44 students at XI-IPS class which was control group. The limitation material of this research was passive voice material. The researcher decided the topic of passive voice in: simple present, simple past, simple future, and preset perfect.

G. Significance of the Research

This study has theoretical and practical significances. Theoretically, there were some benefits which were expected that the result of this research could: measure the effect of grammar discovery technique on students' passive voice mastery, relate a contribution to support the theory in teaching and learning passive voice or classroom technique, prove grammar discovery technique can be applied as one of the effective teaching technique in teaching passive voice.

Practically, the result of the research was expected to give a significant contribution to the English teacher, students, and the future researcher. Firstly, the significant for the teacher is that grammar discovery technique can be implemented by the teacher as an alternative technique in teaching and learning process, especially in teaching English passive voice. Secondly, the significant for the students is that grammar discovery technique will overcome the students' difficulties in mastering grammar especially passive voice. The last, there were

some benefits for the future researcher: it can give empirical data about the use of grammar discovery technique in teaching and learning passive voice, give the reference of a study if they are interested in conducting the similar study, and develop the teaching and learning English passive voice at senior high school.

H. Definition of Key Terms

1. An Experiment

An experiment refers to an attempt to establish a cause-and-effect relationship by some strategy such as administering a treatment to one group and withholding it from another (Toendan, 2007, p.215). In this research, the researcher did the experimental research with the quasi experimental approach at eleventh grade of MA Muslimat NU Palangka Raya in academic year 2017/2018.

2. Grammar discovery technique

Grammar discovery technique is included in discovery learning which is one of the cognitive instructional models was introduced by Jerome Bruner. He regarded that discovery learning agree with searching knowledge actively by human being, and automatically gives the best result (Trianto, 2007, p. 26). In this research, Grammar discovery technique is a technical way that researcher will use to find out its effect on students' Passive voice mastery.

3. Passive Voice

Hornby (2000, p.964) says, "Passive voice is the form of a verb that is used when the subject is affected by the action of verb". Therefore, the Passive voice is a form of the verb used when the grammatical subject is affected by the action of the verb. In the English language, the English passive voice is formed

with an auxiliary verb (usually be or get) plus a participle (usually the past participle) of a transitive verb. However, passive is really needed in daily speaking and writing activity.

4. Mastery

Mastery is a complete knowledge of something, great skill, control to something (Hornby, 2000, p. 968). In this research, the researcher focuses on the mastery of eleventh grade students of MA Muslimat NU Palangka Raya on Passive Voice.

CHAPTER II

REVIEW OF RELATED LITERATURE

In this chapter, the researcher presents some theories and research studies which are relevant to the topic.

A. Related Studies

First of all, the thesis was conducted by Prawerti (2014). The result of analysis showed that Discovery Learning Method is an effective method to teach writing for the tenth grade students of SMAN 1 Durenan in the Academic Year of 2014/2015. Second related research is a thesis from Mukharomah (2015). The result of the research showed that the students improve their descriptive text writing effectively by using discovery learning model. Third, related research was conducted by Naila (2014). Based on the research results, it can be inferred that applying discovery learning model with scientific approach is able to improve the high school students' science process skills. Fourth, a thesis was done by Hidayati (2016). The results of this research indicate that Discovery learning with learning journal writing can improve scientific working class VIII.1 SMP Negeri 1 Probolinggo. Fifth, a thesis was conducted by Mahmoud (2014). The result of this research was Discovery learning strategy succeeded in teaching grammatical rules in the development of skills beyond the knowledge of students in the first grade secondary school year, which is reflected in the level of the students in the test scores. Sixth, Mukharomah (2015) reported the research result showed that using discovery learning model can improve students' achievement in writing descriptive text. The Seventh related research was a research from Sandi (2016). In research finding, the researcher found that students' ability in using passive voice can be classified in the

excellent level and the good level. Besides that, the researcher also found that most of the students' difficulties in learning passive voice were in the mastering of past participle. Eighth, a research was made by Aprilia (2011). Based on the recapitulation on the test result and the data analyzed, it was found that the students' ability in identifying passive voice in reading text was classified into poor and the factors that influence the students' ability in identifying passive voice in reading text were low motivation, limited time, intelligence, teachers' method, class condition, environment, family, and peers. Ninth, the paper was from Sally. (2014). The findings suggest that students were positive towards the use of the discovery approach in learning General Studies. Tenth, the research was presented by Nurhidayati (2013). The result of the research showed that there is positive correlation between the mastery of Indonesian and English passive voice. The correlation was high correlation. Eleventh, the research which was reported by Uside (2013), revealed that the Discovery Experimental Method (DEM) had significant effect on the achievement of students by enhancing knowledge retention and instilling confidence. Twelfth, the thesis was conducted by Alwani (2013). It can be concluded that the students could improve their ability in using passive voice of the simple past tense through Contextual Teaching and Learning (CTL) method. Thirteenth, an error analysis research was done by Qodir (2006). The result showed that the sentences using present continuous tense (Type B) has the highest number of errors. Fourteenth, the research was conducted by Alvin (2013). Based on the results, the proportion of passives in scientific writing may stabilized at about 30%. It is unlikely to dramatically drop any further since the trend suggests that passives are still widely used

in the methodology section. The last was Putthasupa (2009). The findings showed that the inductive approach positively affected the teaching of grammar in the writing course.

In conclusion, the current research is different with those previous studies. The first related research was conducted by Prawerti (2014) tried to reveal whether: (1) Discovery Learning Method is more effective than Direct Method to teach writing to the tenth grade of SMAN 1 DurenanTrenggalek in the Academic Year of 2014/2015; (2) the students who have high creativity have better writing skill than those who have low creativity of the tenth grade of that school; and (3) there is an interaction between teaching method and creativity to teach writing to the tenth grade that school. Second, a previous research conducted by Mukharomah (2015) tried to find out whether discovery learning model is more effective to improve students' descriptive text writing than non-discovery learning. The third, the thesis was conducted by Naila (2014). The result showed that there were significant increases of students' science process skill values by 17,44% from first cycle to second cycle. Forth, a research was done by Hidayati (2016). The result concluded that the implementation learning increases 7.75% from 90.50% to 98.25%, an increase in the ability of learning journal writing, and the ability of scientific work increased 23% from 73.50% to 96.50%. Fifth, the research was conducted by Mahmoud which determined the effectiveness of discovery learning strategy in the teaching of grammatical rules in the development and skills beyond the knowledge of students in the first grade secondary. Sixth, the research which was reported by Mukharomah (2015) tried to find out whether discovery learning model is more

effective to improve students' descriptive text writing than non-discovery learning. The seventh related research presented by Sandi (2016) wanted to see the students' ability in using passive voice and also their difficulties in learning it. The eighth previous research by Aprilia (2011) had two objectives of the research were to find out the students' ability in identifying passive voice in reading text and to find out the factors that influences the students' ability in identifying passive voice in reading text. Ninth, a paper was from Sally (2014). It highlights the use of discovery approach in the teaching General Studies. The overarching aims of the paper are to share researcher's experience of planning a unit of lessons and trying out the discovery approach in one school. The tenth related research was Nurhayati (2013), the purpose of her research is to find the relationship between students' mastery of Indonesian passive voice and passive voice in English version of the second Grade students at MTs HidayatulInsanPalangka Raya. Eleventh, a research was written by Uside (2013). This research established the effects of discovery Experimental method (DEM) on secondary school students' achievement in physics in Kenya. The twelfth, Alwani (2013) did the research to know whether the second grade students of Islamic Junior High School Al-Mujahidin Cikarang in 2012/2013 academic year comprehend passive voice in simple past tense. Besides that, this research also tried to describe how to apply the Contextual Teaching and Learning (CTL) in improving the students. Thirteenth, the writing was written by Qodir (2006) aimed to know the kinds of errors on changing active voice into passive voice into passive voice and to know which tense has the highest frequency of errors. The fourteenth related research is Alvin (2013). His research examined the proportion of

passives used, and the contexts and forms in which they occurred. The last was a research which was conducted by Putthasupa (2009). The result showed that the inductive approach, through the writing classes, could improve learners' grammatical errors. It was also found that there were totally 25 issues of grammatical errors which were frequently produced by the students ranking from sentence to word levels.

Based on description above, then the researcher is interested to formulate this research by using title "The Effect of Grammar discovery technique on Students' Passive Voice Mastery at MA Muslimat NU Palangka Raya" because this research would find out the effect of Grammar discovery technique in many ways on students' passive voice mastery. The researcher chose passive voice because the students' mastery of passive voice is important to be conducted in this research. The researcher hoped that the use of Grammar discovery technique is effective in teaching passive voice because it has learning stages that can make the students understand about passive voice and make the students active in class.

B. Grammar discovery technique

One of the cognitive instructional models is discovery learning from Jerome Bruner. He regards that discovery learning agrees with searching knowledge actively by human being, and automatically gives the best result (Trianto, 2007, p.5). According to Balim (2009, p. 2), stated that Grammar discovery technique is a method that encourages students to arrive at a conclusion based upon their own activities and observations. The activities in grammar teaching raise the curiosity of students and drive them to inquire their priorities and perceive the natural phenomena from different

aspects. Such activities help to correct the conceptual errors of students. On the other hand, the researcher adds that, the best result here should not force students to get the best mark in the end of teaching learning process. The students are given chance by the teacher to solve the problem which passed by themselves. It means that learning output is independently.

In addition, Grammar discovery technique emphasize the important of structure comprehend or the important ideas to a science discipline, through involvement of students 'activity in passive voice' teaching learning process. It is a model to improve the way of the active students 'learning by discovering and investigating themselves, so the result that will get is permanent and memorable in their mind, it is unforgettable to students. By using discovery learning, students can also think analysis and try to solve their problem by themselves (Hosnan, 2014, p.282). When students were asked to understand, they got stress and worried, because of the grammatical rule in English uses in passive voice. Here, the researcher use discovery learning is to reduce students 'worry about the grammatical rule. The students would write without any grammatical rule as usual at the first time, but they would face the fact thing that must be assumed to be a thing that must be written.

People who use self-discovery in learning turn out to be more self-confident. Discovery is a way from the unknown to the known by the learners themselves. The active participation of the learner in the learning process is called discovery learning. In discovery learning, students construct knowledge based on new information and data collected by them in an explorative learning environment (Balim, 2009, p.2). Grammar

discovery technique occurs whenever the learner is not provided with the target information or conceptual understanding and must find it independently and with only the provided materials. Within discovery learning methods, there is an opportunity to provide the learners with intensive, conversely, minimal guidance, and both types can take many forms (e.g., manuals, simulations, feedback, example problems) (Alfieri et al, 2011, p.2).

Grammar discovery technique, in this case, is discussed as Discovery Learning, also can be called as an active learning. Here, the strategy for active learning has a purpose to make independent and creative growing in researching, so that students can make innovations. Learning aim is expected to make students enable to understand a concept through their discovery by doing experiment. For this, it only can be achieved by using strategy in grouping to make a report as well as communication. Based on Mallinson in Trianto (2007, p.133), suggested that "If the main goal of science program is to get children to understand, remember, and apply science concept, there's probably no more powerful tool than having writing science. Research indicates that writing about science improves not only science vocabulary, but also performance in reading and thinking in the discipline".

Bruner using the method called Discovery Learning, where students organize the material learned with a final form (Dalyono, 1996, p. 41 in Mendikbud, 2013). Discovery Learning is a method to understand the concepts, meanings, and relationships, through intuitive process to finally come to a conclusion (Budiningsih, 2005, p. 43 in Mendikbud, 2013).

Discovery occurs when an individual is involved, especially in the use of mental processes to find some of the concepts and principles. Discovery is done through observation, classification, measurement, prediction, and determination and inferring. The process is called cognitive. While the discovery processes itself is the mental process of assimilating concepts and principles in the mind (Sund in Malik, 2001, 219 in Mendikbud, 2013).

According to Murphy, et al (2010), Discovery learning is a learner centered mode of teaching most widely discussed by John Dewey and Jerome Bruner. In discovery learning students become active participants in learning by exploring concepts and answering their own questions through testing and experience. Discovery Learning refers to various instructional design models that engage students in learning through discovery. According to Joolingen (1999, p.285), discovery Learning is a type of method where learners construct their own knowledge by experimenting with a domain, and inferring rules from the results of these experiments. The basic idea of this kind of method is that because learners can design their own experiments in the domain and infer the rules of the domain themselves they are actually constructing their knowledge. Because of these constructive activities, it is assumed they will understand the domain at a higher level than when the necessary information is just presented by a teacher or an expository learning environment.

From the several definitions above, the researcher draw the conclusion about the definition of Grammar discovery technique. It is a kind of method where the students discover the grammar materials by themselves without being taught by the teacher

before. Discovery means from nothing to get something which they never know before. It emphasizes on the students' full participation through observation, classification, measurement, prediction, determination, and inferring until they discover their own concept.

C. The Attributes of Grammar discovery technique

Bicknell-Holmes and Hoffman (2000) describe the three main attributes of discovery learning as 1) exploring and problem solving to create, Grammar discovery, and generalize knowledge, 2) student driven, interest-based activities in which the student determines the sequence and frequency, and 3) activities to encourage Grammar discovery of new knowledge into the learner's existing knowledge base. The first attribute of discovery learning is a very important one. Through exploring and problem solving, students take on an active role to create, integrated, generalize knowledge. Instead of engaging in passively accepting information through lecture or drill and practice, students establish broader applications for skills through activities that encourage risk-taking, problem solving, and an examination of unique experiences (Bicknell-Holmes & Hoffman, 2000). In this attribute, students rather than the teacher drive the learning. Expression of this attribute of discovery learning essentially changes the roles of students and teachers and is a radical change difficult for many teachers to accept (Hooks, 1994).

A second attribute of discovery learning is that it encourages students to learn at their own pace (Bicknell Holmes & Hoffman, 2000). Through discovery learning, some degree of flexibility in sequencing and frequency with learning activities can be

achieved. Learning is not a static progression of lessons and activities. This attribute contributes greatly to student motivation and ownership of their learning.

A third major attribute of discovery learning is that it is based on the principle of using existing knowledge as a basis to build new knowledge (Bicknell-Holmes & Hoffman, 2000). Scenarios with which the students are familiar allow the students to build on their existing knowledge by extending what they already know to invent new ideas.

In addition, based on Husnan (2014, p.284), the main characteristics of discovery learning are:

1. Explore and solve the problem to create, merged, generalize knowledge
2. Students-centered
3. The activity is merged new knowledge and knowledge that available.

D. The Procedure of Grammar discovery technique

According to Mendikbud (2013) also proposes some Application Procedure of Discovery Learning Method. According to Shah (2004, p.244) in applying the Discovery Learning method in the classroom, there some procedures that should be implemented in the teaching and learning activities in general as follows:

1. Stimulation (Stimulation / Giving Stimuli)

Stimulation at this stage serves to provide the conditions of learning interactions that can develop and assist students in exploring materials. For example, Bruner in Mendikbud (2013) provides stimulation by using questioning in Discovery Learning; teacher should give a change to students to be a problem solver, mathematician,

and historian. Lesson material is not given in the beginning of teaching learning, but students should do some activities collect information, comparing, category, analyzing, integrating, reorganizing material as well as making conclusions technique.

Related to the teaching English Passive Voice, the researcher showed a picture and asked the students a question for example “what do you expect from the picture?”. By giving such kind of questions and pictures, it will stimulate the students mind to familiar with the passive voice.

2. Problem Statement (Statement/Identify the Problem)

The next step is giving an opportunity to the student to identify as many agendas as possible which are relevant to lesson material, then one of them is selected and formulated in the form of hypotheses (answers while the question of the problem) (Shah, 2004: 244), while the problem chosen then will be formulated in the form of a question, or hypothesis, i.e. statement as a temporary answer to the questions proposed.

In teaching English Passive Voice for this stage, the researcher gave the opportunity to the students to guess the answer as much as possible. After that, one of the students was selected to convey his sentence. The researcher helped the student to fix the sentence. Then, asked all of the students to change the sentence into passive.

3. Data Collection

When the exploration was ongoing, the teachers also gave the opportunity to the students to gather relevant information as much as possible to prove the hypothesis, whether it is true or not (Shah, 2004, p. 244). At this stage, the answer of hypothesis questions will be looked for to prove the truth of the hypothesis itself.

In this stage, the students are commanded to make some groups. Then, the students are asked to solve some challenges given by researcher; they should move active sentences to passive. The students are allowed to discuss the answer of the questions in each group. The students should complete the answer whether it false or true.

4. Data Processing

According to Shah (2004: 244) data processing is the activity of processing the data and information that has been obtained by the students either through interviews, observation, or others. All the information as a result of readings, interviews, observation, and so on then will be processed, randomized, classified, tabulated, even if it is calculated in a certain way and interpreted on a given confidence level (Djamarah, 2002, p.22).

Related to teaching English Passive Voice, in this step the researcher asked the students to process the answer, convey it in front of class. So one of the students from every group or one group presented their answer, while other groups listened the explanation.

5. Verification (Proof)

At this stage the students perform a careful examination to prove whether true or not the hypothesis determined by finding the alternatives and associated with the outcome of data processing (Shah, 2004, p. 244). Verification intended to make the process of learning will run well and creatively if the teacher provides opportunities for

students to find a concept, theory, rule or understanding through examples that they might be encountered in their life.

In this phase, the role of the researcher was giving the materials and example about passive voice. Then, the teacher asks students to observe and research by themselves. By this step, the students will compare their answer and teacher's example, so the students will consider whether their answers are true or false.

6. Generalization (Interesting Conclusions / Generalization)

The generalization / draw the conclusion stage is that the process of drawing a conclusion which can be used as a general principle and applies to all events or the same problem with regard to the result of verification (Shah, 2004, p.244). Based on the results of the verification, it is formulated the principles underlying the generalization. After draw conclusions, the students should pay attention to the process of generalization that stressed to the importance of mastering the lesson over the meaning and rules or principles underlying the extensive experience of a person. In this stage, the students draw the conclusion about passive voice, such as the form of sentences and the use.

The conclusion of those steps could be seen in the following figure:

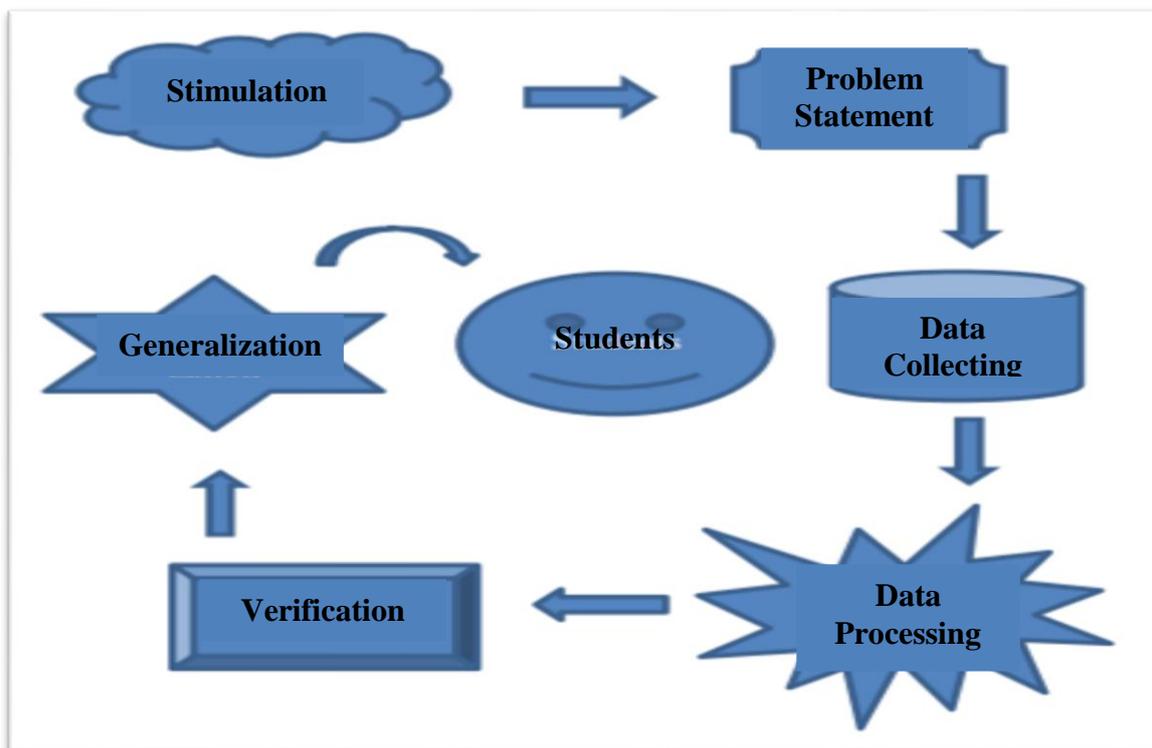


Figure 2.1 Procedure of Grammar Discovery Technique

E. The Advantages and Disadvantages of Grammar discovery technique

1. The advantages of Discovery Learning

In general, Discovery Learning method may have several advantages as proposed by Mendikbud 2013. They are as follows:

- a. Helping students to improve and enhance the writing skills and cognitive processes
- b. The knowledge gained through these methods is very personal and powerful because can strengthen the understanding and retention
- c. This method allows the students develop rapidly and in accordance with own pace.
- d. Helping the students to direct their own learning activities involving their wits and their own motivation. It will improve their grammar and vocabulary in writing.
- e. This method can help students reinforce the concept of writing skill itself, because they have a confidence in collaboration with others.

- f. This method is centered on students and teachers alike participate actively state the ideas. Even the teachers can act as a student, and as a researcher in the discussion part.
- g. Helping students to overcome skepticism because the discovery learning leads to final and certain truths.
- h. Students will understand the basic concepts of writing and ideas well so that it will improve their organization and content in writing.
- i. Encouraging students to think and formulate their own hypotheses
- j. Providing decisions that are intrinsic.
- k. Learning situation becomes more aroused.
- l. Increasing the level of awards to the students so that it will improve the students' mechanic skill in writing.
- m. Students learn to utilize various types of learning resources.
- n. It can develop their individual talents and skills.

The other advantages are also stated by Murphy, et al (2010) as follows:

- 1) Highly Motivating
 - a. Students are engaged actively in the learning process.
 - b. They are responsible for their own successes and failures.
 - c. They have something at stake.
- 2) Problem Solving
 - a. It fosters the growth of problem solving and creative skills.
 - b. It is similar to on-job learning that will occur as adults.

- c. It instils lifelong learning skills
- 3) Personalization
 - a. The learning experience is tailored to each child.
 - b. It gives the students autonomy and independence.
 - 4) Developing an Interest in Learning
 - a. Students discover their own ways of learning.
 - b. Students must utilize their own prior knowledge and understanding.
 - c. Develops curiosity.
 - 5) Memory
 - a. Students may be more likely to retain the information if they learn it on their own terms.
 - b. When they learn the information in context, they may be more likely to remember it than if they are taught from a textbook exclusively.

2. The Disadvantages of Discovery Learning

According to Mendikbud (2013), some advantages of using Discovery Learning Method are:

- a. This method raises the assumption that there is a readiness of mind to learn. The students who have low intelligent, will have difficulty in thinking or expressing abstract or relationships between concepts, written or oral, and finally will cause frustration.
- b. This method is not efficient to teach many students, because it will take a long time to help them find a theory or solving other problems.

- c. Teacher and students who usually applied the old method will be difficult to understand the new concept in the new method. Consequently, the teaching learning process does not run
- d. Teaching discovery is more suitable for developing understanding, whereas to develop aspects of concepts, skills and overall emotional still have less attention.
- e. In some disciplines, such as Science, it still lacks of facilities for measuring ideas expressed by the students
- f. Not provide opportunities to the students to find and discover the material of lesson they like because it has been pre-selected by the teacher.

Based on Murphy, et al (2010) in their article proposes some disadvantages of applying the Discovery Learning method. They are:

1) Not easy to implement

Learners need to possess a number of cognitive skills and be intrinsically motivated to learn.

2) Pure Model vs. Guided Model

Teachers have found that discovery learning is most successful when students have prerequisite knowledge and undergo some structured experiences. Most researchers would argue that pure discovery learning as general and global teaching strategy for beginning and intermediary learners doesn't work. The debate on how much guiding is needed is somewhat open.

3) Measurable performance (compared to hard-core instructional designs) is worse for most learning situations.

- 4) Creations of misconceptions ("knowing less after instruction")
- 5) In order to benefit from a discovery situation, students must have basic knowledge about the problem and must know how to apply problem-solving strategies. Without this knowledge and skill, they will flounder and grow frustrated. Instead of learning from the materials, they may simply play with them.
- 6) Critics believe that discovery learning is so inefficient and so difficult to organize successfully that other methods are preferable. This seems especially true for lower-ability students. Discovery methods may make too many demands on these students because they lack the background knowledge and problem-solving skills needed to benefit.

F. Passive Voice

Passive voice is the opposite of active in sentence pattern, in the passive voice, the object of an active verb becomes the subject of the passive verb Azhar (2002, p.208), in another word the object in the active sentence move into subject position in the passive sentence. Both showed different understanding and function and have a dissimilar rule in use.

There are three ways of forming passive voice, such as (1) The object in the active sentence moved into subject in position in the passive sentence, (2) The subject moved to the end of the sentence and *by* was inserted before it – the sentence now has an *agent by phrase*, (3) The main verb was changed to its past participle form and the appropriate form of *be* was inserted before it Cowan (2008, p. 392).

1. The Nature of Passive Voice

A passive sentence is one of language features of analytical exposition text. That is why students should know and can identify it in reading text. Passive voice is known as one of the characteristics of a language. The use of passive voice is very popular in both daily conversation and many different reading books. In Indonesian, the form of passive voice is well known as “kata kerja berawalan di”. Azar (2006, p.120) says that in the passive, the object of an active verb becomes the subject of the passive verb. She adds that only transitive verbs (a verb that is followed by an object) that are used in the passive. Pyle (2002, p.167) says that a sentence can be either in the active or passive voice. In an active sentence, the subject performs the action. In a passive sentence, the subject receives the action. Furthermore, Pyle and Page (2002, p.168-169) states the steps how to form a correct passive voice as rules in Bahasa Indonesia or English follows:

- a. The complement of the active sentence is placed at the beginning of the passive.
- b. If the active sentence uses an auxiliary verb, the auxiliary should be placed after the new subject agreeing in number with the subject.
- c. Insert “be” after the auxiliary.
- d. Place the subject of the active sentence become the object in passive preceded by the preposition by.

Dealing with this, Lado (1986, p.39), also gives some rules how to form passive voice, they are as follows:

- a. The active sentence has to have the object (the verb used should be transitive).

- b. The object in the active sentence becomes the subject in passive.
- c. The verb in passive should be substituted into past participle preceded by *to be*.
- d. The tenses in passive should be agreeing with the active sentence.

For example:

- My brother helped mother yesterday.

S V O

- Mother was helped by my brother yesterday.

O V S

Based on the sentence above, the object of an active sentence becomes the subject of a passive voice, and the subject of an active sentence is the object of by in the by-phrase in a passive sentence.

2. The Use of Passive Voice

According to Martinet and Thomson (1986, p.266), the passive sentence is used:

- a. When we do not know, or do not know exactly, or have forgotten who did the action,

example:

You will be met at the station.

- b. When the subject of the active verb would be 'people', example:

He is suspected of receiving stolen goods.

- c. When the subject of the active sentence would be the indefinite pronoun one. One

sees this sort of advertisement everywhere would usually be expressed, example:

This sort of advertisement is seen everywhere Or

You see this sort of advertisement everywhere

- d. When we are more interested in the action than the person who does it, example:

The house next door has been bought (by a Mr. Brown)

- e. The passive voice may be used to avoid an awkward or ungrammatical sentence.

This is usually done by avoiding a change of subject, example:

When he arrived home a detective arrested him.

- f. When it is not necessary to mention the doer of the action as it is obvious who he is/was/will be. Example:

The rubbish hasn't been collected.

3. The Characteristics of Passive Sentence

The passive sentence has some characteristics. The characteristics of the passive sentence are:

- a. The object in an active sentence will be the subject in the passive sentence. The subject in an active sentence will be the object in a passive sentence by using 'by'.

Example:

- Sintia sold the computer (active)
- The computer was sold by Sintia (passive)

According to Azar (2006, p.125), a passive verb is followed with a 'by phrase' only if it is important to know who performs an action. Usually, the 'by phrase' is omitted from a passive sentence. The passive is most frequently used when it is not known or not important to know exactly who performs an action.

- b. The use of "be + Past Participle (transitive verb)". Students will recognize passive sentence if they find "be + past participle" in a sentence. "Be" that is used can be in present (is, am, are), past (was, were), perfect (has been, have been, had been) and

4. Completion items
5. Transformation items
6. Items involving the changing of words
7. 'Broken sentence' items
8. Pairing and matching items
9. Combination items
10. Addition items

Grammar assessment has some aspects which have to be considered, first is about what is the purpose of the task, second is about what types of tasks are suitable to measure the grammar mastery, and third is about how to construct a grammar task in order to go in line with the purpose.

In relation to the statement above, the researcher focused on testing the students' mastery with grammar test where it consisted passive voice test; moreover in this study, the researcher takes the multiple choice test, fill the blank test, and structural test by underlining sentence on the text.

Multiple-choice test is easy for the teacher to give the score quickly with a choice of four or five options (Brown, 2014, p.194). Multiple choice tasks are about choosing the best answer from the choices given; therefore, to avoid confusion, special care should be given in order to make sure that there is only one correct answer.

Therefore, the result of the test shows what is required. The researcher takes the multiple-choice from descriptive paragraph where there are some missing words in the paragraph and the multiple-choice test included.

CHAPTER III

RESEARCH METHOD

In this chapter, the researcher present research design, population and sample, research instrument, data collection procedure, and data analysis procedure.

A. Research Design

This study used quantitative approach. The design of the study was an experimental research. It was used because this research used the data which is from of statistic number. This study belonged to quasi-experimental. This study used quasi-experimental design which had two variables in it. This study also took 2 classes as sample. Both group are experiment group and control group. Those groups were be given pretest and posttest. Pretest was given, because the researcher wants to know pre-ability before giving of treatment, and posttest was given to measure the students' score after giving treatment. Pretest and posttest helped in determining whether any difference exists or not. This is to see whether the treatment had changed the score from the pretest to the posttest (Lodico, et al, 2006). This research had taken in MA Muslimat NU Palangka Raya.

The researcher used non-randomized control group, pretest posttest design with a kind of treatment. It is one of the most widely used quasi-experimental designs in education research (Ary, et al, 2010, p. 316). Both groups were given pretest to measure the score of students before treatment is given (Y1 and Y1). It meant, they were at the same strategy in mastery English passive voice. After that, the treatment was given for experiment group only (X). It meant, the control group was not given the treatment but

another conventional strategy as usual, in this case the control group was taught by using Grammar Translation Method (GTM). Post test was given for both groups to measure the students' mastery after treatment is given (Y1 and Y2). The scheme of this model is:

Table 3.1. Scheme of Quasi-Experimental Design Non-Randomized Control Group, Pretest-Posttest Design

Subject	Pre- test	Treatment	Post- test
E	Y1	X	Y2
C	Y1	-	Y2

Where:

E : Experimental group

C : control group

X : Treatment

Y1 : Pre-test

Y2 : Post-test

In this experiment, the researcher taught the students directly with the same material (Passive Voice). Grammar discovery had been applied in experiment group only, while Grammar Translation method had been applied in control group. Otherwise, the control group is not given the treatment.

B. Population and Sample

1. Population

According to Ary et al (2010, p.647), "Population is the large group to which a researcher wishes to generalize; it includes all member of a define class of the people,

events or objects. The population was the generalization that occurred over the subject/object: had certain qualities and characteristics set by the researchers to learn and draw the conclusion Sugiono (2009, p.80). So, population is the whole groups of research.

In this research, the researcher took the students from the MA Muslimat NU Palangka Raya. The population of the research is all of the eleventh grade students of MA Muslimat NU Palangka Raya in Academic Year 2017/2018.

Table 3. 2. The number of population

No	GRADES	GROUP	MALE	FEMALE	STUDENTS' NUMBER
1	XI-IPA	EXPERIMENT	16	28	44
2	XI-IPS	CONTROL	26	18	44
THE TOTAL NUMBER					88

2. Sample

Sample is a group selected from a population for observation in research (Ary et al, 2010, p. 649). The sample of this research is the entire of population. It used cluster random sampling technique. Cluster random sampling was used because the population is not consisted of individuals, but it consists of groups or cluster. Besides that, the students of the class were more focus in learning English activities. The object were regarded that each of groups has the equal chance to be chosen as the sample. In getting sample of the research, the researcher took the procedure which was called the lottery method. It was each group of the population would be presented by small piece of paper. The small piece of paper was placed in a box and well mixed, and a sample of the required size was selected.

The use of the lottery method of random sampling was easy because of the fact that it did not need difficult procedure. In this case, each of the classes' names was written on piece of paper. And then the paper was rolled and put into a slot of a box. After being well mixed, a paper was dropped out of the slot and these become the sample of the research.

In addition, the sample of this research was taken by using cluster random sampling. To determine which one is Experimental or control group, lottery method was the appropriate procedure.

Finally, the researcher considered XI-IPS as control group and XI-IPA as the experimental group. Both of those groups had the same teacher, had the same ability in English, and on the available time to teach them. They consist of 88 students

Table 3. 3. The Number of Samples

No	GRADES	THE NUMBER OF THE STUDENTS
1	XI-IPA	44
2	XI-IPS	44
THE TOTAL NUMBER		88

C. Research Instrument

Instrument is the important thing in a research. It is used to measure the effect of treatment in experimental research. Before the instrument is used in the field, reliability and validity of the instrument must be checked. Besides that, the instrument item should be analyzed by using index of difficulty, discrimination power, and destructor analysis.

1. Research Instrument Development

The researcher used the instrument in order to get the better data. The instrument of this research was a tool or facility. It meant, it was used by the researcher for collecting data in order to get better result or it could occur complete and systematic.

To complete this research, the researcher added the instrument of research include tests. There are pre-test and post-test. The pre-test was given before the teaching and learning process and the post-test was given after it. The researcher compared the achievement of pre-test and post-test; to find out the effect of grammar discovery technique on students' passive voice mastery.

a. Test

The researcher made the instrument of this research that consisted of 100 questions passive voice test. It was divided into three forms; first part is multiple choices, the second part is fill the blank and third part is structure test though underlining sentences in the text.

The researcher made test of multiple-choice item, because the multiple choice item is generally recognized as the most widely applicable and useful type of objective test. It can more effectively measure many of the simple learning outcomes measured by the short-item or completion (Ary, et al, 2010, p.201). So, the researcher used test of multiple choices item that consist of 50 items on part A. Besides that, fill in the blanks test are chosen because of the following advantages:

- ✓ The technique of scoring is easy.
- ✓ It is easy to compute and determine the reliability of the test.

- ✓ It is more practical for the students to answer.

Therefore, the researcher used test of fill the blank item which consist Of 48 items on part B. In the third part of the test, the researcher used structure test though underlining sentences in the text. It was concluded that it is diagnostic test, because based on James Dean Brown who stated that diagnostic tests are designed to diagnose a particular aspect of a language and can be used to check the students'' in learning a particular element of the course. It was used because the researcher wants to measure how well the students understand passive voice, and it can be seen only by underlining some passive voice sentences in the short text.

The test was made by researcher and Mr. Citra PriskaAbadi, S. s, M.Pd as the Validator of instrument. Initially, the test was made in fill the blank form with only two alternative choices below. Then, the researcher did *validity judgment* which was helped by Mr. LuqmanBaehaqi, S. s, M.Pd as the examiner to change the alternative choices from 2 become 4 alternative choice. It was done, because the researcher wants to minimalist the guessing/bias, therefore the students did not answer the test promiscuously. After that, the test was changed become multiple choice based on the suggestion by Mrs. SantiErlianaM.Pd.

Multiple choices consist of 50 items from number 1to number 50 on part A. The score per items is 1. It means if students can choose the answer of 1 item correctly, they will get 1 score and if they can choose the answer of 50 items on part A correctly, they will get 50 scores.

Fill in the blank test consist of 48 items from number 1 to number 48 on part B. It's score per item is 1 as well. It means if students can choose the answer of 1 item correctly, they will get 1 score and if they can choose the answer of 48 items correctly, they will get 48 scores.

Structure test though underlining sentences in the text consists of 2 items from number 49 to number 50 on part B. It's score per item is 1 also. It means if students can choose the answer of 1 item correctly, they will get 1 score as well and if they can choose the answer of 2 items correctly, they will 2 scores. If the students answer all items correctly, they will get scores 100.

Consequently, from the description of each test from above, it can be seen that the high score of this test is 100 scores.

1) Pre-test

Before the researcher taught the English Passive Voice material by using Grammar discovery technique, the researcher gave a test to the students. A pre-test was given at the beginning of research before the treatment was run to both control and experimental class with similar question that related to the topic. A pre-test is given to know that the sample (control and experimental class) has the same ability.

2) Post-test

Post-test was given to the experiment class and control class. It was given in order to know students' achievement on English passive voice. The post-test was given to the experimental class and control class after received treatment. The experimental

class was taught passive voice by using grammar discovery technique and the control class was taught passive voice without using grammar translation method. The post-test questions have been rearranged from pre-test questions, because the researcher want to clarify that the students have mastered English passive voice well and they were not guessing in answer the post-test.

The score of students' achievement on English passive voice can be calculated by using this following formula:

$$\text{Score} = \frac{\text{the number of true answers}}{\text{the number of questions}} \times 100$$

In connection with the score of students' test, the researcher used scoring rubric as follows:

Table 3. 4. Scoring Rubric for students' passive voice score

No	Classification	Score
1	Very Good	80-100
2	Good	70-79
3	Fair	60-69
4	Poor	50-59
5	Very Poor	0-49

2. Instrument Try out

Before the test was used as an instrument to collect the data, it would be tried out first to the students in another class or another school. Try out was used to measure the suitability of the test and the students' ability in the sample class of this research, so the researcher conducted a try out test. MA Muslimat NU only has 2 classes in Eleventh grade in academic year 2017/2018 and they belonged to population on this research, as

a result the researcher should conduct try out test to the eleventh grade students in other school that has same level. Consequently, the researcher chose MA DarulUlumPalangka Raya to try out the test; because in researcher's opinion, the school has same level with MA Muslimat NU palangka Raya. The tryout test conducted to the grade XI-IPS MA DarulUlumPalangka Raya. The instrument was given on Wednesday, 23th August 2017 at 09.30 – 11.00 and was done by 20 students.

There are 100 questions' item as the try out test that every single item is passive voice' question. To get the data of try out, the researcher used some procedures as follows:

- a. The researcher made and prepared test of try out.
- b. The researcher gave test of try out to the students at eleventh grade of MA DarulUlumPalangka Raya.
- c. The researcher asked the students to do test of try out.
- d. The researcher collected the student's answer.
- e. The researcher calculated and gave score to the students' answer.
- f. The researcher analyzed the result of try out to know whether the test was valid or not.
- g. If the results were valid, it meant that the test item as the instrument of this study is suitable to be given.

3. Instrument Validity

a. Content Validity

It referred to the extent which the instrument represented the content of interest. In the other words, it was concerned with the question how well the content of the instrument represents the entire universe of content which might be measured (Ary, et al. 2010, p. 214). Specifically, in this research, the test must be made up of items testing knowledge. It would provide the test constructor with the basis for making principle selection of elements for inclusion in the test. In order to address the study, the researcher from the English textbook: *English Grammar in Use* published by Cambridge University Press, *Advanced Grammar in Use* published by Erlangga, *Speaking, Grammar for Everyday Life* given by GLC English. The test would really measure the grammar mastery of the students.

Table 3.5. The Content Signification Validity of items research instrument

No	Indicator of the study	Kind and Number of test item	Item
1	Simple Present	Multiple choice (Part A) 3, 9, 12, 13, 14, 16, 22, 24, 25, 26, 27, 28, 29, 40, 41, 42, 45. Fill the Blank Part B: 11, 13, 14, 15, 16, 17, 18, 19, 20, 32, 33, 41, 42, 43, 48, 49, 50. Structure test (Part B) 49 and 50.	36 items
2	Present Perfect	Multiple Choice (Part A): 2, 4, 6, 8, 20, 21, 30. Fill the Blank (Part B) 2, 5, 9, 10, 12, 24, 35, 38.	15 items
3	Simple Past	Multiple choice (Part A): 5, 7, 10, 11, 15, 17, 19, 32, 33, 34, 36, 37, 38, 43, 44, 46, 47, 48. Fill the Blank (Part B): 3, 7, 8, 21, 22, 23, 26, 27, 28, 29, 31, 34,	36 items

		36, 39, 44, 46, 47.	
4	Simple Future tense	Multiple choice (Part A) 18, 23, 31, 39, 39. Fill the Blank (Part B): 1, 4, 6, 25, 30, 37, 40, 45.	13 items
Total Number of test item			100 items

b. Face Validity

Face validity is a term sometimes used in connecting with a test's content. Face validity refers to the extent which examined believe the instrument in measuring what it is supposed to measure (Ary, et al, 2006, p. 228). The types of face validity, if the test item looked right to other testers, teacher, indicators, and test. The types of test items, which used in this research, could be suitable to the others at the same level in Senior High School.

For face validity of the test items as follow:

- 1) The test used written test in appropriate test instruction.
- 2) The evaluation based on scoring system.
- 3) Kind of test is multiple choices.
- 4) The item language is English.
- 5) The test based on syllabus of English Grammar mastery for eleventh grade students at MA Muslimat NU Palangka Raya.

c. Construct Validity.

Construct validity aim to know how far a test measure ability or skill theoretically included into area that has to measure (Qodir. A, 2009, p. 23). The

researcher constructed the item to measure students' knowledge, comprehension, application and analysis in Grammar lesson.

Table 3.6. Syllabus of Passive Voice

Basic Competence	Material	Indicator	Evaluation	
			Type	Form
Implementing social function, text structure, dan language elements of transactional communication in spoken and written that involve asking and giving information related to situation/action/activity/oc curance without mentioning the actor in scientific text as the context used. (<i>Pay attention to language element of passive voice</i>).	Passive voice in : Simple Present Tense, Present Perfect Tense, Simple Past Tense, and simple future tense. Language element: - Declarative and interrogative sentence of passive voice. - Preposition <i>by</i> - Nominal of singular and plural form using or without <i>a, the, this, those, my, their,</i> dsb. Topic: Thing, animal, plant related to other subject that realize the characters as mentioned in the core competences.	Students are able to master English passive voice	Written test	Objective test

Based on the explanation above, in making the test the researcher is going to match each of items test with curriculum that is used by MA Muslimat NU PalangkaRaya. The purpose is in order to make the test is appropriate with the lesson that the students accepted in the moment when the research is done. To measure the

validity of the instrument, the researcher used the formulation of product moment by Pearson as follows (Riduwan, 2004, p. 110) :

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

Where:

r_{xy} : Index Correlation Number “r” Product Moment.

N : Number of Cases

$\sum XY$: Multiplication Result between score X and score Y.

$\sum X$: Total Value of score X.

$\sum Y$: Total Value of score Y.

Interpretation:

$r_{xy} > r_t$ = Valid

$r_{xy} < r_t$ = Invalid

The test is valid if r table (r_{xy}) is more than 0,444 and if less than 0,444 it is not valid. To know the validity level of the Instrument, the result of the test was interpreted to the criteria below:

0.800 – 1.000 = Very High Validity

0.600 – 0.799 = High Validity

0.400 – 0.599 = Fair Validity

0.200 – 0.399 = Poor Validity

0.00 – 0.199 = Very Poor Validity

**Table 3.7. Distribution of Instrument Try Out in Grade XI IPS
MADarul Ulum Palangka Raya Academic Year
of 2017/2018Based on the Validity Index**

No.	Validity Index	Item number	Total	Percentage
1.	< 0.444 (item was not valid)	Part A: 1, 3, 4, 5, 7, 11, 19, 23, 24, 26, 28, 31, 32, 33, 34, 36, 38, 42, 45, 46, 47, 49. Part B: 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 19, 23, 24, 33, 39, 45, 46, 47, 48, 50.	50	50%
2.	≥ 0.444 (item was valid)	Part A : 2, 6, 8, 9, 10, 14, 15, 16, 18, 20, 21, 22, 25, 27, 29, 30, 35, 37, 39, 40, 41, 43, 44, 48, 50 Part B : 4, 15, 16, 17, 18, 20, 21, 22, 25, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38, 40, 41, 42, 43, 44, 49.	50	50%

From the table above shows that from 100 questions that were given, there were 50 numbers which are valid. And 50 questions were not valid. It is available on appendix 3.

4. Instrument Reliability

The reliability of a measuring instrument is the degree of consistency with which it measures whatever it is measuring. On a theoretical level, reliability is concerned with the effect or error on the consistency of scores (Ary et al, et al, 2010, p.237).

In the reliability of an instrument quantitative, research is described statistically by using the correlation calculation by searching for "coefficient" which ranges between

1 and 2. When coefficient close to 1, it means that the instruments have high reliability (Djiwandono, 2008, p.170).

The good instrument in a research was not only the instrument valid but also reliable to measure what suppose measured. The analysis used several formulas that used to measure the reliability (Sugiono, p.131). To measure the reliability test, the researcher used the Kuder-Richardson (KR20) and the formula as follow:

$$r = \frac{k}{k-1} \times \left\{ 1 - \frac{\sum pq}{s^2} \right\}$$

Notes

r : Reliability of test

k : Number of test items

p : Mean of the correct answer

q : Mean of the wrong answer

s^2 : Variance of items test

With interpretation coefficient of reliability as follow:

DP : 0.00 – 0.20 = Poor

DP : 0.21 – 0.40 = Satisfactory

DP : 0.41 – 0.70 = Good

DP : 0.71 – 1.00 = Excellent

DP : Negative = All of poor

- a) If r_{11} is equal to or greater than 0.70 means that the test of learning outcome that is being tested its reliability has a high reliability (reliable).
- b) If r_{11} is less than 0.70 means that the test of learning outcome that is being tested its reliability did not have a high reliability (unreliable).

The higher coefficient reliability of the test is the higher level or degree of consistency in a test instrument. Tests can be said as reliable if has a coefficient equal to or greater than 0.70. Calculation result of r_{11} is compared with r table of product moment. From the calculation of try out, the reliability score that the researcher got was $r_{11} = 0.943$. The conclusion is that test reliable and include in category excellent. (See appendix)

5. Discrimination Power

The discrimination power is a measure of the effectiveness of a whole test. It is used to know how accurate the question differs higher subject and lower subject (Djiwandono, 2008, p. 221). The formula for discrimination is:

$$D = \frac{RH - RL}{1/2 T}$$

Where:

D ; Discrimination Index

Rh : Number of students in upper group

RL : Number of students in low group

T : number of students

The criteria are:

D	: 0.00 - 0.20 = Poor	D	< 0.2 is poor
D	: 0.21 - 0.40 = Satisfactory	0.2	< D ≤ 0.4 is fair.
D	: 0.41 - 0.70 = Good	0.4	< D ≤ 0.7 is good.
D	: 0.71 – 1.00 = Excellent	0.7	< D ≤ 1 is Excellent.
D	: Negative = All of poor		

**Table 3.8. Distribution of Instrument Try out in Grade XI-IPS
MA DarulUlumPalangka Raya Academic Year
of 2017/2018Based on the Discrimination Power**

No.	Discrimination Power	Item Number	Total	Percentage
1.	0.70-1.00 (Excellent)	-	0	0%
2.	0.40-0.69 (Good)	Part A: 5, 6, 10, 14, 15, 35,41, 44, 46. Part B: 4, 11, 13, 16, 17, 21, 28,29,32, 34, 35, 36, 37, 38, 40, 41, 44, 49.	27	27%
3.	0.20-0.39 (Satisfactory)	Part A: 8, 9, 16, 18, 20, 21, 22, 25, 27, 29, 30, 37, 39, 40, 42, 43, 48, 50. Part B: 8, 10, 15, 18, 20, 22, 24, 25, 30, 31, 42, 43.	31	31%
4.	0.00-0.19 (Poor)	Part A: 1, 3, 4, 7, 11, 12, 13, 17, 19, 23, 24, 26, 28, 31, 32, 33, 34, 36, 38, 45, 47, 49. Part B: 1, 2, 3, 5, 6, 7, 9, 12, 14, 19, 23, 26, 27, 33, 39, 45, 46, 47, 48, 50.	42	42%

6. Index of difficulty

A good question is a question that is not really difficult and not really easy.

Formula for degree of test difficulty is:

$$FV = \frac{R}{N}$$

Where:

FV : Difficulty index

R : number of students who answered the items correctly

N : number of students

The level of difficulty of each item was determined by using this following categorization:

FV : 0.00 – 0.30 is difficult

FV : 0.31 – 0.70 is fair

FV : 0.71 – 1.00 is easy.

**Table 3.9. Distribution of Instrument Try out in Grade XI-IPS
MA DarulUlumPalangka Raya Academic Year
of2017/2018 Based on the Difficulty Level**

No.	Difficulty Level	Item Number	Total	Percentage
1.	0,70 – 1 (Easy)	Part A: 3, 4, 11, 23, 28, 31, 32, 33, 34, 40, 42, 45, 48, 49. Part B: 3, 5, 14, 15, 19, 20, 23, 25, 26, 27, 33, 42, 43, 47, 48, 50.	30	30%
2.	0,30 – 0,69 (Fair)	Part A: 5, 6, 7, 9, 12, 13, 14, 16, 17, 18, 19, 20, 22, 24, 25, 26, 29, 36, 38, 39, 46, 47, 50. Part B: 1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 17, 18, 21, 22, 24, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 44, 45, 46, 49.	56	56%

3.	0,00 – 0,29 (Difficult)	Part A; 1, 2, 8, 10, 15, 21, 27, 30, 35, 37, 41, 43, 44. Part B: 16	14	14%
Total				100%

7. Distractor Analysis

The last concentration of item analysis activity is the effectiveness of distractor. This research used 50 items multiple choice question as the instrument. It is a procedure specifically related to the multiple choice item. In distractor function to divert students from the correct answer if they do not know which is correct. As Brown (1997, p.71) stated that, “The primary goal of distractor efficiency is to examine the degree to which the distractor are attracting students who do not know the correct answer”.

Distractor analysis is obtained by counting the number of test participants who choose the answer of a, b, c, d. From the distribution of the answers could be obtained information about whether distractor is functioning properly or not. To determine whether a distractor was able to work effectively or not, it can be seen if the distractors have been chosen at least by 5% of all test participants.

In conclusion, the effectiveness of distractor analysis provides the information about how successful a distractor has diverted students who have not studied well from the correct answer. (See appendix)

Table 3.10. The Recapitulation of the Instrument Try Out Test

No	Instrument Aspect	The result of try out	Interpretation
1	Validity	Valid Part A : 25 Items Part B : 25 items Total valid items are	- 25 question in part A (multiple choices) - 25 question in part B (fill in the

		50 items.	blank and structure test) Are used for the test
		Invalid Part A : 25 Items Part B : 25 items Total invalid items are 50 items.	
2	Reliability	$R_{11} (0,943) > R_t (0,70)$	Reliable
3	Discrimination power	Very good : 0	-
		Good : 27	- 6 items in part A (Multiple Choice) - 14 items in part B (fill the blank) - 1 item in part B (structure test) Are used for the test
		Satisfactory : 31	- 19 items in part A (Multiple Choice) - 10 items in part B (fill the blank) Are used for the test
		Poor : 42	-
4	Index of Difficulty	Difficult : 14	- 10 items in part A (Multiple Choice) - 1 item in part B (fill the blank) Are used for the test
		Fair : 56	- 13 items in part A (Multiple Choice) - 17 items in part B (fill the blank) - 1 item in part B (structure test) Are used for the test
		Easy : 30	- 2 items in part A (Multiple Choice) - 6 items in part B (fill the blank) Are used for the test
5	Distractor Analysis	50	25 items are used for the test

D. Data Collection Procedures

In collecting data, the researcher used a written test to know the students' mastery in passive voice. The data collection procedures consist some steps as follows:

1. The researcher observed the school by headmaster' permission.
2. The researcher asked to the English teacher (Mrs. DesiArisandi, S.Pd. I) about the number of classes, the number of students, and the class activity.
3. The researcher decidedclassesinto experimental and control group.
4. The researcher gave try out to another school but in the same grade before testing pre-test and post-test.
5. The researcher gave pre-test (50 questions of passive voice) to both of experimental and control group (Y1). It can be seen on table 3.11.
6. The researcher taught English passive voice to Experimental group by using grammar discovery technique whereas the researcher taught control group by using grammar translation method.
7. The resecher taught English Passive Voice for four times to the students in experimental group by using grammar discovery technique, the steps as follows:

Pre-teaching

- The teacher greets the students
- The teacher appreciates and motivates the students.
- The teacher informs the competences and activity plan.
- Generalization
- The teacher gives stimulus related to the material by showing slide and picture. (*Stimulation*)
- The teacher asks the students to read and comprehend the materil based on the correct answer using passive voice. (*Problem Identification*)

- The teacher divided students into some groups to discuss a question the paper that had been given. (*Data Collection*)
- The teacher guides the students to identify the grammatical form of the question. (*Data processin*)
- The teacher one student in each group to present the result of discussion. (*Verification*)
- Teacher reflectes the process and result of learning and guides students to conclude the best answer with the grammatical form which was given on the paper together. (*Generalization*)

Post- teaching

- Teacher give assesment test for each student.
 - Teacher informs the next material.
8. Both groups were taught in similar topic or learning material. In specific, the description of the teaching activities as follows:

Meeting	Date and Time		Passive Voice Material
	Experiment	Control	
Pre-test	Friday, 25 th August 2017 at 08.45 – 10.35	Thursday, 24 th August 2017 at 06.30 – 08.00	Giving pre-test
1	Friday, 8 th September 2017 at 08.45 – 10.35	Thursday, 31 st August 2017 at 06.30 – 08.00	Simple Present Tense
2	Friday, 15 th September 2017 at 07.15 – 08.45	Thursday, 31 st August 2017 at 08.00 – 09.30	Present Perfect Tense
3	Friday, 15 th September 2017 at 08.45 – 09.35	Thursday, 7 th September 2017 at 06.30 – 08.00	Simple Past Tense
4	Friday, 22 nd September 2017 at 08.45 – 09.35	Thursday, 21 st September 2017 at 06.30 – 08.00	Simple Future Tense

Post-test	Friday, 29 st September 2017 at 08.45 – 09.35	Friday, 28 st September 2017 at 06.30 – 08.00	Giving Post-test
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9. The researcher gave posttest to both experimental and control group. It can be seen on the table 3.11.
10. The researcher took the result of the test and gave the score to the data from both experiment and control group.
11. The researcher analyzed the obtained data from both pre-test and post-test using t-test.
12. The researcher interpreted the analyze result.
13. The researcher concluded the activity of the research whether the use of grammar discovery technique students passive voice mastery there is an effect or not to the students.

E. Data Analysis Procedures

Data analysis is the last step in the procedure of experiment, in this case, processing the data. Therefore, the data are in quantitative data. The data was analyzed by means of inferential statistics. This statistical analysis was suitable to answer the research problem. In this case, the researcher applied T-Test to examine the students' passive voice mastery.

1. Techniques of Data Analysis

In order to analyze the data which had been collected, the researcher would do some procedure below:

Before analyzing data using T-Test, the researcher fulfills the requirements of T-Test. They are Normality test, homogeneity test and hypotheses test.

1. Normality Test

It was used to know the normality of the data that is going to be analyzed whether both groups have normal distribution or not. In this research to test the normality the researcher applied SPSS 18.0 program using Kolmogorov Smirnov with level of significance =5%. If significance was higher than α (5%) so the distribution data would be normal. In the contrary, if the result of an asymptotic significance was lower than α (5%), it meant the data would not be normal distribution.

b. Homogeneity Test

Homogeneity was used to know whether experimental group and control group, that are decided, come from population that has relatively same variant or not. To calculate homogeneity testing, the researcher applied SPSS 18.0 program used Levene's testing with level of significance α (5%).

c. Testing Hypothesis

The researcher applied the T-Test statistical to test hypothesis with level of significance 5% T-Test could be applied to test a difference mean or more.

2. Data Analysis procedures

The researcher analyzed the data in two steps; they are individual score and then match t-test.

In order to analyze the data which had been collected, the researcher did some procedures below:

- a. The researcher collected the data of the students' test results from both experiment and control group.
- b. The researcher gave score the students test results by used the scoring system.

The researcher gave score for each item by using the formula:

$$Score = \frac{\text{score acquisition}}{\text{total score}} \times 100$$

- c. The researcher arranged the obtained score into the distribution of score frequency on table.
- d. The researcher calculated mean, median, modus, standard deviation, and standard error from both experiment and control group.
- e. The researcher calculated the standard error for the difference mean.
- f. The researcher calculated t-test using manual calculation.

$$T_o = \frac{MD1 - MD2}{SE MD1 - SE MD2}$$

Where:

T_o = value of the mean difference will be judge

MD1 = mean of difference of Experiment class

MD2 = Mean of difference of control class

SE MD1 = standard error of experiment class

SE MD2 = standard error of control class

If t-test \geq t table, H_a is accepted and H_o is rejected

If t-test \leq t table, H_a is ejected and H_o is accepted.

- g. The researcher supported manual calculation using SPSS 18.0 program.

- h. The researcher calculated degree of freedom by using the following formula:

$$df = N1+N2-2$$

Where:

Df = Degree of Freedom

N1 = Number of students in Experiment group

N2 = Number of students in Control Group

- i. The researcher determined the significant of t_{observed} by comparing the t_{observed} and t_{table} .
- j. The researcher interpreted the result of analyzing.
- k. The researcher discussed to clarify the research findings and concluded the result of data analysis. The results of data analysis are shown in Chapter IV.

CHAPTER IV

RESEARCH FINDINGS AND DISCUSSION

In this chapter research findings and discussion begins with data presentation (the results of pretest and posttest in experiment and control group), research findings and discussion.

A. Data presentation

The Pre-test and Post-test at the experiment class had been conducted on August, 25th 2017 (Friday, at 08.45- 09.30 a.m) for Pre-test and September, 29th 2017 (Friday, at 08.45 - 09.30 a.m) for Post- test at XI-IPA class of MAMuslimat Nu Palangka Raya with the number of student 44 students. Besides that, the control class had been conducted on August, 24th 2017 (Thursday, at 06.30–08.00 a.m) for Pre-test and September, 28th2016 (Thursday, at 06.30–08.00 a.m) for Post- test at XI-IPS class of MA Muslimat Nu Palangka Raya with the number of student was 44 students. In this chapter, the researcher presents the obtained data of the students' passive voice score, experiment class who was taught with grammar discovery technique and control class who was taught without grammar discovery technique.

1. The Result of Pre-test Score

a. The Description Data of Pre-Test Score

The students' pretest score was distributed in the following table in order to analyze the students' knowledge before conducting the treatment.

Table 4.1Pre- Test Score of Experimental and Control Group

Experiment			Control		
CODE	PRE-TEST	CATEGORY	CODE	PRE-TEST	CATEGORTY
EX1	50	Poor	Con1	34	Very Poor
EX2	30	Very Poor	Con2	30	Very Poor
EX3	28	Very Poor	Con3	34	Very Poor
EX4	44	Very Poor	Con4	34	Very Poor
EX5	26	Very Poor	Con5	54	Poor
EX6	20	Very Poor	Con6	30	Very Poor
EX7	16	Very Poor	Con7	28	Very Poor
EX8	22	Very Poor	Con8	44	Very Poor
EX9	30	Very Poor	Con9	26	Very Poor
EX10	18	Very Poor	Con10	20	Very Poor
EX11	34	Very Poor	Con11	18	Very Poor
EX12	42	Very Poor	Con12	22	Very Poor
EX13	16	Very Poor	Con13	30	Very Poor
EX14	40	Very Poor	Con14	18	Very Poor
EX15	16	Very Poor	Con15	34	Very Poor
EX16	42	Very Poor	Con16	38	Very Poor
EX17	20	Very Poor	Con17	22	Very Poor
EX18	26	Very Poor	Con18	38	Very Poor
EX19	24	Very Poor	Con19	42	Very Poor
EX20	30	Very Poor	Con20	40	Very Poor
EX21	40	Very Poor	Con21	42	Very Poor
EX22	34	Very Poor	Con22	24	Very Poor
EX23	50	Poor	Con23	46	Very Poor
EX24	18	Very Poor	Con24	52	Poor
EX25	28	Very Poor	Con25	30	Very Poor
EX26	50	Poor	Con26	22	Very Poor
EX27	40	Very Poor	Con27	30	Very Poor
EX28	40	Very Poor	Con28	20	Very Poor
EX29	26	Very Poor	Con29	42	Very Poor
EX30	46	Very Poor	Con30	24	Very Poor
EX31	26	Very Poor	Con31	40	Very Poor
EX32	20	Very Poor	Con32	40	Very Poor
EX33	28	Very Poor	Con33	30	Very Poor
EX34	18	Very Poor	Con34	30	Very Poor

EX35	40	Very Poor	Con35	18	Very Poor
EX36	22	Very Poor	Con36	40	Very Poor
EX37	24	Very Poor	Con37	24	Very Poor
EX38	36	Very Poor	Con38	36	Very Poor
EX39	28	Very Poor	Con39	28	Very Poor
EX40	40	Very Poor	Con40	34	Very Poor
EX41	34	Very Poor	Con41	34	Very Poor
EX42	30	Very Poor	Con42	28	Very Poor
EX43	34	Very Poor	Con43	22	Very Poor
EX44	34	Very Poor	Con44	50	Poor
TOTAL		1360	TOTAL		1422
MEAN		30.909	MEAN		32.318
LOWEST		16	LOWEST		18
HIGHEST		50	HIGHEST		54
STD. DEVIATION		9.906	STD. DEVIATION		9.390
STD. ERROR		1.493	STD. ERROR		1.449
Category					
Category	Student	Percentage	Category	Students	Percentage
Very Good	0	0%	Very Good	0	0%
Good	0	0%	Good	0	0%
Fair	0	0%	Fair	0	0%
Poor	3	7%	Poor	3	7%
Very Poor	41	93%	Very Poor	41	93%
Total	44	100%	Total	44	100%

From the table above, it can be seen that on the pre-test of experimental group there were 41 students (93%) whose score was classified in the very poor category and there were 3 students (7%) whose score was classified in the poor category. Meanwhile, from the table of pre-test of control group, it can be seen that there were also 41 students (93%) whose score was classified in the very poor category and there were 3 students (7%) whose score was classified in the poor category. It means, that both of the experimental and control group have the same level on passive voice mastery before getting the treatment.

1) The Result of Pre-test Score of Experimental Group (XI-IPA)

Based on the data on the table above, it was known that the highest score was 50 and the lowest score was 16. It was used to determine the mean, median, modus, standard deviation and standard Error. Then, to determine the range of score, the class interval, and interval of temporary, the researcher calculated using formula as follows (Djiwandono, 2008, p. 214):

$$\text{The Highest Score (H)} = 50$$

$$\text{The Lowest Score (L)} = 16$$

$$\text{The Range of Score (R)} = H - L$$

$$= 50 - 16$$

$$= 34$$

$$\text{The Class Interval (K)} = 1 + (3.3) \times \text{Log } n$$

$$= 1 + (3.3) \times \text{Log } 44$$

$$= 1 + (3.3) \times 1.643$$

$$= 1 + 5.13579825$$

$$= 6.422 \approx 6$$

$$\text{Interval of Temporary (I)} = \frac{34}{6}$$

$$= 5.6 \approx 6$$

So, the range of score was 34, the class interval was 6, and interval of temporary was 6. Then, it was presented using frequency distribution in the following table:

Table 4.2 The Frequency distribution of the Pre-test Scores of Experimental Group

Class (k)	Interval	Frequency	Mid-Point	The Limitation of Each Group	Frequency Relative (%)	Frequency Cumulative (%)
1	16-21	9	18.5	15.5-21.5	20.455	100.000
2	22-27	8	24.5	21.5-27.5	18.182	90.910
3	28-33	8	30.5	37.5-33.5	18.182	70.455
4	34-39	6	36.5	33.5-39.5	13.636	56.819
5	40-45	9	42.5	39.5-45.5	20.455	38.637
6	46-51	4	48.5	45.5-51.5	9.091	20.455
$\Sigma F = 44$			201		$\Sigma P = 100$	

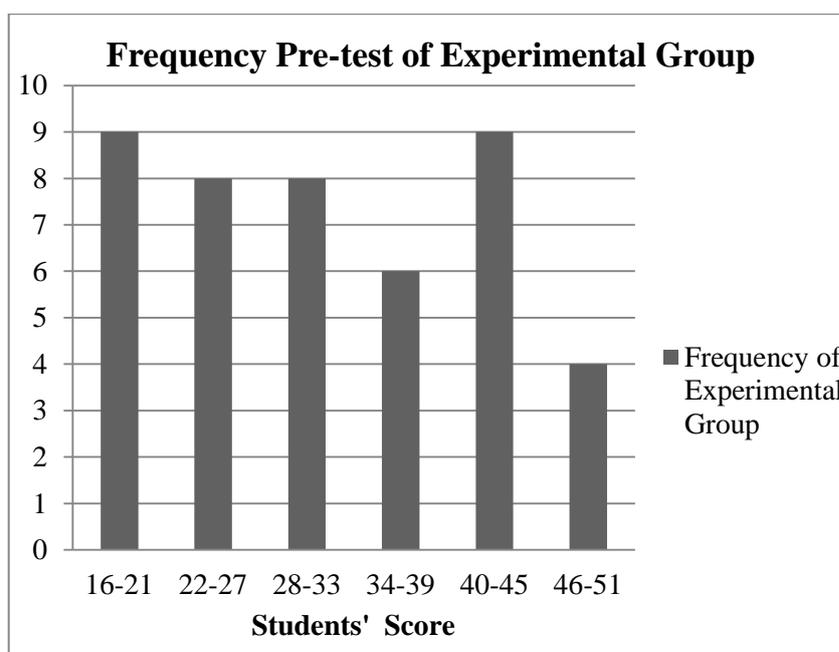


Figure 4.2 The Frequency Distribution of Pre-test of Experimental Group

It could be seen from the figure above, the students' pretest scores of experimental groups. There were 9 students who got score 16-21. There were 8 students who got score 22-27. There were 8 students who got score 28-33. There were 6 students who got score 34-39. There were 9 students who got score 40-45. The last, there were 4 students who got score 46-51. The next step, the

researcher tabulated the scores into the table for the calculation of mean, median, and modus. It is available on Appendix 4.

From the calculation, the mean score is 30.909, median score is 30, and modus score is 40 of the pre-test of the experiment class. The last step, the researcher tabulates the scores into the table for the calculation of standard deviation and the standard error. It is available on Appendix 4.

The result of calculation reports that the standard deviation of pretest score of experiment class is 9.906 and the standard error of pretest score of experiment class is 1.493.

To support the manual calculation, the researcher used SPSS 18.0 program to calculate the score of mean, median, mode, standard deviation, and standard error of mean of pre-test score in experiment group as follows:

Table 4.3 The Calculation of Pre-Test Score in Experiment Group Using SPSS 18 .0 Program

Statistics		
Experiment		
N	Valid	44
	Missing	0
Mean		30.91
Std. Error of Mean		1.493
Median		30.00
Mode		40
Std. Deviation		9.906
Variance		98.131
Range		34
Minimum		16
Maximum		50
Sum		1360

2) The Result of Pre-test Score of control Group (XI-IPS)

Based on the data, it can be seen that the students' highest score was 54 and the student's lowest score was 18. To determine the range of score, the class interval, and interval of temporary, the researcher calculated using formula as follows:

$$\text{The Highest Score (H)} = 54$$

$$\text{The Lowest Score (L)} = 18$$

$$\begin{aligned} \text{The Range of Score (R)} &= H - L \\ &= 54 - 18 \\ &= 36 \end{aligned}$$

$$\begin{aligned} \text{The Class Interval (K)} &= 1 + (3.3) \times \text{Log } n \\ &= 1 + (3.3) \times \text{Log } 44 \\ &= 1 + (3.3) \times 1.643 \\ &= 1 + 5.13579825 \\ &= 6.422 \\ &\approx 6 \end{aligned}$$

$$\begin{aligned} \text{Interval of Temporary (I)} &= \frac{36}{6} \\ &= 6 \end{aligned}$$

So, the range of score was 36, the class interval was 6, and interval of temporary was 6. Then, it was presented using frequency distribution in the following table:

Table 4.4 The Frequency Distribution of the Pre Test Scores of the Control Group

Class (k)	Interval	Frequency	Mid-Point	The Limitation of Each Group	Frequency Relative	Frequency Cumulative
1	18-23	9	20.5	17.5-23.5	20.455	100.000
2	24-29	7	26.5	23.5-29.5	15.909	97.728
3	30-35	13	32.5	29.5-35.5	29.545	93.182
4	36-41	7	38.5	34.5-41.5	15.909	81.819
5	42-47	5	44.5	41.5-47.5	11.364	65.910
6	48-53	2	50.5	47.5-53.5	4.545	36.364
7	54-59	1	56.5	53.5-59.5	2.273	20.455
		44			100.000	

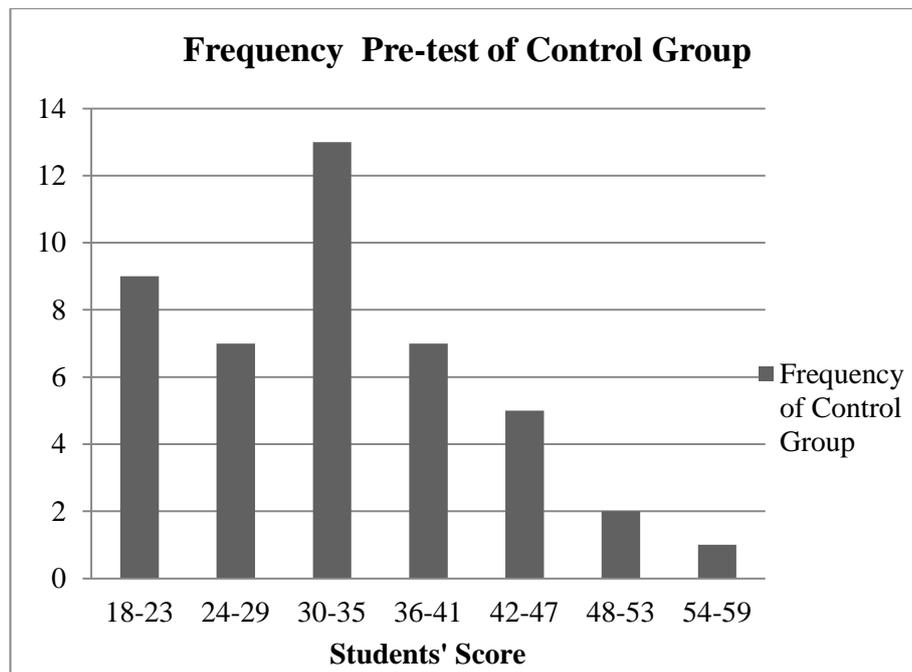


Figure 4.3 The Frequency Distribution of the Pretest Scores of the Control Group

The table and the figure showed the pretest score of students in control group. It could be seen that there were 9 students who got score 18-23. There were 7 students who got score 24-29. There were 13 students who got score 30-

35. There were 7 students who got score 36-41. There were 5 students who got score 42-47, there were 2 students who got 48-53, and there were 1 student who got score 54-59.

The next step, the researcher tabulated the score into the table for the calculation of mean, median, and modus. It is available on Appendix 4.

The calculation above showed the mean value was 32.318, median value was 30, and modus value was 30 of the pretest of the control group.

The next step, the researcher tabulated the scores of pretest of control group into the table for the calculation of standard deviation and the standard error (See appendix).

The result of calculation showed the standard deviation of pretest score of control group was 9.390 and the standard error of pretest score of control group was 1.416.

The researcher also calculated the data conclusion of pre-test score in control group by using SPSS 18.0 program. The result of statistic table as follows:

Table 4.5 The Calculation of Pre-test Score in Control Group Using SPSS 18.0 Program

Statistics		
Control		
N	Valid	44
	Missing	0
Mean		32.32
Std. Error of Mean		1.416
Median		30.00
Mode		30
Std. Deviation		9.390
Variance		88.175
Range		36
Minimum		18
Maximum		54
Sum		1422

2. The Result of Post-test

b. The Description Data of Post-test Score

Table 4.6 Post-Test Score of experiment and Control Group

Experiment			Control Group		
CODE	POST-TEST	CATEGORY	CODE	POST-TEST	CATEGORTY
EX1	86	Very Good	Con1	66	Fair
EX2	68	Fair	Con2	56	Poor
EX3	66	Fair	Con3	54	Poor
EX4	78	Good	Con4	72	Good
EX5	56	Poor	Con5	74	Good
EX6	56	Poor	Con6	52	Poor
EX7	46	Very Poor	Con7	42	Very Poor
EX8	64	Fair	Con8	66	Fair
EX9	66	Fair	Con9	62	Fair
EX10	58	Poor	Con10	56	Poor
EX11	66	Fair	Con11	52	Poor
EX12	84	Very Good	Con12	56	Poor
EX13	60	Fair	Con13	58	Poor
EX14	78	Good	Con14	52	Poor
EX15	42	Very Poor	Con15	60	Fair
EX16	76	Good	Con16	66	Fair
EX17	64	Fair	Con17	54	Poor
EX18	70	Good	Con18	60	Fair
EX19	64	Fair	Con19	66	Fair
EX20	76	Good	Con20	66	Fair
EX21	76	Good	Con21	56	Poor
EX22	80	Very Good	Con22	66	Fair
EX23	88	Very Good	Con23	74	Good
EX24	56	Poor	Con24	80	Very Good
EX25	62	Fair	Con25	58	Poor
EX26	90	Very Good	Con26	52	Poor
EX27	86	Very Good	Con27	56	Poor
EX28	86	Very Good	Con28	56	Poor
EX29	62	Fair	Con29	60	Fair
EX30	80	Very Good	Con30	58	Poor
EX31	60	Fair	Con31	76	Good
EX32	60	Fair	Con32	66	Fair
EX33	44	Very Poor	Con33	56	Poor
EX34	58	Poor	Con34	60	Fair
EX35	86	Very Good	Con35	38	Very Poor
EX36	60	Fair	Con36	72	Good

EX37	64	Fair	Con37	48	Very Poor
EX38	72	Good	Con38	60	Fair
EX39	68	Fair	Con39	50	Poor
EX40	78	Good	Con40	72	Good
EX41	60	Fair	Con41	66	Fair
EX42	60	Fair	Con42	48	Very Poor
EX43	76	Good	Con43	54	Poor
EX44	74	Good	Con44	84	Very Good
TOTAL		3010	TOTAL		2656
MEAN		68.409	MEAN		60.364
LOWEST		42	LOWEST		38
HIGHEST		90	HIGHEST		84
STD. DEVIATION		12.035	STD. DEVIATION		9.676
STD. ERROR		1.814	STD. ERROR		1.459
Category	Student	Percentage	Category	Students	Percentage
Very Good	9	20%	Very Good	2	5%
Good	10	23%	Good	6	14%
Fair	17	39%	Fair	14	32%
Poor	5	11%	Poor	18	41%
Very Poor	3	7%	Very Poor	4	9%
Total	44	100%	Total	44	100%

From the table above, the result of post-test of experimental group can be seen that: there were 3 students (7%) whose score was classified in the very poor category, there were 5 students (11%) whose score was classified in the poor category, there were 17 students (39%) whose score was classified in the fair category, there were 10 students (23%) whose score was classified in the good category, and there were 9 students (20%) whose score classified in the very good category. Meanwhile, from the posttest of control group can be seen that there were 4 students (9%) whose score was classified in the very poor category, there were 18 students (41%) whose score was classified in the poor category, there were 14 students (32%) whose score classified in the fair category, there were 6 students (14%) whose score classified in the good category, and there were 2 students (5%) whose score classified in the very good category.

1) The Result of Post Test Score of Experimental Group (XI IPA)

Based on the data Post-test score of experimental group, it was known the highest score was 90 and the lowest score was 42. To determine the range of score, the class interval, and interval of temporary, the researcher calculated using formula as follows:

$$\text{The Highest Score (H)} = 90$$

$$\text{The Lowest Score (L)} = 42$$

$$\begin{aligned} \text{The Range of Score (R)} &= H - L \\ &= 90 - 42 \\ &= 48 \end{aligned}$$

$$\begin{aligned} \text{The Class Interval (K)} &= 1 + (3.3) \times \text{Log } n \\ &= 1 + (3.3) \times \text{Log } 44 \\ &= 1 + (3.3) \times 1.643 \\ &= 1 + 5.13579825 \\ &= 6.422 \approx 6 \end{aligned}$$

$$\begin{aligned} \text{Interval of Temporary (I)} &= \frac{48}{6} \\ &= 8 \end{aligned}$$

So, the range of score was 48, the class interval was 6, and interval of temporary was 8. Then, it was presented using frequency distribution in the following table:

Table 4.7 The Frequency Distribution of the Post Test Score of the Experimental Group

Class (k)	Interval	Frequency	Mid-Point	The Limitation of Each Group	Frequency Relative	Frequency Cumulative
1	42-49	3	45.5	41.5-49.5	6.818	100.000
2	50-57	3	53.5	49.5-57.5	6.818	97.727
3	58-65	14	61.5	57.5-65.5	31.818	84.091
4	66-73	7	69.5	65.5-73.5	15.909	61.363
5	74-81	10	77.5	73.5-81.5	22.727	45.454
6	82-89	6	85.5	81.5-89.5	13.636	13.636
7	90-97	1	93.5	89.5-97.5	2.273	6.818
		44	486.5		100.000	

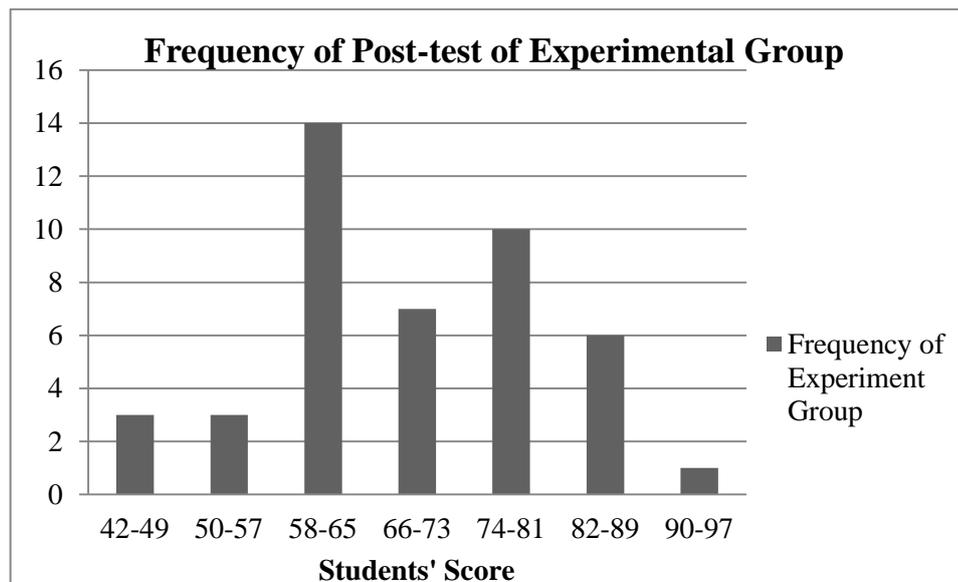


Figure 4.4 The Frequency Distribution of the Post Test Scores of the Experimental Group

The table and figure above, it could be seen that there were 3 students who got score 42-49. There were 3 students who got score 50-57. There were 14 students who got score 58-65. There were 7 students who got 66-73. There were 10 students who got 74-81. There were 6 students who got 82-89, and there was 1

student who got 90-97. The next step, researcher tabulated the score into the table for the calculation of mean, median, and modus. It is available on Appendix 4.

The calculation showed mean of value was 68.409, median value was 66, and modus value was 60 of the post test of the experimental group. The last step, the researcher tabulated the scores of pretest of control group into the table for the calculation of standard deviation and the standard error. It is available on Appendix 4.

The result of calculation showed the standard deviation was 12.035 and the standard error was 1.814. The researcher also calculated the data calculation of post-test score of experimental group using SPSS 18.0 program. The result of statistic table is as follows:

Table 4.8 The Calculation of Post-test Score of Experiment Group Using SPSS 18 .0 Program

Statistics	
EXPERIMENT	
N	Valid 44
	Missing 0
Mean	68.41
Std. Error of Mean	1.814
Median	66.00
Mode	60
Std. Deviation	12.035
Variance	144.852
Range	48
Minimum	42
Maximum	90
Sum	3010

2) The Result of Post-Test Score of Control Group (XI-IPS)

Based on the data on the appendix, it can be seen that the students' highest score was 84 and the student's lowest score was 44. To determine the range of

score, the class interval, and interval of temporary, the researcher calculated using formula as follows (Djiwandono, 2008, p.214):

$$\text{The Highest Score (H)} = 84$$

$$\text{The Lowest Score (L)} = 44$$

$$\begin{aligned} \text{The Range of Score (R)} &= H - L \\ &= 84 - 38 \\ &= 46 \end{aligned}$$

$$\begin{aligned} \text{The Class Interval (K)} &= 1 + (3.3) \times \text{Log } n \\ &= 1 + (3.3) \times \text{Log } 44 \\ &= 1 + (3.3) \times 1.643 \\ &= 1 + 5.13579825 \\ &= 6.422 \\ &\approx 6 \end{aligned}$$

$$\begin{aligned} \text{Interval of Temporary (I)} &= \frac{46}{6} \\ &= 7.6 \approx 8 \end{aligned}$$

So, the range of score was 40, the class interval was 6, and interval of temporary was 8. Then, it was presented using frequency distribution in the following table:

Table 4.9 The Frequency Distribution of the Post Test Scores of the Control Group

Class (k)	Interval	Frequency	Mid-Point	The Limitation of Each Group	Frequency Relative	Frequency Cumulative
1	38-45	2	47	37.5-45.5	4.545	102.273
2	46-53	7	54	45.5-53.5	15.909	97.727
3	54-61	18	61	53.5-61.5	40.909	84.091
4	62-69	9	68	61.5-69.5	20.455	63.636
5	70-77	6	75	69.5-77.5	13.636	22.727
6	78-85	2	82	77.5-85.5	4.545	6.818
		44	387		100.000	

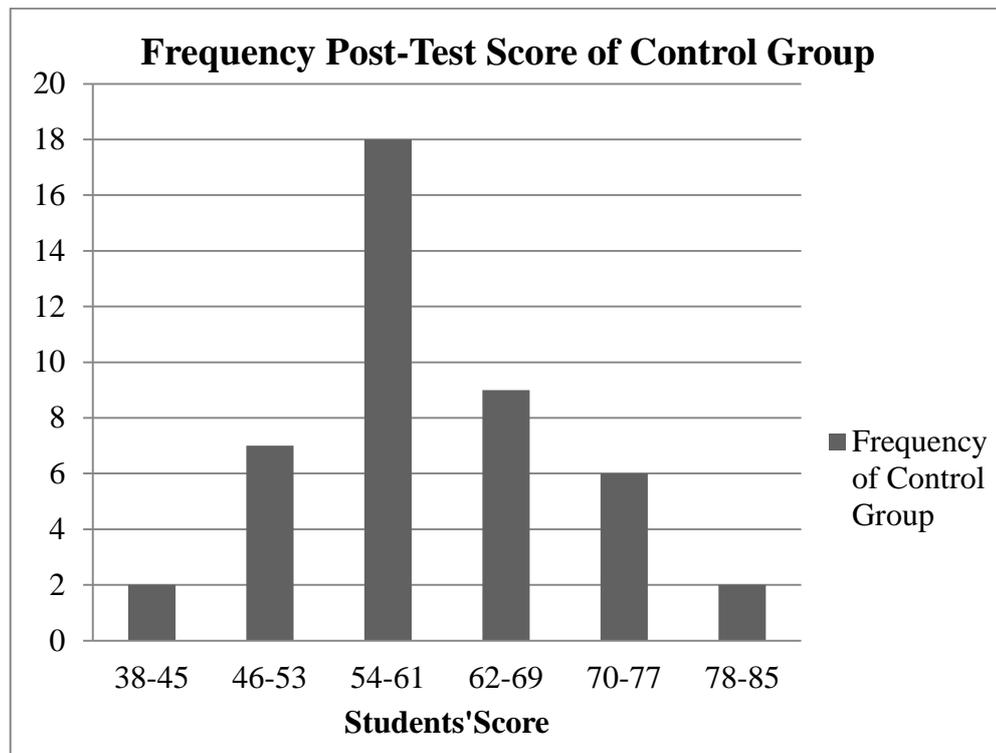


Figure 4.5 The Frequency Distribution of the Post Test Scores of the Control Group

The table and figure above, it could be seen that there were 2 students who got score 38-45. There were 7 students who got score 46-53. There were 18 students who got score 56-61. There were 9 students who got 62-69. There were 6 students who got 70-77, and there were 2 students who got 78-85. The next step, the researcher tabulated the score into the table for the calculation of mean, median, and modus. It is available on Appendix 4.

The calculations showed that mean value was 60.364, median value was 59, and modus value was 66. The last step, the researcher calculated the standard deviation and the standard error. It is available on Appendix 4.

The result of calculation showed the standard deviation was 9.676 and the standard error of post test score of control group was 1.459. The researcher also calculated the data calculation of post-test score of control group using SPSS 18.0 program.

Table 4.10 The Calculation of Post Test Scores in Control Group Using SPSS 18.0 Program

Statistics		
CONTROL		
N	Valid	44
	Missing	0
	Mean	60.36
	Std. Error of Mean	1.459
	Median	59.00
	Mode	66
	Std. Deviation	9.676
	Variance	93.632
	Range	46
	Minimum	38
	Maximum	84
	Sum	2656

3. The Comparison Result of Pre-Test and Post-test of Experimental and Control Group

a. The Comparison of Pre-test and Post-test score of Experiment Group

Table 4.11 The Comparison of Pre-test and Post-test Score of Experiment Group

No	CODE	PRE-TEST	CATEGORY	POST-TEST	CATEGORY	DIFF
1	EX1	50	Poor	86	Very Good	36
2	EX2	30	Very Poor	68	Fair	38
3	EX3	28	Very Poor	66	Fair	38
4	EX4	44	Very Poor	78	Good	34
5	EX5	26	Very Poor	56	Poor	30
6	EX6	20	Very Poor	56	Poor	36
7	EX7	16	Very Poor	46	Very Poor	30
8	EX8	22	Very Poor	64	Fair	42
9	EX9	30	Very Poor	66	Fair	36
10	EX10	18	Very Poor	58	Poor	40
11	EX11	34	Very Poor	66	Fair	32
12	EX12	42	Very Poor	84	Very Good	42
13	EX13	16	Very Poor	60	Fair	44
14	EX14	40	Very Poor	78	Good	38
15	EX15	16	Very Poor	42	Very Poor	26
16	EX16	42	Very Poor	76	Good	34
17	EX17	20	Very Poor	64	Fair	44
18	EX18	26	Very Poor	70	Good	44
19	EX19	24	Very Poor	64	Fair	40
20	EX20	30	Very Poor	76	Good	46
21	EX21	40	Very Poor	76	Good	36
22	EX22	34	Very Poor	80	Very Good	46
23	EX23	50	Poor	88	Very Good	38
24	EX24	18	Very Poor	56	Poor	38
25	EX25	28	Very Poor	62	Fair	34
26	EX26	50	Poor	90	Very Good	40
27	EX27	40	Very Poor	86	Very Good	46
28	EX28	40	Very Poor	86	Very Good	46
29	EX29	26	Very Poor	62	Fair	36
30	EX30	46	Very Poor	80	Very Good	34
31	EX31	26	Very Poor	60	Fair	34
32	EX32	20	Very Poor	60	Fair	40
33	EX33	28	Very Poor	44	Very Poor	16
34	EX34	18	Very Poor	58	Poor	40

35	EX35	40	Very Poor	86	Very Good	46
36	EX36	22	Very Poor	60	Fair	38
37	EX37	24	Very Poor	64	Fair	40
38	EX38	36	Very Poor	72	Good	36
39	EX39	28	Very Poor	68	Fair	40
40	EX40	40	Very Poor	78	Good	38
41	EX41	34	Very Poor	60	Fair	26
42	EX42	30	Very Poor	60	Fair	30
43	EX43	34	Very Poor	76	Good	42
44	EX44	34	Very Poor	74	Good	40
TOTAL		1360		3010		
MEAN		30.909		68.409		
LOWEST		16		42		
HIGHEST		50		90		
ST.DEVIATION		9.906		12.035		
ST. ERROR		1.493		1.815		
Category						
Very Good	Student	Percentage	Students	Percentage		
Very Good	0	0%	9	20%		
Good	0	0%	10	23%		
Fair	0	0%	17	39%		
Poor	3	7%	5	11%		
Very Poor	41	93%	3	7%		
Total	44	100%	44	100%		

From the table above, the result of pre-test can be seen that there were 41 students (93%) whose score was classified in the very poor category and there were 3 students (7%) whose score was classified in the poor category. Meanwhile, the result of posttest can be seen that: there were 3 students (7%) whose score was classified in the very poor category, there were 5 students (11%) whose score was classified in the poor category, there were 17 students (39%) whose score was classified in the fair category, there were 10 students (23%) whose score was classified in the good category, and there were 9 students (20%) whose score was classified in the very good category.

b. Comparison Pre-test and Post-test of Control group

Table 4.12 The Comparison of Pre-test and Post-test Score of Control Group

No	CODE	PRE-TEST	CATEGORY	POST-TEST	CATEGORY	DIFF
1	Con1	34	Very Poor	66	Fair	32
2	Con2	30	Very Poor	56	Poor	26
3	Con3	34	Very Poor	54	Poor	20
4	Con4	34	Very Poor	72	Good	38
5	Con5	54	Poor	74	Good	20
6	Con6	30	Very Poor	52	Poor	22
7	Con7	28	Very Poor	42	Very Poor	14
8	Con8	44	Very Poor	66	Fair	22
9	Con9	26	Very Poor	62	Fair	36
10	Con10	20	Very Poor	56	Poor	36
11	Con11	18	Very Poor	52	Poor	34
12	Con12	22	Very Poor	56	Poor	34
13	Con13	30	Very Poor	58	Poor	28
14	Con14	18	Very Poor	52	Poor	34
15	Con15	34	Very Poor	60	Fair	26
16	Con16	38	Very Poor	66	Fair	28
17	Con17	22	Very Poor	54	Poor	32
18	Con18	38	Very Poor	60	Fair	22
19	Con19	42	Very Poor	66	Fair	24
20	Con20	40	Very Poor	66	Fair	26
21	Con21	42	Very Poor	56	Poor	14
22	Con22	24	Very Poor	66	Fair	42
23	Con23	46	Very Poor	74	Good	28
24	Con24	52	Poor	80	Very Good	28
25	Con25	30	Very Poor	58	Poor	28
26	Con26	22	Very Poor	52	Poor	30
27	Con27	30	Very Poor	56	Poor	26
28	Con28	20	Very Poor	56	Poor	36
29	Con29	42	Very Poor	60	Fair	18
30	Con30	24	Very Poor	58	Poor	34
31	Con31	40	Very Poor	76	Good	36
32	Con32	40	Very Poor	66	Fair	26
33	Con33	30	Very Poor	56	Poor	26
34	Con34	30	Very Poor	60	Fair	30
35	Con35	18	Very Poor	38	Very Poor	20
36	Con36	40	Very Poor	72	Good	32
37	Con37	24	Very Poor	48	Very Poor	24
38	Con38	36	Very Poor	60	Fair	24

39	Con39	28	Very Poor	50	Poor	22
40	Con40	34	Very Poor	72	Good	38
41	Con41	34	Very Poor	66	Fair	32
42	Con42	28	Very Poor	48	Very Poor	20
43	Con43	22	Very Poor	54	Poor	32
44	Con44	50	Poor	84	Very Good	34
TOTAL		1422		2656		
MEAN		32.318		60.364		
LOWEST		18		38		
HIGHEST		54		84		
ST.DEVIATION		9.390		9.676		
ST. ERROR		1.449		1.153		
Very Good						
		0	0%	2	5%	
Good						
		0	0%	6	14%	
Fair						
		0	0%	14	32%	
Poor						
		3	7%	18	41%	
Very Poor						
		41	93%	4	9%	
Total						
		44	100%	44	100%	

From the table above, the result of pre-test can be seen that there were 41 students (93%) whose score was classified in the very poor category and there were 23 students (7%) whose score was classified in the poor category. Meanwhile, the result of posttest can be seen that there were 4 students (9%) whose score was classified in the very poor category, here were 18 students (41%) whose score was classified in the poor category, there were 14 students (32%) whose score classified in the fair category, there 6 students (14%) whose score classified in the good category, and there were 2 students(5%) whose score classified in the very good category.

B. Research Findings

1. Testing Normality and Homogeneity

The researcher calculates the result of pre-test and post-test score of experiment and control class by using SPSS 18.0 program. It is used to know the

normality of the data that is going to be analyzed whether both groups have normal distribution or not. Also, homogeneity is used to know whether experiment class and control class, that are decided, come from population that has relatively same variant or not.

a. Testing Normality and Homogeneity of Pre-Test

The researcher applied SPSS 18.0 program to calculate t test in testing normality of the study. The result could be seen as follows:

1). Normality

The researcher applied SPSS 18.0 program to calculate t test in testing normality of the study. The result of the t test using SPSS 18.0 program could be seen as follows:

Table 4.13 Testing Normality of Pre-Test Experimental and Control Group Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Experiment	.116	44	.161	.953	44	.068
Control	.120	44	.116	.963	44	.165

The table showed the result of test normality calculation using SPSS 18.0 program. To know the normality of data, the formula could be seen as follows:

If the number of sample > 50 = Kolmogorov-Smirnov

If the number of sample < 50 = Shapiro-Wilk

Based on the number of data, both of experiment and control group consisted $88 > 50$, so to analyzed normality data the researcher used Kolmogorov-

Smirnov with the level of significant 5% ($\alpha=0.05$). The next step, the researcher analyzed normality of data used formula as follows:

If Significance > 0.05 = data is normal distribution

If Significance < 0.05 = data is not normal distribution

Based on data above, significant data of experiment and control group used Kolmogorov-Smirnov was $0.161 > 0.05$ and $0.116 > 0.05$. It could be concluded that the data was in normal distribution.

2). Homogeneity

The researcher applied SPSS 18.0 program to calculate t test in testing homogeneity of the study. The result of the t test using SPSS 18.0 program could be seen as follows:

Table 4.14 Testing Homogeneity of Pre-test Experimental and Control Group

Test of Homogeneity of Variances			
Experiment			
Levene Statistic	df1	df2	Sig.
1.055	9	27	.425

The table showed the result of Homogeneity test calculation using SPSS 18.0 program. To know the Homogeneity of data, the formula could be seen as follows:

If Sig. > 0.05 = Equal variances assumed or Homogeneity distribution

If Sig. < 0.05 = Equal variances not assumed or not Homogeneity distribution

Based on data above, significant data was 0,425. The result was $0,425 > 0.05$, it meant that the t-test calculation used at the equal variances assumed or data was Homogeny distribution.

b. Testing of Normality and Homogeneity for Post-Test of Experiment and Control Class

1). Normality

Table 4.15 Testing Normality of post-test experimental and control group Homogeneity Test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
EXPERIMENT	.102	44	.200*	.963	44	.167
CONTROL	.129	44	.065	.975	44	.447

The table showed the result of test normality calculation using SPSS 18.0 program. To know the normality of data, the formula could be seen as follows:

If Significance > 0.05 = data is normal distribution

If Significance < 0.05 = data is not normal distribution.

Based on the data above, it could be seen that p-value (sig) of the posttest scores of the experiment group was 0.200 and control group was 0.065 which higher than the level significance (0.05). Thus, it can be concluded that the data was normal distribution.

2). Homogeneity

Table 4.16 Testing Homogeneity of Post-test Experimental and Control Group

Test of Homogeneity of Variances

EXPERIMENT

Levene Statistic	df1	df2	Sig.
1.545	8	28	.187

Based on the result of homogeneity test, the data are homogeneous if the significant value is higher than significance level $\alpha = 0.05$. Table 4.20 proves that the significant value (0.187) is higher than significant level $\alpha = 0.05$, it can be concluded that the data are homogeneous. It means that both of classes have same variants.

2. Testing Hypothesis

The researcher uses t-test statistical calculation with significant level of the refusal null hypothesis $\alpha = 0.05$. The researcher uses manual calculation and SPSS 18.0.

a. Testing Hypothesis Using Manual Calculation

To test the hypothesis of the study, the researcher used t-test statistical calculation. Firstly, the researcher calculated the standard deviation and the standard error of X1 and X2. It was found the standard deviation and the standard error of posttest of X1 and X2 at the previous data presentation. The criteria of H_a is accepted when $t_{observed} > t_{table}$, and H_0 is refused when $t_{observed} < t_{table}$. It could be seen on this following table:

Table 4.17 The Standard Deviation and the Standard Error of X1 and X2

Variable	Standard Deviation	Standard Error
X ₁	12.035	1.814
X ₂	9.676	1.459

Where:

X₁ = Experimental Group

X₂ = Control Group

The table showed the result of the standard deviation calculation of X₁ was 12.035 and the result of the standard error mean calculation was 1.814. The result of the standard deviation calculation of X₂ was 9.676 and the result of the standard error of mean calculation was 1.459. The next step, the researcher calculates the standard error of the differences mean between X₁ and X₂:

$$SE_{M1} - SE_{M2} = \sqrt{SE_{M1}^2 + SE_{M2}^2}$$

$$SE_{M1} - SE_{M2} = \sqrt{1.814^2 + 1.459^2}$$

$$SE_{M1} - SE_{M2} = \sqrt{3.290596 + 2.128681}$$

$$SE_{M1} - SE_{M2} = \sqrt{5.419277}$$

$$SE_{M1} - SE_{M2} = 2.328$$

The calculation above shows the standard error of the differences mean between X₁ and X₂ is 2.178. Then, it is inserted to t_0 formula to get the value of

$t_{observed}$ as follows:

$$t_0 = \frac{M1 - M2}{SE_{M1} - SE_{M2}}$$

$$t_0 = \frac{68.401 - 60.364}{2.328}$$

$$t_o = \frac{8.045}{2.328}$$

$$t_o = 3.456$$

With the criteria:

If t-test ($t_{\text{observed}} \geq t_{\text{table}}$), it means H_a is accepted and H_0 is rejected.

If t-test ($t_{\text{observed}} < t_{\text{table}}$), it means H_a is rejected and H_0 is accepted.

Then, the researcher interprets the result of t-test. Previously, the researcher accounts the degree of freedom (df) with the formula:

$$\begin{aligned} df &= (N_1 - N_2 - 2) \\ &= (44 + 44 - 2) \\ &= 86 \end{aligned}$$

t table at df 86 at 5% significant level = 1.98793 \approx 1.988

The calculation above shows the result of t-test calculation as in the table follows:

Table 4.18 The Result of T-test

Variable	t_{observed}	t_{table}		Df
		5%	1%	
X1 – X2	3.456	1.988	2.632	86

Where:

X1 = Experimental Class

X2 = Control Class

t_{observed} = The calculated Value

t_{table} = The distribution of t value

df = Degree of Freedom

The result of hypothesis test calculation (Table 4.22) proves that the value of t_{observed} is higher than the value of t_{table} at the level of significant in 5% or 1% that is $1.988 < 3.456 > 2.632$. It shows that H_a is accepted and H_o is rejected. From the result of hypothesis test can be described that students who taught by using grammar discovery technique have significant effect on the passive voice mastery' score at the eleventh grade students of MA Muslimat NU Palangka Raya. On the other hand, students who taught by non-grammar discovery technique did not have better passive voice mastery than those taught by grammar discovery technique. Simply, it can be interpreted that independent variable gave significant effect on dependent variable.

b. Testing Hypothesis Using SPSS Program

The researcher also applied SPSS 18.0 program to calculate t-test in testing hypothesis of the study which supports the result of manual calculation.

The result of the test using SPSS 18.0 program can be seen as follows:

Table 4.19 The Calculation of T-test Using SPSS 18.0

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SC OR E	Equal variances assumed	3.268	.074	3.456	86	.001	8.045	2.328	3.417	12.674
	Equal variances not assumed			3.456	82.208	.001	8.045	2.328	3.414	12.677

The table showed the result of t-test calculation using SPSS 18.0 program. Since the result of post-test between experiment and control group had difference score of variance, it meant the t-test calculation used at the equal variances not assumed. It found that the result of t observed was 3.456, the result of mean difference between experiment and control group was 8.045, and the standard error difference between experiment and control group was 2.328.

To examine the truth or the false of null hypothesis stating that grammar discovery did not give significant effect on the students' passive voice mastery, the result of t-test was interpreted on the result of degree of freedom to get the table. The result of degree of freedom (df) was 86, it found from the total number of the students in both group minus 2. The following table was the result of t observed and table from 86 df at 5% and 1% significance level.

The interpretation of the result of t-test using SPSS 18.0 program, it was found the t observe was greater than the t table at 1 % and 5 % significance level or $1.988 < 3.456 > 2.632$. It means, H_a was accepted and H_o was rejected.

It could be interpreted based on the result of calculation that H_a stating that grammar discovery technique gives significant effect on the students' passive voice mastery was accepted and H_o stating that grammar discovery technique does not give significant effect on the students' passive voice mastery was rejected.

In conclusion, teaching English grammar (passive voice) using grammar discovery technique gave significant effect on the students' passive voice mastery at the eleventh grade students of MA Muslimat NU Palangka Raya.

3. Interpretation of the Result

The hypothesis testing uses T-test to measure the significant effect of using cartoon toward students' vocabulary score. Based on the manual calculation and SPSS 18.0 program of T-test the $t_{\text{observed}} = 3.297$ is consulted with t_{table} with significant level 5% (1.988) and 1% (2.632) or $1.988 < 3.297 > 2.632$. It can be concluded that the use of grammar discovery technique on students' passive voice is effective.

The result of calculation proves that H_a stating there is significant effect of grammar discovery technique on students' passive voice mastery score in the eleventh grade students of MA Muslimat Nu Palangka Raya was accepted and H_0 stating there is no significant effect of grammar discovery technique on students' passive voice mastery score at the eleventh grade students of MA Muslimat Nu Palangka Raya is rejected. It means the students who were taught with grammar discovery technique have better passive voice mastery than the students who taught without grammar discovery technique.

C. Discussion

Data result of analysis above showed that there was obvious increase of students' grade achievement before and after being given special treatment. In pretest, most students of experimental group which 7% or 3 students achieved POOR category and 93% or 41 students achieved VERY POOR category; and nobody achieved among FAIR, GOOD, and VERY GOOD category. Meanwhile, after being given special treatment called grammar discovery technique, their achievement was significantly increased. The posttest score showed that most of

them gained FAIR category; there were 39% of students; while there was only 3 students or 7% students who gained VERY POOR category and 5 students or 11% whose score in POOR category. Besides there were 9 students or 20% students who achieved VERY GOOD category and there were 10 students or 23% students whose score classified in GOOD category.

In addition, the experimental group which was given special treatment showed higher increase than the control group which was without being given special treatment. The mean difference between pretest and posttest of experimental group was 37.50 which were higher than in control group of 28.05. In addition the posttest score of control group showed that there were still 4 students or 9% students who got VERY POOR category; 18 students or 41% who got POOR category; 14 students or 31% students who got FAIR category; 6 students or 14% who got GOOD category; and only 2 students or 5% who got VERY GOOD category. It means that there is notable difference between group taught by grammar discovery technique and other taught by grammar translation method.

The result of the analysis shows that there is a significant effect of grammar discovery the students' passive voice mastery, it is proved by the value of t_{observed} is higher than t_{table} at 5% and 1% significant level or $1.988 < 3.456 > 2.634$. It meant that H_a was accepted and H_o was rejected. Therefore, after the students have been taught using grammar discovery technique, the students' passive voice mastery was higher compared to prior the implementation. This finding indicated that grammar discovery technique which is included in discovery learning was

effective and supported the previous research which was done by Rahmalia (2014), Prawerti (2014), and Putranto (2016) that also stated teaching learning by using discovery learning was effective.

The result supports the theory by Prawerti (2014, p. 105), discovery learning provides more chance for the students to be active learners. It deals with the instruction activities where the students are encouraged to discover the new knowledge that they have never known before through the several steps of learning: observing, thinking, asking, and finally discovering the knowledge. In teaching passive voice, grammar discovery technique gives the students chance to explore their own ideas.

In addition, the result mentioned above indicates that grammar discovery technique is effective in teaching grammar. As students were given opportunity to explore their ideas in form of discoveries, they were much motivated to learn. The effectiveness of this technique is influenced by the elements of language teaching applied; namely ESA (Engage Study Activate) (Harmer, 2007, p. 51). Since the students were really engaged in teaching and learning process, they could study how the structures were constructed and finally actively produced the language and its structures they were just learned. All those elements were effectively applied in discovery technique which caused it was effective in teaching grammar.

The fact that grammar discovery technique gave positive effect on students' passive voice mastery is undeniably because of the principles of grammar teaching applied in it. As Thornbury (1999, p. 95) mentions the principles of grammar teaching in term of Efficiency and Appropriateness factor,

in grammar discovery technique passive voice is also presented as efficiently and appropriately as possible. Through grammar discovery technique passive voice is taught efficiently. It does not take too long time to explain the rules, because it has been discovered by the students itself. Besides, it uses materials in form of pictures and simple questions which can be easily understood by the students. Furthermore, the materials can attract the students' interest, motivation, and attention in learning grammar. Therefore, the grammar discovery technique allows passive voice teaching efficiently done. The next principle is appropriateness in which grammar teaching must be done as appropriate as possible. Since grammar discovery technique involves some attractive pictures and some simple questions, it is considered appropriate to be given to the eleventh grade students at MA Muslimat NU Palangka Raya. At last, teaching grammar through grammar discovery technique has applied the principles of grammar teaching so that it enables students to learn successfully.

In addition, Discovery technique also followed the principles of current trends of grammar teaching suggested by Larsen and Freeman (2003, p.44). Grammar is taught for communication. It is clear that grammar discovery technique allows students to learn passive voice from context which enables students to be a good communicator, not grammarians. Further, since the students are required to predict related sentences based on pictures and questions given, the materials are presented in form of discourse, not isolated sentences. Moreover, the teacher gives full guidance for the students in order to be fluent in applying the

grammar rules in context. Thus, all those principles have been effectively applied in teaching grammar through this technique.

Meanwhile, connecting to statement of Larsen and Freeman (2003, p. 42) that grammar discovery technique has advantage since it allows students to use their cognitive powers where they are required to concentrate fully, its implementation in the research shows a great success. Students were enthusiastic to follow each step of teaching and learning passive voice in the class. Since they have great curiosity about the grammar rules they have never found before, they were much motivated to find it by themselves. As all of students want to be great discoverers, they did concentration fully to the context provided by the researcher. As the result, their focus in the class is only on the learning materials and nothing else. Finally, the learning objectives could be achieved, so that their achievements were significantly improved.

CHAPTER V

CONCLUSION AND SUGGESTION

This chapter contained of the conclusion of the findings and suggestions. Conclusion was to summary the findings and suggestions were aimed to the students, the teacher and the further researcher.

A. Conclusion

Based on the hypothetical test and discussion of the data analysis in the previous chapter, the conclusion can be drawn that the teaching of English passive voice using grammar discovery technique are more effective at XI-IPA class of MA Muslimat NU Palangka Raya as an experimental group.

It can be seen from the results of test score that the experimental group which were given treatment using grammar discovery technique as teaching technique got higher core that was 68.409 compared with the control class who did not get treatment using grammar discovery technique as teaching technique was 60.364.

Based on the t-test with standard of significant 5%, it is found $t_{table} = 1.988$ with $t_{observed} = 3.456$. Because $t_{table} > t_{observed}$, so there is real difference between results of the study of learning English passive voice using grammar discovery technique as teaching technique and learning English passive voice without using grammar discovery technique as teaching technique.

In short, based on the research finding the conclusion is grammar discovery technique in an effective teaching technique for teaching passive voice to the eleventh grade students of MA Muslimat NU Palangka Raya. By using

grammar discovery technique, students are getting more active and more encouraged to study and master their passive voice. As a result, the students' passive voice enhanced optimally.

B. Suggestion

Based on the result of this research positively indicates that there is a significant effect of grammar discovery technique as a technique in teaching English passive voice on students' passive voice mastery. Some suggestions for the teaching learning English are proposed as follows:

Forth teacher

1. Grammar discovery technique can be applied by the teacher as an alternative technique in teaching and learning process, especially in teaching English passive voice.
2. Teacher should aware in selecting teaching technique, whether the selected teaching technique can facilitate the students having high and low mastery to produce their knowledge on grammar especially passive voice or not.

For the students

1. Grammar discovery technique will overcome the students' difficulties in mastering grammar especially passive voice.

For Further Researcher

1. It can be used as an additional reference for a similar research with different variables to conduct further study concerning with the teaching technique used to enhance students' passive voice mastery.

2. Time management is important in applying this technique , so the further researcher should use time properly in teaching and learning proses.
3. Grammar discovery technique is easier to be conducted as a research if the students were already known the knowledge.
4. This study only has two variables, so the further researcher is expected to provide more than two variables.

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