

**THE EFFECTIVENESS OF INQUIRY-BASED TEACHING TO TEACH  
READING VIEWED FROM THE STUDENTS' CREATIVITY  
(An Experimental Study at the Tenth grade Students of SMAN 1 Geger  
Madiun in the Academic Year of 2011/2012)**

**A THESIS**

**Submitted to the Graduate School of Sebelas Maret University  
As a Fulfillment of the Requirements for achieving  
The Graduate Degree of English Education**



**By.**

**Harmawan Wardani**

**S891008037**

**ENGLISH EDUCATION DEPARTMENT  
GRADUATE SCHOOL  
SEBELAS MARET UNIVERSITY  
SURAKARTA  
2011**

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## APPROVAL

THE EFFECTIVENESS OF INQUIRY-BASED TEACHING TO TEACH  
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(An Experimental Research at the First Grade Students of  
SMAN 1 Geger in the Academic Year of 2011/2012)

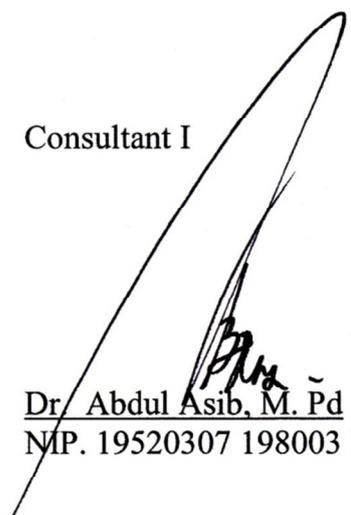
by:

Harmawan Wardani

S 891008037

This thesis has been approved by the Consultants of English Education  
Department of Graduate School of Sebelas Maret University  
Surakarta, .....2012

Consultant I



Dr. Abdul Asib, M. Pd  
NIP. 19520307 198003 1 005

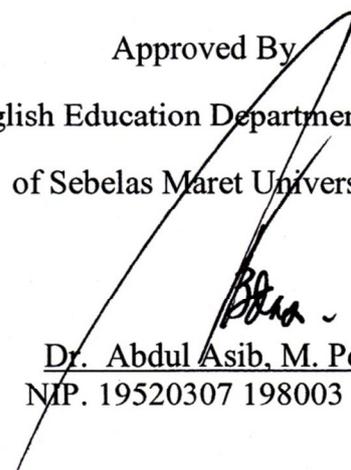
Consultant II



Drs. Martono, M.A  
NIP. 19600301 198803 1 004

Approved By

The Head of English Education Department of Graduate School  
of Sebelas Maret University



Dr. Abdul Asib, M. Pd  
NIP. 19520307 198003 1 005

## LEGITIMATION OF EXAMINERS

### THE EFFECTIVENESS OF INQUIRY-BASED TEACHING TO TEACH READING VIEWED FROM STUDENTS' CREATIVITY

(An Experimental Study on the Tenth Grade Students of SMAN 1 Geger Madiun in the Academic Year of 2011/2012)

By:

**Harmawan Wardani**

**S891008037**

This thesis has been examined by the Board of Examiners of English Education Department, Graduate School of Sebelas Maret University on July 10<sup>th</sup>, 2012.

The Board of Examiners:

1. Chairman:  
Dra. Dewi Rochsantiningasih, M.Ed, Ph.D  
NIP. 19600918 198702 2 001
2. Secretary:  
Dr. Ngadiso, M.Pd.  
NIP. 19621231 198803 1 009
3. First Examiner:  
Dr. Abdul Asib, M.Pd.  
NIP. 19520307 198003 1 005
4. Second Examiner:  
Drs. Martono, M.A  
NIP. 19600301 198803 1 004

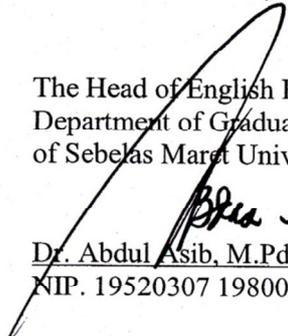






Legalized by,  
The Director of Graduate School  
Sebelas Maret University  
  
Prof. Dr. Ir. Ahmad Yunus, M.S.  
NIP. 19610717 198601 1 001

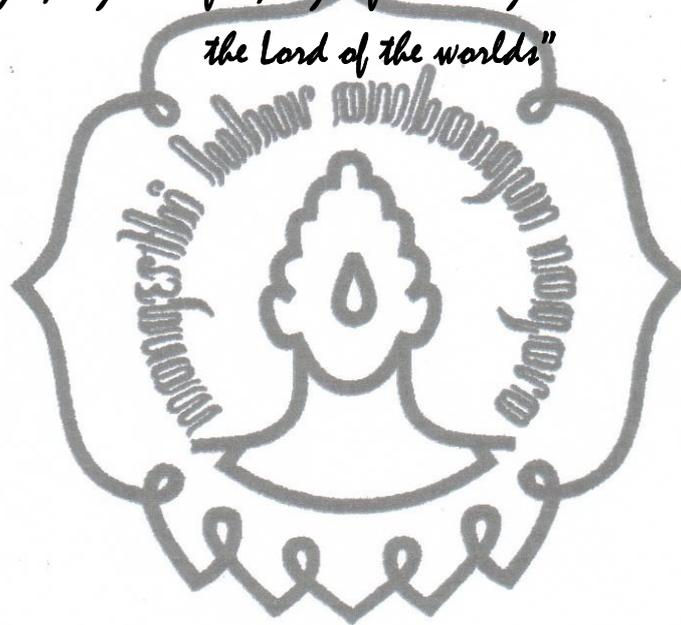
The Head of English Education  
Department of Graduate Program  
of Sebelas Maret University

  
Dr. Abdul Asib, M.Pd.  
NIP. 19520307 198003 1 009

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## MOTTO

*"my prayer, my sacrifice, my life and my death are all for Allah;  
the Lord of the worlds"*



(6: 162)

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**DEDICATION**

*This thesis is dedicated to:*

*My beloved parents*

*My beloved sister*

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## ABSTRACT

Harmawan Wardani. S891008037. *“The Effectiveness Of Inquiry-Based Teaching to Teach Reading Viewed From Students’ Creativity (An Experimental Research at the Tenth Grade Students of SMAN 1 Geger in the Academic Year of 2011/2012)”*, Thesis. English Education Department, Graduate School, Sebelas Maret University, Surakarta 2012. Consultant: 1) Dr. Abdul Asib, M. Pd., 2) Drs. Martono, M.A

*Key words: Inquiry-Based Teaching, Direct Instruction, Creativity*

The objectives of the study are to find out: (1) whether Inquiry-Based Teaching method is more effective than Direct Instruction method in teaching reading skill in the tenth grade students of SMAN 1 Geger in the academic year of 2011/2012; (2) whether the students with high creativity have better comprehension in reading than the students with low creativity; (3) whether there is an interaction between teaching methods and students’ creativity in teaching reading in the tenth grade students of SMAN 1 Geger in the academic year of 2011/2012.

This research is an experimental research and using factorial design 2x2. The research was conducted at SMAN 1 Geger in the academic year of 2011/2012. The population of this research is the tenth grade students which consist of eight classes. The sample was taken using cluster random sampling, and to determine experimental and control class from the sample, randomized matching is used. The samples are XE and XF. The number of students of each class is 32 students, so there are 64 students used as sample. The researcher used normality test and homogeneity test in order to make sure the sample was in normal distribution and homogeneous. The instrument that is used to collect the data is reading test, and to find out creativity score, the researcher used a Creativity Test. Before the instrument was used, a try out was done to know the validity and reliability of reading test.

To test the hypotheses multifactor analysis of variance and Tuckey Test are used at  $\alpha = 0.05$  significance level. The multifactor analysis of variance result shows: (1) IBT is more effective than DI in teaching reading,  $25.72 > 24.50$ . (2) The students having high creativity have better comprehension in reading than those having low creativity,  $26.28 > 23.94$ . (3). There is an interaction between teaching methods and students’ creativity,  $F_o (152.89) > F_t (0.05) (4.00)$ .

Based on the result of data analysis, it can be concluded that the research findings are: (1) IBT is more effective than DI in teaching reading; (2) the students who have high creativity have higher reading comprehension ability than those who have low creativity; (3) there is interaction between teaching methods and creativity in teaching reading. Based on the research findings above, it can be concluded that IBT is proved as an effective teaching method to teach reading for the tenth grade students of SMAN 1 Geger in the 2011/2012 academic year. The effectiveness is affected by student’s level of creativity.

Therefore, it is recommended that: (1) to apply appropriate methods by considering students’ psychological aspects especially based on their creativity; (2) to encourage students to be active and involve thoroughly in the teaching learning process in order to improve their reading skills; and (3) to make this research as a reference to continue some related research in different condition and characteristic.

## ACKNOWLEDGEMENT

Praise to Allah SWT, the Lord of the world, thanks for His blessing, and everything given to the writer in completing his study. Peace and blessing on the Messenger of Allah, Muhammad the prophet. The writer is aware his thesis could not be finished without the help from other people. Therefore, he would like to express his appreciation and gratitude to:

1. The Director of Graduate School of Sebelas Maret University for permitting to write this thesis.
2. Dr. Abdul Asib, M. Pd., The Head of English Education Department of Graduate School of Sebelas Maret University and the first consultant who support and guide the writer in his thesis writing process.
3. Drs. Martono, M.A, the second consultant for his patience in giving guidance and feedback to the writer to the perfection of this thesis.
4. Drs. H. Muhaimin, M. Pd, the headmaster of SMAN 1 Geger who has given his permission to carry out the research in the school.
5. All the students of XD and XF who were subjects in this thesis.
6. All the lecturers of English Education Department of Graduate School of Sebelas Maret University who had taught and gave their guidance patiently during the years of my study.
7. All of his friends and all of people who might not be mentioned individually here.

Finally, the writer has a great expectation that his research will be beneficial and useful for anyone who is interested in reading this thesis.

Surakarta, June 2012

The writer

Harmawan Wardani

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## TABLE OF CONTENTS

<b>TITLE .....</b>	<b>i</b>
<b>APPROVAL SHEETS BY THE ADVISOR .....</b>	<b>ii</b>
<b>APPROVAL SHEETS BY THE EXIMINING COMMITEE.....</b>	<b>iii</b>
<b>MOTTO .....</b>	<b>iv</b>
<b>DEDICATION.....</b>	<b>v</b>
<b>ABSTRACT .....</b>	<b>vi</b>
<b>ACKNOWLEDGEMENT .....</b>	<b>vii</b>
<b>TABLE OF CONTENTS.....</b>	<b>viii</b>
<b>LIST OF TABLES .....</b>	<b>xi</b>
<b>LIST OF FIGURES .....</b>	<b>xii</b>
<b>LIST OF APPENDICES .....</b>	<b>xiii</b>
<b>CHAPTER I : INTRODUCTION</b>	
A. Background of the Study.....	1
B. Problem Identification .....	7
C. Problem Limitation.....	7
D. Problem Statement .....	8
E. Objectives of the Study.....	8
F. Benefit of the Study .....	9
<b>CHAPTER II : REVIEW OF RELATED LITERATURE</b>	
A. General Concept of Reading .....	10
1. Macro and Micro Skills on Reading.....	12
2. Reading Comprehension .....	13
3. Reading Processes Models .....	16
a. Bottom-Up Models.....	16
b. Top-Down Models .....	17
c. Interactive Models.....	18
4. Purposes of Reading .....	18
a. Reading to search for simple information and reading to skim .....	19
b. Reading to learn from texts.....	19
c. Reading to integrate information, write and critique texts.....	20
d. Reading for general comprehension .....	20
5. Difficulties in Teaching Reading .....	20
B. Teaching Method.....	22
1. Inquiry-Based Teaching Method .....	22
a. Theories of Inquiry-Based Teaching .....	22
b. Procedure of Inquiry-Based Teaching .....	29

c. Strength and Weaknesses of Inquiry-Based Teaching	30
2. Direct Instruction Method .....	31
a. Theories of Direct Instruction .....	31
b. The Procedures of Direct Instruction .....	36
c. Strength and Weaknesses of Direct Instruction ...	37
3. Teaching Reading Using IBT Compared to DI.....	38
C. Creativity .....	40
1. General Concept of Creativity .....	40
2. Characteristics of creative person .....	43
3. Types of creativity .....	43
4. Point of View in Understanding Creativity.....	44
a. Cognitive Aspects of Creativity: Ways of Thinking, Mental Models, and Metaphors .....	44
b. Personal Variation in Creativity.....	45
5. The Interaction between Creativity and Other Psychological Aspects.....	46
6. The Importance of Creativity in Education .....	47
D. Review of Related Research .....	48
E. Rationale .....	50
1. The difference between the Inquiry-Based Teaching method and Direct Instruction Method in teaching reading.....	50
2. The difference in reading achievement between the students having high creativity and low creativity....	51
3. The interaction between teaching methods and the students' creativity in teaching reading .....	52
F. Hypothesis .....	53

### CHAPTER III: RESEARCH METHODOLOGY

A. The Place and Time of The Study .....	54
B. The Method of Research .....	55
C. Research Variables .....	55
D. Population, Sample, and Sampling.....	57
1. Population .....	57
2. Sample.....	57
3. Sampling .....	57
E. Technique of Collecting the Data.....	58
F. Technique of Analyzing the Data.....	60
1. ANOVA .....	60
2. Tukey Test.....	64
G. Statistical Hypothesis.....	66

### CHAPTER IV: THE RESULT OF THE STUDY

A. The Description of the Data .....	68
B. Normality and Homogeneity Test .....	75
C. Hypothesis Test .....	76

1. Multifactor Analysis Of Variance.....	77
2. Tuckey Test.....	80
D. The Discussion of the Result of the Study .....	82
<b>CHAPTER V: CONCLUSION, IMPLICATION, AND SUGGESTION</b>	
A. Conclusion.....	87
B. Implication.....	88
C. Suggestion .....	89
<b>BIBLIOGRAPHY .....</b>	<b>90</b>
<b>APPENDICES .....</b>	<b>95</b>

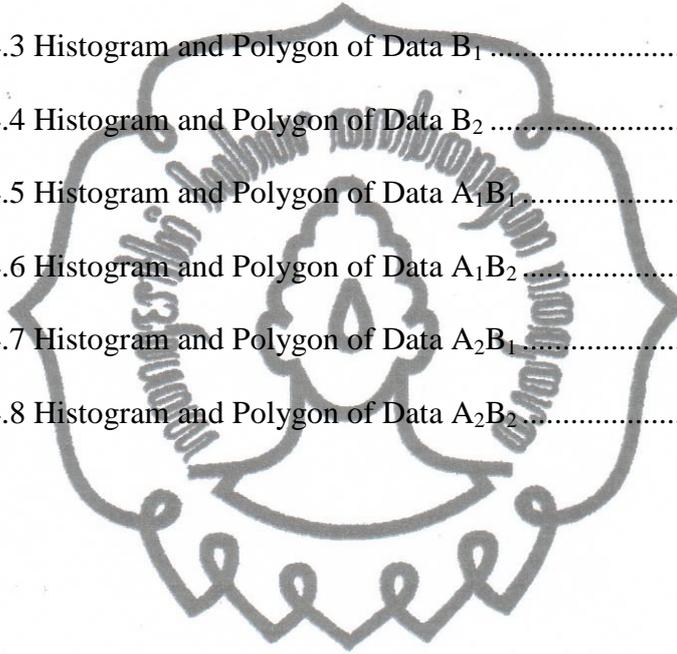


## LIST OF TABLES

1.	Table 3.1 Research Frame Time .....	54
2.	Table 3.2 The Design of Multifactor Analysis of Variance.....	61
3.	Table 3.2 Summary of a 2X2 Multifactor Analysis of Variance .....	64
4.	Table 4.1 Frequency Distribution of Data $A_1$ .....	69
5.	Table 4.2 Frequency Distribution of Data $A_2$ .....	70
6.	Table 4.3 Frequency Distribution of Data $B_1$ .....	71
7.	Table 4.4 Frequency Distribution of Data $B_2$ .....	72
8.	Table 4.5 Frequency Distribution of Data $A_1B_1$ .....	72
9.	Table 4.6 Frequency Distribution of Data $A_1B_2$ .....	73
10.	Table 4.7 Frequency Distribution of Data $A_2B_1$ .....	74
11.	Table 4.8 Frequency Distribution of Data $A_2B_2$ .....	75
12.	Table 4.9 The Normality Test .....	76
13.	Table 4.10 The Homogeneity Test.....	76
14.	Table 4.11 The data of Multifactor Analysis of Variance .....	77
15.	Table 4.12 Multifactor Analysis of Variance.....	78
16.	Table 4.13 The Tukey Test .....	80

## LIST OF FIGURES

1. Figure 4.1 Histogram and Polygon of Data $A_1$ .....	69
2. Figure 4.2 Histogram and Polygon of Data $A_2$ .....	70
3. Figure 4.3 Histogram and Polygon of Data $B_1$ .....	71
4. Figure 4.4 Histogram and Polygon of Data $B_2$ .....	72
5. Figure 4.5 Histogram and Polygon of Data $A_1B_1$ .....	73
6. Figure 4.6 Histogram and Polygon of Data $A_1B_2$ .....	73
7. Figure 4.7 Histogram and Polygon of Data $A_2B_1$ .....	74
8. Figure 4.8 Histogram and Polygon of Data $A_2B_2$ .....	75



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**LIST OF APPENDICES**

Appendix 1. Lesson plan of experimental class.....	96
Appendix 2. Lesson plan of control class .....	174
Appendix 3. The blue print of Reading test.....	253
Appendix 4. The answer key of Reading test .....	254
Appendix 5. The instrument of Reading test .....	255
Appendix 6. Validity and Reliability of Reading test .....	271
Appendix 7 The Computation of First Validity of Reading test .....	282
Appendix 8. The Computation of Second Validity of Reading test .....	283
Appendix 9. The Computation of Reliability of Reading Test.....	284
Appendix 9. Mean, Mode, Median, and Standard Deviation of Reading Test	285
Appendix 10. Normality Test.....	294
Appendix 11. Homogeneity Test.....	306
Appendix 12. Multifactor Anova and Tukey Test.....	307
Appendix 13. Research Permission .....	310
Appendix 14. Creativity Test Result.....	311
Appendix 15. Reading Posttest Result .....	312

## CHAPTER I

### INTRODUCTION

#### A. Background of the Study

Reading today gets extra attention in Indonesian education. The Government decided to give reading major portion in curriculum for senior and junior high school. It is signed with government decree: "*Kompetensi lulusan untuk pelajaran bahasa menekankan pada kemampuan membaca dan menulis yang sesuai dengan jenjang pendidikan*" (PP 19, 2005 Bab V, Pasal 25, Ayat 3). The decree indicates Indonesian education goal for English learning is emphasized on reading and writing (literacy cycle).

Why does literacy cycle (reading and writing) get extra attention from Indonesian government? The answer to that question is implicitly stated by Helena (2006:1):

Indonesia is now in the process of changing its school curriculum into a competence-based curriculum (CBC) aimed at equipping school graduates with sufficient knowledge and life skills so that they can survive, academically and socially, in modern societies

From the statement above it could be assumed a student is expected to survive academically and socially. To survive socially relates to oracy (listening and speaking) ability. Meanwhile to survive academically relates to literacy (reading and writing) ability. Indonesian government realizes the importance of literacy role in academic survival. Nowadays the focus of Indonesian curriculum is literacy development since academic competence is seen as characteristic of

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educated people. It is the reason why Indonesian government emphasizes English learning on literacy (reading and writing). Meanwhile oracy role promotes students literacy ability.

Related to the importance of reading above lead to further question what is the ideal condition of student reading skills? According to Indonesian competency standard for the tenth grade of senior high school on reading skills, students are expected to comprehend short functional texts and simple essay in narrative, recount and procedure form in daily context and for accessing knowledge (*standard kompetensi lulusan*, 2006: 311). Based on the statement above the government expects students to comprehend (fully understand) short functional text and simple essay in narrative, recount and procedure. Students are also expected to apply their understanding to those texts in daily context and to comprehend such kind of text form to get knowledge from it.

There are many factors that influence students reading skill. Two of them are teaching method and students' psychological aspect (condition). Teaching method has great influence not only on teaching reading but also on general teaching success. It is in line with Rodgers (2001:1) statement; the method concept in language teaching—the notion of a systematic set of teaching practices based on a particular theory of language and language learning—is a powerful one. According to statement above a method is powerful in determining the success of teaching learning process. A method could be very useful for teachers in their work to transfer knowledge to their students. Students also need teaching method as a tool to receive knowledge from teacher. The definition of method itself is

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specific instructional design or system based on a particular theory of language learning; it contains detailed specifications of content, roles of teacher and learners, and teaching procedures and techniques (Richards and Rodger, 2001, p. 245). It means a method should contain clear specifications of content, role teacher and learner and also teaching procedure and technique.

The second thing that influences teaching learning success is psychological aspect. Experts have admitted the important role of psychological aspect on teaching learning since more than a century. As in early 1880s Hopkins stated the importance of psychology in education:

It would be as absurd for one to undertake to educate the young with no knowledge of... psychology, as for one to attempt to produce a sonata while ignorant the phenomena of sound (Hopkins. 1886 p. 3. in Hanson & Eller. 1999).

Based on statement above, education experts put psychological aspect into teaching learning element. Furthermore the idea of educational psychology also came from statement above. Educational psychology itself defines as knowledge gained from psychology and applied to the classroom (Grinder .1981 in Hanson & Eller. 1999). In present day psychological aspect is faced bigger challenge than before because the student conditions (student condition relates to society condition) become more complex.

In conclusion two factors that influence teaching reading are teaching (students' reading ability) method and psychological aspect. Teaching method is powerful tool to transfer knowledge from the teachers to their students.

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Meanwhile psychological aspect is also very important in enhancing learning. By implementing psychology principles to class the better result will be got.

Related to the importance of teaching method in teaching learning above, this research aims to investigate the effectiveness of two teaching methods, Inquiry Based Teaching (IBT) and Direct Instruction Method (DI) on reading comprehension and their correlation with one of psychological aspects, creativity. Inquiry Based Teaching (IBT) is chosen because the researcher wants to promote teaching method that focus on process to English teacher and Direct Instruction Method is chosen because it is the method that principally contrasts with Inquiry Based Teaching (IBT).

Principally Inquiry Based Teaching (IBT) is a method that focuses on 'how we know what we know' (evidence). Because Inquiry is something that students do, not something that is done to them (Inquiry and the National Science Education Standards in Stewart & Rivera 1998. p. 4). So Inquiry-Based Teaching emphasizes on the process of learning (why we understand something), how deep we understand something rather than how much knowledge we possess. Inquiry-Based Teaching also places the teacher as facilitator of learning (Stewart & Rivera: 1998 p. 4). In other words Teacher's role on Inquiry-Based Teaching learning is as facilitator. Transferring knowledge is done indirectly. Students are seen as a teacher partner in searching knowledge. It is in line with Stewart & Rivera statement; student's role is as active, independent learner (investigator) (1998 p.4). From the explanation above it could be assumed that Inquiry-Based Teaching is not a method that centralizes on teacher but on students.

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Inquiry Based Teaching (IBT) has very important role on reading. The result of implementing Inquiry based teaching (IBT) in teaching reading process makes students deeply understand about the materials which are given by the teachers. Students understand better any material that is taught by teachers and their knowledge will remain last long. It is in line with Sweetland (2008: 1) statement; an inquiry-based curriculum develops and validates 'habits of mind' that characterize a life-long learner: It teaches students to pose difficult questions and fosters the desire and skills to acquire knowledge about the world.

In contrast with Inquiry-Based Teaching, Direct Instruction is a teaching method in which the teacher transmits information directly to the students, the lessons are goal oriented and structured by the teacher (Slavin in Edwin D, Bell. 2007: 5). Direct Instruction Method is a method that centralizes on teacher control. As it is stated by Hanson and Eller (1999: 309) educators who tend to be teacher-centered advocate a model of teaching called direct instruction, and also Arends (2001:265) Direct Instruction Method is a teacher centered model that has five steps: establishing set, explanation and demonstration, guided practice, feedback, and extended practice. A teacher is responsible for students' degree of learning success. A teacher's role as central knowledge resources provides effective instruction during teaching learning process. On the other hand, students passively receive the instruction from the teacher during teaching learning process.

Direct Instruction (DI) Method offers effective ways to achieve lesson goals through instructions. Direct instruction (DI) method could be very useful to teach

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reading because it provides effective instruction to achieve lesson goals. So, the students are expected to be able achieving lesson goals on reading effectively, both on time and score result. It is in line with Nokes & Dole (2004) in Moore (2007: 1) statement; although direct instruction is effective for teaching a range of reading skills and strategies, it is especially effective in helping students comprehend fully what they read.

Although creativity is hard to define but it is extremely important part in problem solving process. It is in line with Henson & Eller (1999: 353) statement; as we examine problem solving, it becomes evident that creativity can be fascinating part of the process. Problem solving is very important in learning. Students need good problem solving ability in order to solve any problem that occurs during the learning process. It is also in line with Kaplan (Kaplan in Henson & Eller 1999: 353) statement; educational psychologists agree that creativity, like problem solving, is very important in educational process. In conclusion creativity is very important in educational process. Creativity is needed by learners in order to solve problems that they faced during learning process.

From the paragraph above it is undeniable that creativity is needed by learners to solve problems during learning process. It also happens on teaching reading process. Learners who have high creativity will solve problems which they meet during teaching reading process better than learners who have low creativity. So, creativity has an important role in influencing learners reading ability.

## B. Problem Identification

Based on the background of the study, there are many problems that arise. The problems can be identified as follows:

1. Does the literacy affect students characteristic?
2. How does oracy help to promote students' literacy ability?
3. How does a student implement literacy in their daily life?
4. How does a student use their reading ability to get knowledge from text?
5. Does the inappropriate teaching method cause problems in teaching learning success?
6. Does the teacher pay attention to psychological aspects in their teaching?
7. How can Inquiry-Based Teaching method help the students's reading comprehension?
8. How can Direct Instruction Method help the students's reading comprehension?
9. How can the students with high creativity get better comprehension in reading than the students with low creativity?

## C. Problem Limitation

Based on the problems identification above, the research problems are limited to the problems which are supposed to influence students' reading comprehension; they are the teaching methods (Inquiry-Based Teaching and Direct Instruction) and students' creativity. The researcher limits the object to the tenth grade students of SMAN 1 Geger Madiun.

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#### **D. Problem Statement**

1. Is Inquiry-Based Teaching (IBT) more effective than Direct Instruction Method to teach reading to the tenth grade students of SMAN 1 Geger Madiun in the academic year of 2011/2012?
2. Do the students who have high creativity have better reading comprehension ability than those who have low creativity?
3. Is there an interaction between methods and creativity in teaching reading to the tenth grade students of SMAN 1 Geger Madiun in the academic year of 2011/2012?

#### **E. Objectives of the Study**

The objectives of the study are to find out:

1. Whether Inquiry-Based Teaching method is more effective than Direct Instruction Method in teaching reading in the tenth grade students of SMAN 1 Geger Madiun in the academic year of 2011/2012;
2. Whether the students with high creativity have better comprehension in reading than the students with low creativity;
3. Whether there is an interaction between teaching methods and the students' creativity in teaching reading in the tenth grade students of SMAN 1 Geger Madiun in the academic year of 2011/2012.

## **F. Benefit of the Study**

### 1. For teachers

The teachers are expected to get information about Inquiry-Based Teaching and Direct Instruction Method and to get information about the importance of creativity in teaching reading. The result of this study is expected that will be used as a consideration to increase the teachers' awareness in developing and applying suitable methods for their own students in teaching reading.

### 2. For students

Students are expected to enrich their insight about learning through this research; as a result they can improve their reading skill optimally.

### 3. For other researchers

The result of the study can be used as a reference and guidance in conducting a research in the future.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

#### A. General Concept of Reading

In this sub-chapter researcher tries to make general concept (construct) of reading based definitions by experts. There are many reading definitions from the experts. From those definitions construct of reading will be made and from construct, indicators of reading are obtained. Through general concepts of reading, definition of reading is expected to become clearer.

Nunan (2003: 68) defines reading as a process of readers combining information from text and their own background knowledge to build meaning. Still according to Nunan (2003) the act of reading interacts or involves with four factors they are strategies, fluency, the reader, and the text. To give clearer concept act of reading from Nunan see the figure below:

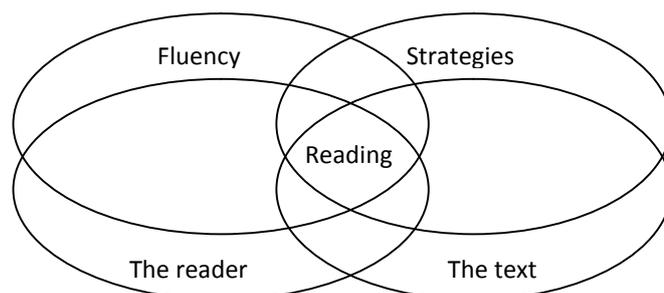


Figure 1. The Definition of Reading (Nunan, 2003: 68)

Furthermore Grabe and Stoller (2002) suggest that the definition of reading have to involve four issues, they are;

- a. Purpose of reading and its relation with skills and strategies.

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- b. Criteria of fluent reading abilities.
- c. Explanation reading as cognitive process.
- d. The ability to draw meaning from a text and interpret this meaning varies in line with the second language (L2) proficiency of the reader (p. 9-10).

Nuttall (1996: 2) states that reading involves three major group activities first; decode, decipher, and identify, second; articulate, speak, and pronounce and third; understand, respond, meaning.

In the other hand reading from psycholinguistic perspective is conceived by Halley and Theresa (2004: 15) as autonomous mental process occurring in the heads of individuals; interpreting written text is complex by design in that involves as a simultaneous coordinate of attention, perception and memory.

Reading is also defined as the meaningful interpretation of written or printed verbal symbols (Harris 1972 p. 3). But Thorndike in Staiger (1973: 194) defined reading differently. They define reading as very elaborate procedure, involving weighing of many elements in a sentence, their organization in proper relation to each other, the selection of certain of their connotation and the rejection of others, and the co-operation of many forces to determine final response.

Goodman as cited by Coady (1979, p. 5) defines reading as a “psycholinguistic reading by which the reader, a language user, reconstructs, as best as he can a message which has been encoded by a writer as a graphic display.

From definitions above reading can be constructed as autonomous mental process that occurs in the heads of individuals in combining information from text or printed verbal symbols with reader background knowledge (interpretation) to

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build meaning in particular purpose of reading which involves several strategies or single strategy.

#### **a. Macro and Micro Skills on Reading**

According to Brown (2004: 187) macro and micro skills represent the spectrum of possibilities for objectives in the assessment of reading comprehension. There are fourteen macro and micro skills in Brown model, they are:

- 1) Discriminate among the distinctive graphemes and orthographic patterns of English.
- 2) Retain chunks of language of different lengths in short-terms memory.
- 3) Process writing at an efficient rate of speed to suit the purpose.
- 4) Recognize a core of words, and interpret word order patterns and their significance.
- 5) Recognize grammatical word classes (noun, verbs, etc.), system (e.g., tense, agreement, pluralization), patterns, rules, and elliptical forms.
- 6) Recognize that a particular meaning may be expressed in different grammatical forms.
- 7) Recognize cohesive device in written discourse and their role in signaling the relationship between and among clauses.
- 8) Recognize the rhetorical forms of written discourse and their significance for interpretation.
- 9) Recognize the communicative functions of written texts, according to form and purpose.

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- 10) Infer context that is not explicit by using background knowledge.
- 11) From events, ideas, etc., described, infer links and connections between events, deduce causes and effect, and detect such relations as main idea, supporting idea, new information, given information, generalization, and exemplification.
- 12) Distinguish between literal and implied meaning.
- 13) Detect culturally specific references and interpret them in context of appropriate cultural schemata.
- 14) Develop and use a battery of reading strategies, such as scanning and skimming, detecting discourse markers, guessing meaning of words from context, and activating schemata for the interpretation of texts.

## **2. Reading Comprehension**

Comprehension is very important in reading, because comprehension is the goal of reading. It is in line with experts statement; comprehension is the goal reading (Nunan: 2003 and Block & Pressley in Learning Point Associates Journal: 2004). Furthermore comprehension could not be separated from reading. Since successful comprehension enables readers to acquire information, and to get experience from a text in order to achieve reading success.

Many experts has stated or argued the definition of reading comprehension. For example, Snow (2002: 11) defines reading comprehension as the process of simultaneously extracting and constructing meaning through interaction and involvement with the written language.

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Rosenshine says reading comprehension commonly entails seven skills. They are: recognizing the words in the context, identifying main ideas, recognizing the sequence, decoding details, drawing inferences, recognizing cause and effect, and comparing and converting. Being able to state the main idea of what has been read is one the most important comprehension skill (Rosenshine in Dupuis and Askov: 1982: 186).

Furthermore, Alexander (1998:279) specifically state about skills of reading comprehension include (1) finding the main idea (2) remembering details (3) recognizing sequence (4) following direction (5) summarizing and organizing information (6) generalizing (7) predicting outcome.

Another definition of reading comprehension stated by Mc Neill (1992: 16) he states that reading is making sense of text. From an interaction perspective, reading comprehension is acquiring information from context and combining disparate elements into a new whole. It is the process of using one's existing knowledge (schemata) to interpret text in order to construe meaning.

Moreover Block & Pressley in Learning Point Associates Journal (2004: 30) state that Comprehension involves constructing meaning that is reasonable and accurate by connecting what has been read to what the reader already knows and thinking about all of this information until it is understood.

Meanwhile E.S.R.C (journal: 2004: 8) stated that good reading comprehension involves reading the words on the page, accessing their meanings, computing the sense of each sentence and much else as well. To understand text in a meaningful way, readers need to integrate the meanings of successive sentences

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and to establish local *coherence*. Readers also need to establish how the information fits together as a whole, that is, *global coherence*.

Furthermore according *standard isi mata pelajaran bahasa inggris untuk sekolah menengah atas/Madrasah aliyah* (2006: 311) from Indonesia government, there are two based competences on odd semester that should be had by students on they are;

- 5.1 *Merespon makna dalam teks tulis fungsional pendek (misalnya pengumuman, iklan, undangan dll.) resmi dan tak resmi secara akurat, lancar dan berterima dalam konteks kehidupan sehari-hari dan untuk mengakses ilmu pengetahuan.*
- 5.2 *Merespon makna dan langkah retorika teks tulis esei secara akurat, lancar dan berterima dalam konteks kehidupan sehari-hari dan untuk mengakses ilmu pengetahuan dalam teks berbentuk: recount, narrative, dan procedure (p. 311).*

Davis in Reutzel (2006: 4) found the following skills that associated with reading comprehension are: 1) ability to determine a writer's purpose, point of view, etc. (critical reading), 2) word meaning knowledge (vocabulary), 4) ability to select the appropriate word meaning for a word in context (words with multiple meanings), 5) ability to follow the organization of a passage (text structure), 6) ability to select the main idea, 7) ability to answer questions directly answered in the passage (right there), 8) ability to answer questions where the words in the passage are not a direct answer to the question (think and search), 9) ability to make inferences, 10) ability to recognize literary devices in text (metaphors, similes, foreshadowing, etc.).

Based on theories of reading comprehension and *standard isi mata pelajaran bahasa inggris untuk sekolah menengah atas/Madrasah aliyah* above, construct of

reading comprehension is reading process which involves identifying main idea, identifying implicit and explicit information, word meaning knowledge (vocabulary), and selecting appropriate word meaning for a word in context (words with multiple meanings) in combining information from text with reader background knowledge (interpretation). In this research there are four indicators of reading comprehension. They are; identifying main idea, identifying implicit information, identifying explicit information, and word meaning knowledge (vocabulary).

Means score of posttest result will be used as based point to see the effectiveness of Inquiry-Based Teaching in reading. If the IBT's means score on posttest is higher than Direct Instruction, means the IBT is more effective toward Direct Instruction. It is in line with multifactor analysis of variance principle, which is used to analyze research data.

### **3. Reading Processes Models**

Reading processes models explain how printed word (text) is understood by the reader. According to experts (Nunan 2003 and Nuttall 1996) reading processes models are divided into three:

#### **a. Bottom-Up Models**

Bottom-Up models according to Nunan (2003) are explained as:

Models that typically consist of lower-level reading processes. Student start with the fundamental basics of letter and sound recognition, which in turn allows for morpheme recognition followed by word recognition, building up to the identification of grammatical structures, sentences, and longer text (p. 70).

Meanwhile Nuttall (1996: 17) stated that on bottom-up processing, the reader builds up a meaning from the black marks on the page: recognizing letters and words, working out sentence structure. Nuttall also makes an imagery of bottom-up process like the scientist with magnifying glass examining the ecology of transect-a tiny part of landscape the eagle surveys (p. 17).

From the explanations above, the bottom-up model is reading processes model that reader start from small things (letter and sound recognition, morpheme recognition, word recognition, sentence grammar and finally text) to understand main purpose of writer (text message).

#### **b. Top- Down Models**

Top-down models by Nunan (2003: 71) are explained as models which begin with the idea that comprehension resides in the reader. The reader uses background knowledge, makes predictions, and searches the text to confirm or reject the predictions that are made.

Meanwhile according to Nuttall (1996: 16) top-down processes are explained as follows; in top-down processing, we draw on our own intelligence and experience-the predictions we can make, based on the schemata we have acquire-to understand the text. Nuttall makes comparison about the top-down processing to an eagle's eye view the landscape. From a great height, the eagle can see a wide area spread out below; it understand the nature of whole terrain (p. 16).

Based on two explanations above top-down processing could be explained as the model of reading processes that start from predict message of text using reader background knowledge (schemata) then confirm or reject predictions that are  
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made by checking the detail information from text. So, top-down models are principally contrast with bottom-up models.

### c. **Interactive Models**

According to Nuttal (1996) the interactive models are explained as follows:

Although logically we might expect that we ought to understand the plain sense if we are to understand anything else, in practice a reader continually shifts from one focus to another, now adopting a top-down approach to predict the probable meaning, then moving to the bottom-up approach to check whether that is really what the writer says. This has become as interaction reading (p. 17)

Meanwhile according to Stanovich in Nunan (2003: 72) interactive models explain as follow; this type of reading processes combines elements of both bottom-up and top-down models assuming “that a pattern is synthesized based on information provided simultaneously from several knowledge sources”.

In conclusion interactive models are combination between top-down and bottom-up. Reader uses both elements (top-down and bottom-up) during a reading process.

## **4. Purposes of Reading**

When readers read some texts (newspaper, magazine, or even scientific journal) they have particular purpose of reading. And purpose of reading is totally different one another. It depends on the text which the readers read. According to Grabe & Stoller (2002: 11) reading purposes can be classified under seven main headings they are; (1) reading to search for simple information (2) reading to skim quickly (3) reading to learn from text (4) reading to integrate information (5) reading to write (or search for information needed for writing) (6) reading to

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critique text (7) reading for general comprehension. Here are the explanations of each reading purposes from Grabe and Stoller (2002).

### **1. Reading to search for simple information and reading to skim**

Reading to search simple information is a common reading ability and it is used so often in reading tasks. Reader use scanning ability for search specific information or specific word. The example of reading to search for simple information is reading telephone directory to find key information either address or phone number.

Similarly reading to skim is also common part of many reading tasks. Skimming is defined as sampling segments of the text for a general understanding. Reading to skim quickly involves a combination of strategies for guessing important information in the text, and then using basic reading comprehension skills on those segments of the text until a general idea is formed.

### **2. Reading to learn from texts**

Reading to learn from texts usually occurs in academic or professional contexts where reader need to learn a considerable amount of information from a text. Reading to learn from text requires the abilities to:

- 1) Remember main ideas as well as a number of details that elaborate the main and supporting ideas in the text.
- 2) Recognize and build rhetorical frames that organize the information in the text.
- 3) Link the text to reader's knowledge base.

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### **3. Reading to integrate information, write and critique texts**

Reading to integrate information requires ability to decide the relative importance of complementary, supporting or conflicting information from multiple sources. Reader also requires the ability to reconstruct rhetorical frame to accommodate those information.

Reading to write and critique text may be task variants of reading to integrate information. Because both of reading to write and critique text represent common academic tasks that need the ability to integrate information (Enright et al., 2000 Perfetti, Rouet and Britt, 1999 in Grabbe & Stoller 2002).

### **4. Reading for general comprehension**

Reading for general comprehension is the most basic purpose for reading, underlying and supporting most other purposes for reading. Reading general comprehension when accomplished by a skilled fluent reader requires very rapid and automatic processing of words, strong skills in forming a general meaning representation of main ideas, and efficient coordination of many processes under very limited time constraints. It means, reading for general comprehension need adequate skill in processing of words, forming general ideas of text and coordinate it efficiently.

### **5. Difficulties in Teaching Reading**

According to Frankfurt International School (2012: 1), the difficulties in teaching reading in ESL are:

- a. Illegibility

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The problem in illegibility is related to printed or copied reading material. ESL students may have illegibility problem in teaching reading process.

b. Unfamiliar Words

Unfamiliar words relates to the difficulties in word meaning or vocabulary. A written message may be difficult to ESL students. For example, the instruction in reading is simple but the language in which it is expressed is not.

c. Lack of Background Knowledge

Lack of Background Knowledge problem appears in reading comprehension process. For example, ESL students read about statistical content passage. They will get difficulties unless they have basic background knowledge about statistic.

d. Difficult Concepts

Difficult Concepts relates to understand the general idea of text. Sometimes in comprehending text, there is no need special Background knowledge but ESL students still get difficulties in comprehending text. It is because there is a problem in understanding concept.

e. Complex Syntax

Complex Syntax is related to difficulties of the complex syntax in reading passage. In sentences contain subordinate clauses; ESL students usually get difficulties in understanding and comprehending text.

f. Nominalization

Nominalization, which is the use of a noun in combination with an "empty" verb, is a feature of academic text that causes problems to ESL students.

g. Complex noun groups

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Other syntactic features of academic text are complex noun groups. This kind of noun group can be very problematic for language learners, especially in ESL students.

#### h. Advanced cohesion

Cohesion refers to the way writer's link phrases, clauses and sentences into a coherent whole. However, a complex form of cohesion is sometimes bringing difficulties to language learners. John bought a red pencil and Mary a blue one.

#### i. Poor Writing

The final source of difficulty is associated with the many different manifestations of poor writing. For example, a text may be difficult because the ideas are not organized logically, or because punctuation is lacking, faulty or ambiguous, or because cohesion is slipshod.

## **B. Teaching Method**

### **1. Inquiry-Based Teaching (IBT) Method**

#### **a. Theories of Inquiry-Based Teaching (IBT)**

There are many definitions of Inquiry-Based Teaching from many experts. Researcher obtains it from many sources. The following are inquiry-based teaching definition. Inquiry-based teaching is a pedagogical approach that invites students to explore academic content by posing, investigating, and answering questions (Sweetland: 2008: 1).

Meanwhile according to Lane (2001: 1) Inquiry-based teaching is a research-based strategy that actively involves students in the exploration of the content,  
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issues, and questions surrounding a curricular area or concept. Furthermore Warner & Myers (2011: 1) state that Inquiry-based teaching is a teaching method that combines the curiosity of students and the scientific method to enhance the development of critical thinking skills while learning science. And according to Kauchak and Eggen 1998 in Morse (1998: 5), “Inquiry is a process that gathers facts and observations and uses them to solve problems.

Stewart & Rivera have also different definition about inquiry-based teaching. It is defined as “an approach to learning that involves a process of exploring the natural or material world, which leads to asking questions and making discoveries in the search for new understandings” (1998: 4).

More detail definition of inquiry-based teaching is stated by Spronken-Smith (2007: 2). According to him IBT is a pedagogy which best enables students to experience the processes of knowledge creation. The core ingredients of an IBT approach that most researchers are in agreement with are:

- 1) Learning is stimulated by inquiry, i.e. driven by questions or problems
- 2) Learning is based on a process of seeking knowledge and new understanding
- 3) A student-centred approach to teaching in which the role of the teacher is to act as a facilitator
- 4) A move to self-directed learning with students taking increasing responsibility for their learning and the development of skills in self-reflection
- 5) An active approach to learning.

Meanwhile Alberta (2004: 1) simplifies the definition of Inquiry-Based Teaching. It is defined as a process where students are involved in their learning, formulate questions, investigate widely and then build new understandings, meanings and knowledge.

Based on many definitions above the construct of Inquiry-Based teaching is a process of learning which put the students as a center (student center style). It builds and develops concept, critical thinking skills, understandings, meanings and knowledge through student exploration of material by posing, investigating, and answering questions, making discoveries and uses them to solve problems. Furthermore the core ingredients IBT are:

- 1) Learning is stimulated by inquiry, i.e. driven by questions or problems
- 2) Learning is based on a process of seeking knowledge and new understanding.
- 3) A student-centred approach to teaching in which the role of the teacher is to act as a facilitator.
- 4) A move to self-directed learning with students taking increasing responsibility for their learning and the development of skills in self-reflection.
- 5) An active approach to learning.

Mostly, inquiry-based teaching is used for teaching science, because inquiry itself imitates the process of how scientist invents something. Student is treated as investigator rather than passive knowledge receiver. But inquiry-based teaching is also relevant to teach language. In language learning, inquiry-based teaching is used to contextualize language. It is in line with Lee & Fradd, 1998 in Trish et al  
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(2000: 2) statement, thus, learners engage in authentic communicative interactions—describing, hypothesizing, explaining, justifying, argumentation, and summarizing—which promote purposeful language. It is the reason why inquiry-based teaching is also suitable implemented in teaching language process.

In order for an approach to lead to method, it is necessary to develop a design for an instructional system (Richards & Rodgers: 2001: 24). According to Richards & Rodger (2001: 24) there are six design components they are (1) objectives, (2) content choice and organization: the syllabus, (3) types of learning and teaching activities, (4) learner roles, (5) teacher roles and (6) the role of instructional materials. So, to make sure inquiry-based teaching which is used in this research is a method, researcher has developed design for inquiry-based teaching. The following is design for inquiry-based teaching.

#### 1) Objectives

Objectives of inquiry-based teaching state implicitly in statement below;

An inquiry-based curriculum develops and validates ‘habits of mind’ that characterize a life-long learner: It teaches students to pose difficult questions and fosters the desire and skills to acquire knowledge about the world. Inquiry-based approach allows students to draw connections between academic content and their own lives, which can be particularly important for culturally and linguistically diverse learners (Sweetland 2008: 1).

Meanwhile according to Goodwin (1999: 3) Introducing inquiry-based strategies not only into the classroom but also into the laboratory sections of science courses will help students enhance and develop their critical-thinking and communication skills. And according to Lane (2001: 1) inquiry giving students more opportunity to reflect on their own learning, gain a deeper understanding of the course

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concepts in an integrated fashion, and become better critical thinkers. Furthermore Spronken-Smith (2007: 3) states more detail objectives of inquiry. They are critical thinking, the ability for independent inquiry, responsibility for own learning, and Intellectual growth and maturity

Based on statements above the objectives of inquiry are to develop student critical-thinking and communication skills or gain a deeper understanding of the course concepts through pose questions and connect between academic content and student lives.

## 2) Content Choices and Organization: The Syllabus

The syllabus of inquiry-based teaching is stated in the following sentences;

When teachers choose to use an inquiry-based approach, they commit to provide rich experiences that provoke students' thinking and curiosity; to plan carefully-constructed questioning sequences; to manage multiple student investigations at the same time; to continuously assess the progress of each student as they work toward their solution or final product; and to respond in-the moment to students' emerging queries and discoveries (Sweetland: 2008: 1)

From the statement above it could be inferred that the syllabus of inquiry-based teaching is centralized on provoke students' thinking and curiosity. To provoke students' curiosity and students' thinking, teacher should provide rich experiences and carefully-constructed questioning sequences.

## 3) Types of learning and teaching activities

According to Sweetland (2008: 1) types of learning and teaching in inquiry-based teaching are carefully-constructed questioning sequences and multiple student investigations.

Meanwhile according to Lane (2001: 1) the activities and assignments in an IBT classroom can be designed such that students work individually or together to

solve problems involving both in-class work and fieldwork. The learning in inquiry actively involves students in discussion, questioning, and investigation (Khan& Iqbal: 2011: 2). Furthermore according Hacker, 1999; Kuhlthau, 1988 in Alberta (2004: 4) the types of learning and teaching activities of inquiry is stated implicitly in the following sentence; through reflecting on the process during inquiry-based teaching activities, students are given opportunities to explore and understand both the cognitive and affective domains of “learning to learn”.

Based on the statements above types of learning and teaching activities in inquiry are centered on students problems solving, investigations exploration or discussion.

#### 4) Learner role

Learner role in inquiry-based teaching stated implicitly in the following sentence; This approach puts students’ questions at the center of the curriculum, and places just as much value on the component skills of research as it does on knowledge and understanding of content (Sweetland: 2008: 1). Furthermore Stewart &Rivera (1998: 4) state that student’s role is active, independent learner (investigator). Hanson and Eller also state that unlike the lecture, which places the student in a passive learning role, inquiry learning requires the student to be active in the learning process (1999: 313). And Sullivan (2008: 6) mention three learner role in inquiry, they are; picking up clues, semi-active and seeking out evidence.

Based on the statements above learner role in inquiry generally is independent learner. They are expected to be active in picking up clues and seeking evidence to solve the problems. In the other word Inquiry-based teaching

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is a student center method, means expect the student to become active problems solving.

#### 5) Teacher role

The role of a teacher in an inquiry-based classroom is quite different from the role of a teacher in a conventional classroom. Instead of providing direct instruction to students, teacher's help students generate their own content-related questions and guide the investigation that follows (Sweetland: 2008: 1). Meanwhile according to Khan & Iqbal (2011: 2) the role of teacher in inquiry changes from that of a knowledge source (directly or indirectly) to that of a facilitator of learning. Hanson and Eller (1999: 312) state that inquiry teaching changes the teacher's role; it is not conducive to the teacher constantly dispensing information. And Sullivan (2008: 6) give more detail of teacher role in inquiry, they are; combines parts that lead to "discovery", sets the environment, provides clues, foreshadows events, and evaluates students.

From the statement above it could be inferred that teacher role in inquiry-based teaching is as a facilitator in learning. As a facilitator teacher should be able to help and guide students in generating their own idea trough investigations. Furthermore in detail teacher role is to combine part that lead to discovery, sets environment, provides clues, and evaluates students.

#### 6) The role of instructional material

According to Sullivan (2008: 6) instructional material in inquiry should be well-structured and presented as a strategy for knowledge construction. So the role of instructional material in inquiry-based teaching is as a strategy for

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knowledge construction. In addition material in inquiry-based teaching should be well-structured. There is no specific kind of material that is used in inquiry, so as long as the material could be used as a strategy for knowledge construction it is not forbidden.

#### **b. Procedure of Inquiry-Based Teaching (IBT)**

There are many models of inquiry-based teaching that represent its procedure. This research uses Inquiry-Based Teaching (IBT) 5-e model to teach reading. The model is adapted from 5-e model by Warner & Myers (2011: 3). Here is the explanation of 5-e model.

##### 1) Engagement

The first of this model serves as an interest approach or motivator. It is the stage when teacher builds curiosity and provides direction for the remainder of the lesson to students. During this stage the question for investigation is developed, prior knowledge is activated, and procedures, rules are outlined.

##### 2) Exploration

This stage principally imitates guided discovery. Students make hypothesis or prediction, and share their findings with classmates and the teacher. The teacher provides scaffolding by observing, questioning, and guiding. Exploration provides concrete experience from which student learning and knowledge can be built.

##### 3) Explanation

In this stage teachers ask their students to share their discoveries and explanations in their own words. Based on the students' descriptions, teachers introduce relevant concepts, principles, and/or theories. Teachers should *commit to user*

encourage students to make connection to their experiences during the exploration phase. Together, students and teachers utilize concepts and experiences to describe phenomenon.

#### 4) Elaboration

Elaboration stage is the stage where students create connections between new concepts, principles, theories, and real-world experiences by applying them to a new situation. The application of this new knowledge provides an opportunity for students to move beyond memorization to deeper understanding of what they have learned. Small group and classroom discussions continue to play a vital role in the learning process by allowing students to share and to defend their understandings and explanations.

#### 5) Evaluation

Evaluation provides teachers an opportunity to assess students' knowledge and provide feedback on performance. Informal assessment and feedback may be provided throughout the inquiry learning process to reassure, encourage, or direct students. Formal assessments, such as tests or projects, provide the teacher with feedback and allow them to determine how much the students have learned from the activity. Students should also be encouraged to utilize self-assessment throughout the learning process (Warner & Myers 2011: 3).

### **c. Strength and Weaknesses of Inquiry-Based Teaching (IBT)**

Strength of inquiry-based teaching (IBT)

- 1) Flexible and adaptable for a variety of projects.

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- 2) Helps to build self-esteem through allowing them to be more active in their own learning process, rather than passive via traditional lecture based methods.
- 3) Reinforces and builds several skills of students in the areas of physical, emotional, and cognitive.
- 4) It can work with any age group.

Weakness of inquiry-based teaching (IBT)

- 1) Doesn't Works for all science topics.
- 2) Requires more planning, preparation, and responsiveness from the educators.
- 3) Educators must be skilled in helping students learn the art of asking a good question.
- 4) Requires more class time
- 5) May be less able to meet goals of standardized testing (Stewart& Rivera 1998: 9).

## **2. Direct Instruction (DI) Method**

### **a. Theories of Direct Instruction (DI)**

Many experts have defined direct method. The following are some definitions from the expert. Direct instruction model is teaching of facts, rules, and action sequences are most efficiently achieved through a process (Borich, D. Gary 1996). Meanwhile Joyce, Weil, & Calhoun, 2000, in Magliaro et al (2005: 1) stated that direct instruction is an instructional model that focuses on the interaction between teachers and students. Key components of DI include “modeling, reinforcement, feedback, and successive approximations”.

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Direct instruction could also be defined as a teacher centered instructional approach that is most effective for teaching basic or isolated skills (Kroesbergen & Van Luit, 2003 in Hauser. 2005: 1). The other definition of direct instruction is an approach to teaching. It is skills-oriented, and the teaching practices it implies are teacher-directed. It emphasizes the use of small-group, face-to-face instruction by teachers and aides using carefully articulated lessons in which cognitive skills are broken down into small units, sequenced deliberately, and taught explicitly (Schug et al: 2001: 5). SRA Online (2004: 1) defines direct instruction as an explicit, intensive instructional method that allows students of all abilities to become confident, capable learners. Also Slavin, 2006, in Edwin D. Bell (2007: 5) defines Direct instruction as a method that used to describe lessons in which the teacher transmits information directly to students structuring class time to reach a clearly defined set of objectives as efficiently as possible". According to Hanson and Eller (1999) Direct instruction means students spend most of their time during the school day being taught or supervised by teachers instead of working on their own (p. 309). Elliot at all (2000) state that with direct instruction teacher tell, demonstrate, explain, and assume the major responsibility for lesson's progress and they adapt the work to their students' age and abilities (p. 523).

Based on some definitions above direct instruction construct is a method of teaching in which the teacher transmits information directly to students through intensive instruction that is most effective for teaching basic or isolated skills. Furthermore direct instruction is a teacher centered method, student acts passively received the instruction from teacher.

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In order for an approach to lead to method, it is necessary to develop a design for an instructional system (Richards & Rodgers: 2001: 24). According to Richards & Rodger (2001: 24) there are five design components they are (1) objectives, (2) content choice and organization: the syllabus, (3) types of learning and teaching activities, (4) learner roles, (5) teacher roles and (6) the role of instructional materials. So, to make sure inquiry-based teaching which is used in this research is a method, researcher has developed design for direct instruction method. The following are design for direct instruction method.

1) Objectives

The objective of direct instruction state implicitly in the following statements, direct instruction is an explicit, intensive instructional method that allows students of all abilities to become confident, capable learners (SRA: 2004: 1). The basic of direct instruction model is to get students to learn as much as academic content as efficiently as possible (Cruiskshank, Bainer and Metcalf: 1998: 2).

From two statements above it could be inferred that the objective of direct instruction is to make students become capable learner as efficiently as possible.

2) Content Choices and Organization: The Syllabus

According to ([http://skola.gov.mt/ictsec/articles/Articles001\\_Learning\\_Theories.pdf](http://skola.gov.mt/ictsec/articles/Articles001_Learning_Theories.pdf): 6) principally syllabus of direct instruction methods are:

- a) Based primarily upon behaviorist and information-processing learning theories;
- b) Associated with traditional, teacher-directed forms of instruction;

Other expert state that direct instruction can be a scripted program that is very systematic with a step-by-step format requiring student mastery at each step (Hauser: 2005: 2).

Based on statements above it could be inferred that the syllabus of direct instruction is based on behaviorist and information-processing learning theories and it is centralized on very systematic teacher-directed forms of instruction.

### 3) Types of learning and teaching activities

Direct instruction also includes continuous modeling by teachers, followed by more limited teacher involvement and then fading teacher involvement as students begin to master the material (Maccini & Gagnon,2000 in Hauser: 2005.

1). Borisch (1996: 244) stated that; this (direct instruction) usually takes the form of a lecture-recitation with explanation examples, and opportunities for practice and feedback. Furthermore types of learning and teaching activities also state implicitly in the following statement;

The teacher usually spends some time lecturing; then the teacher guides the students through a complex problem, with the problem broken down into simple steps; then the students are given, one by one, the simple steps to carry out on their own; finally, the students are given one or many sample problems to accomplish on their own (University of Saskatchewan .1996. p. 3).

In conclusion type of learning and teaching activities in direct instruction is teacher guidance of problem through step-by step instruction, feedback and practice are also given as the part of direct instruction types of learning activities. If student faces a complex problem during learning process than teacher should break it down into simpler form and followed by steps of instruction.

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#### 4) Learner role

According to Sullivan (2008: 3) learners role in direct instruction are semi-active and waiting to be lead. In other word, learner is passive. Leaner waits the instruction from teacher. It is why direct instruction is teacher centered method.

#### 5) Teacher role

According to Sullivan (2008: 2) teachers role in direct instruction are orchestrates learning, guides rehearsal and evaluates students. Meanwhile Borisch (1996: 244) stated that in the direct instruction model, your role (teacher) is to pass facts, rules, or action sequences on to students in the most direct way possible. So, teacher's role is conductor in learning process. They provide effective instruction to their students in order to achieve learning goal during teaching learning process.

#### 6) The role of instructional material

Moore (2007: 2) states that lessons in direct instruction are organized with headings that clearly identify the phases of direct instruction, such as *Connect*, *Teach/Model*, *Practice Together*, *Try It!*, and *On Your Own*. The role of instructional material is also stated in Arends (1997) statement below;

A direct instruction lesson requires a most careful structuring and orchestration by teacher. To be effective the model necessitates that every detail of the skill or content be carefully defined and that demonstration and practice session be carefully planned and executed (p. 67)

It means that the role of instructional material in direct instruction is to identify the phase of direct instruction. The instructional material of direct instruction is orchestrated carefully so each phase of direct instruction could be  
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effective and successful.

#### **b. The Procedures of Direct Instruction (DI)**

The procedures of direct instruction that are used in this research are adopted from Moore (2007: 1). There are five phases' procedures of direct instruction. The phases are as follows;

##### 1) Orientation

In the first phase of direct, explicit instruction, teachers activate students' relevant prior knowledge and experiences and help them to connect it to the new knowledge they will gain from the lesson. They also inform learners about the focus of a lesson. Furthermore, teachers explain the lesson's purpose, telling students what they are expected to be able to do.

##### 2) Presentation

This is the explicit phase of the instructional model, where the teachers identify and choose a specific strategy for students, then model it exactly. For example, if the teaching objective involves a strategy such as comparing ideas, teachers might use a graphic organizer as part of their modeling, thinking aloud frequently as they complete the organizer. Throughout this and other phases of direct instruction, teachers check frequently for understanding of all students and provide immediate corrective feedback when needed. Additionally, the most effective presentations include both verbal and visual explanations. And the best presentations are grounded in students' everyday strategic thinking and stores of general knowledge, which teachers connect to the academic tasks. The purpose of this phase is to help students trap ideas.

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### 3) Structured Practice

The structured practice phase of direct, explicit instruction is the phase for teachers to begin the process of handing over to students the strategy or concept that they have modeled. Using new but related material, teachers apply the steps of a strategy or the dimensions of a concept, involving students in ways in which they cannot fail.

### 4) Guided Practice

Guided practice is the phase of instruction that helps students move toward independence. In this phase, teachers give students increasing responsibility for applying a strategy or concept to more new material. Teachers use structured response techniques to ensure that every student participates and to check the accuracy of students' responses in order to provide immediate corrective feedback. The teacher will stop support only when students show that they can work on their own.

### 5) Independent Practice

In the final phase of direct, explicit instruction, students independently practice work with a strategy or concept, applying their new knowledge in unfamiliar situations. During this phase, students have the main responsibility for completing academic tasks on their own, although teachers still monitor what they do and respond to their efforts.

## c. Strength and Weaknesses of Direct Instruction (DI)

The advantages of Direct Instruction

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The advantages of Direct Instruction in (University of Saskatchewan .1996. p. 7) are as follows:

- 1) The teacher has control of the timing of the lesson.
- 2) Students are physically easy to monitor.
- 3) The teacher has control over what will be learned, and who will learn.
- 4) The curriculum can be covered, so the teacher can say that she/he taught the material.

The disadvantages of Direct Instruction

The disadvantages of Direct Instruction in (University of Saskatchewan .1996. p 8) are as follows:

- 1) It is based on old learning theories: that students must learn simple tasks before complex ones, and that only measurable learning is worthwhile.
- 2) Students do not have a sense of the overall purpose of the simple steps.
- 3) Teachers cannot assess what the students' prior knowledge is, so will be unaware of why particular students cannot learn.
- 4) Because the students have not struggled with the problem themselves, retention of how to solve the problems is low.

### **3. Teaching Reading Using IBT Compared to DI**

Inquiry-Based Teaching is a method which is constructed based on constructivism theory. Inquiry-Based Teaching takes students as a central role in teaching learning activities. Teacher's role is as a guide to students, teacher responsibility is giving a series of questions that will lead students to make their own discoveries or build knowledge based on their understanding. Inquiry-Based

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Teaching involves psychology aspect on its phases, especially creativity. Creativity has big role in Inquiry-Based Teaching because Inquiry-Based Teaching relies on students' curiosity. Furthermore, curiosity is undeniable needed high creativity. The Inquiry-Based Teaching phases which are used in this research are engagement, exploration, explanation, elaboration, evaluation (5e). Engagement is a phase when teacher builds curiosity and provides direction for the remainder lesson for the students. Exploration is a phase when teacher guides and encourages students to make analysis and prediction about material. Explanation is a phase when teacher gives students chance to share their analysis and finding and make a conclusion based on students finding. Elaboration is a phase when students draws or connects a concept and their daily fact. Evaluation is a phase when teacher makes an evaluation of students' performance.

In contrast, Direct Instruction method is constructed based on behaviorism theory. Direct Instruction put teacher as a center in teaching learning activities. Students' role is as receiver of knowledge from teacher. They tend to be passive because Direct Instruction relies on instruction from teacher. Direct Instruction doesn't involve psychology aspect especially creativity. Direct Instruction tries as hard as possible to solve problem during teaching learning by constructs effective instruction, as a result problem that appears in learning process is breaking down into the smallest so the students can solve the problem easily. Because of that characteristic, Direct Instruction method results passive students. The Direct Instruction phases which are used in this research are orientation, presentation, structured practice, guided practice, and independent practice. Orientation phase is

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a phase when teacher activates students' prior knowledge and states the lesson goal. Presentation is a phase when teacher explain learning material. Structured practice is a phase when teacher begins to transfer knowledge through relevant material. Guided practice is a phase when teacher increases students' freedom and responsibilities in transferring knowledge. Independent practice is a phase when teacher gives evaluation to the students.

## C. Creativity

### 1. General Concept of Creativity

There are many definitions of creativity. First definition said that Psychologists tend to see creativity exclusively as a mental process but creativity is as much a cultural and social as it is a psychological event (Mihaly Csikszentmihalyi: 1999: 3). Csikszentmihalyi (1999) add that creativity is a process that can be observed only at the intersection where individuals, domains, and fields interact (p.3).

Second set definition stated that a creative solution can simply integrate existing knowledge in a different way. It is also proposes that a creative solution, either new or recombined, must have value Higgins 1999 in Eleni Sefertzi (2000: 3). Meanwhile National Advisory Committee on Creative and Cultural Education (1999: 31) explains the definition of creativity on the following statement:

Our starting point is to recognize four characteristics of creative processes. First, they always involve thinking or behaving imaginatively. Second, overall this imaginative activity is purposeful: that is, it is directed to achieving an objective.

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Third, these processes must generate something original. Fourth, the outcome must be of value in relation to the objective. We therefore define creativity as: Imaginative activity fashioned so as to produce outcomes that are both original and of value. The fourth set definition stated that creativity is the generation of imaginative new ideas, involving a radical newness innovation or solution to a problem and a radical reformulation of problems (Newell and Shaw 1972 in Sefertzi: 2000: 3). Creativity is also generally defined as useful novelty – not novelty for its own sake, but novelty that can be applied and add value to an organization's products and services (Oldham and Cummings 1996 in Heerwagen: 2002: 1).

Creativity is various defined as a characteristic that a person possesses, a product or outcome that is regarded as original and process by which an unusual outcome is obtained (Crowl: 1997: 194). Seventh set definition stated that defining creativity is no easy task but suggests that creative problem solving has two aspects; novelty and value. Novelty refers to unusual or unique methods of solving problem, and value means that creative solutions are appropriate to the problem to be solved (Glover and Burning in Hanson & Eller 1999: 354).

Furthermore in 1960 Guilford (Hanson & Eller 1999: 354) defined creative thinking in terms of convergence and divergence. Convergent thinking implies deductive reasoning (going from general to specific). Convergent thinking leads to solutions that are generally accepted as correct. Divergent thinking uses inductive reasoning (going from specific to general). Divergent thinking produces optional

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ways of solving problem, some of which may be so unique or original that they are not readily accepted.

Based on theories above it can be concluded that creativity is a creative thinking which includes convergence and divergence thinking process. Convergent thinking relates to deductive reasoning (general to specific flow of thought) that influences solutions that are generally accepted as correct. In contrast divergent thinking relates to inductive reasoning (specific to general flow of thought) that influences optional ways of solving problem, some of which may be so unique or original that they are not readily accepted. That construct is adapted from Guilford's creativity definition because that definition has complete explanation about concept of creativity. The other definitions have been summarized on the Guilford definitions. Meanwhile the indicators of creativity that are used in this research are fluency, flexibility, elaboration, and originality. Those indicators are explained below:

- a. Fluency refers to the ability of an individual to generate alternatives for a given problem.
- b. Flexibility is the ability to produce variation in ideas.
- c. Elaboration refers to the ability to elaborate or develop and refine ideas to solve problems.
- d. Originality refers to individual's ability to generate original and inconspicuous solutions.

Those indicators are also adapted from Torrance. Torrance developed those criteria from Guilford definition, so the indicators are in line with the construct of creativity that is used in this research.

## 2. Characteristics of creative person

According to Stenberg 1988 in Hanson & Eller (1999: 354) typically creative individuals are:

- a. Are willing to take chances.
- b. Reject limitations and often try the impossible.
- c. Appreciate the arts.
- d. Have an unusual ability to make unique things.
- e. Question social norms.
- f. Are willing to actively address unpopular issue.
- g. Are inquisitive and curious.

## 3. Types of creativity

According to Boden (1998), there are three main types of creativity, involving different ways of generating the novel ideas:

- a. The “combinational” creativity that involves new combinations of familiar ideas.
- b. The “exploratory” creativity that involves the generation of new ideas by the exploration of structured concepts.
- c. The “transformational” creativity that involves the transformation of some dimension of the structure, so that new structures can be generated (Sefertzi: 2000: 3).

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#### 4. Point of View in Understanding Creativity

Creativity is not an innate quality of only a few selected people. Creativity is present in everyone. It can be learned, practiced and developed by the use of proven techniques which, enhancing and stimulating the creative abilities, ideas and creative results, help people to move out of their normal problem-solving mode, to enable them to consider a wide range of alternatives and to improve productivity and quality of work (Sefertzi: 2000: 3).

From statement above it could be inferred that creativity is not for particular person, e.g. genius person. Creativity could be improve and develop and each human possessed creativity as part of their brain system. To understand more clearly about creativity concept, there are two point of view in understanding the nature of creativity. According to Heerwagen (2000: 4) the points of view are:

##### a. **Cognitive Aspects of Creativity: Ways of Thinking, Mental Models, and Metaphors**

The cognitive processes that generate creative outcomes do not differ from everyday thinking. What differs is the context in which the creative ideas arise: The context both motivates and determines the value and usefulness of the ideas (Buchanan 2001 in Heerwagen: 2002: 4). The cognitive processes try to explain the process of creativity occur in brain system and explain the importance of creativity in problem solving. The cognitive aspect involves ways of thinking, mental model and metaphor (Heerwagen, 2002: 4).

##### 1) Ways Of Thinking

There are two different ways of thinking related to creative problem solving. One is convergent or analytical thinking and the other is lateral or associative thinking (Guilford 1967 in Heerwagen, 2000: 4). While convergent thinking is the

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process of critiquing and turning the ideas into useful products, lateral thinking is the source of ideas and insights. Both processes are essential for creative work outcomes.

## 2) Mental Models

Another important cognitive component of creativity is the ability to use different mental models. Shifting in different mental models could be explained as the ability to shift from one understanding of a concept to a new and different perspective (Chi 1997 in Heerwagen, 2000: 4).

## 3) Metaphors

According to Chi 1997 in Heerwagen (2000: 4) metaphors aid the shift of perspective and are thus an important form of creativity. In other word metaphors is important in perspective shifting. Furthermore metaphor has important role in creative problem solving. It is useful because metaphor help to connect or relate two seemingly unrelated things.

An important implication of the research on the creativity and mental functioning is that no one kind of cognitive process is responsible for creative thought: it draws on many kinds of processes Dunbar 1997 in Heerwagen (2000: 4). It means three elements of cognitive process above could not stand alone to explain creative thought. Those three elements should be united to view creativity thought process completely.

### **b. Personal Variation in Creativity**

Although the cognitive processes involved in creativity are the same for everyone, it is still evident that some people are consistently more creative than

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others and that people differ in their creative outputs over time (Dacey and Lennon 1998 in Heerwagen (2000: 4). It means that cognitive process prove that creativity mechanism is universal but degree of creativity in each person is differ. Thus, there are individual differences as well as situational factors that influence creativity of individuals. These differences are related to many factors, including personality, experience, interests, and knowledge (Heerwagen, 2000: 4). In other word the differences in degree of creativity is influenced by many factors such as personality, experience, interest, and knowledge.

## **5. The Interaction Between Creativity and Other Psychological Aspects**

### *a. Intelligence and creativity:*

Intelligence and creative behavior of individuals are often related. Except in rare circumstances, at least average intelligence seems to be necessary for people to be exceptionally creative (Rothstein, 1990 in Kenneth and Eller, 1999: 355). It means creativity and intelligence have strong correlation. In general circumstances to be very creative someone must have average intelligence. But creativity cannot be measured using intelligence tests and cannot be associated with personality types such as artist or musicians.

### *b. Knowledge*

Creativity also relies heavily on a knowledge base. As noted by Buchanan 2000 in Heerwagen (2000: 4), background knowledge is an essential element that distinguishes deliberate acts of creation from “accidental creativity.” Background knowledge not only aids idea generation, it also supports the valuation component of creativity; it places the idea in a context and suggests why it is important (Kuhn

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1970 in Heerwagen, 2000: 4). Those statements are in line with Kenneth and Eller (1999: 355) statement; most agree that exceptionally creative people typically spend a great deal of time learning and studying their fields and pursuing these talents. It could be inferred that being creative means also being knowledgeable. Because one of creativity source is from knowledge.

c. *Motivation and preparation*

Similar to learning problem solving and most other aspect of academe, creativity appears to require considerable effort and motivation (Kenneth and Eller, 1999: 355). It means to have peak performance of creativity someone have to practice and to hone it for years.

## 6. The Importance of Creativity in Education

The importance of creativity in education is stated impliedly on following statements:

“By providing rich and varied contexts for pupils to acquire, develop and apply a broad range of knowledge, understanding and skills, the curriculum should enable pupils to think creatively and critically, to solve problems and to make a difference for the better. It should give them the opportunity to become creative, innovative, enterprising and capable of leadership to equip them for their future lives as workers and citizens. It should enable pupils to respond positively to opportunities, challenges and responsibilities, to manage risk and cope with change and adversity.” Source: UK National Curriculum Handbook [p 11-12]; Wayne Morris: 2006: 3)

Second statement states that:

Problem-solving is now a key skill in education. Developing young people with abilities to solve problems is fundamental to preparing them for an independent life. Creative education can contribute directly to problem-solving abilities in all disciplines and fields of work. The value of creative thinkers is not only that they solve problems we know we have, but that they find problems we had not imagined and lead us on to new horizons. More opportunities should be given to young people to sense and define problems for themselves, as well as identifying solutions to given problems. More opportunities should be given to

the generation of ideas; looking at the world in different ways and playing with different possibilities and alternative solutions. Familiarity with a wide range of problem-solving activities can lead to greater competence in seeing underlying patterns and analogies (National Advisory Committee on Creative and Cultural Education: 1999: 38).

Meanwhile Hanson & Eller (1999: 353) state that educational psychologists agree that creativity, like problem solving, is very important in the educational process.

From three statements above it could be concluded that creativity plays important role on education. Creativity can contribute directly to problem solving abilities in all divisions and field work. Students who have high creativity are expected to be good problem solver. Good problem solver also means the chance to succeed for students in education are bigger.

#### **D. Review of Related Research**

There are six previous studies which are related to the writer's study. The first thesis is written by Dwi Cahyono (2012) that entitled "The Effectiveness Of Inquiry-Based Teaching In Teaching Reading Viewed From Students' Self-Actualization (An Experimental Research In The Eleventh Grade Students Of SMA Muhammadiyah 1 Sragen In The Academic Year Of 2011/ 2012). The result of the study showed that the students who were taught by using IBT had better reading ability than those who were GTM.

The second thesis entitled, "The Effectiveness of Inquiry-Based Teaching (5 E) in Teaching Reading Viewed from Students' Locus of Control. (An Experimental Study on the First Year Students of SMK N I Banyudono in the Academic Year of 2011/2012)." The thesis was conducted by Wahyu Trimastuti

in 2011. The writer found out that the students who were taught using IBT showed enthusiasm and participation toward learning process. On the other hands, the students who were taught using conventional strategy were more silent and mostly did not participate in learning process.

The third thesis entitled “The Effectiveness of Inquiry Based Teaching to Teach Reading Viewed from Students’ Intelligence: An Experimental Research at the Eighth Grade of SMP Negeri 13 Surabaya in the Academic Year of 2011/2012. This thesis was conducted by Safitri Wikan Nawangsari in 2011. The result of the research shows that learning process using IBT contributes better result than GTM.

On the other thesis that entitled “Improving the Students’ Reading Skill by Using Inquiry-Based Teaching and Learning Method” (A Classroom Action Research at the Eight Grade of SMPN 2 Barat-Magetan in 2011/2012 Academic Year). This thesis was conducted by Sri Sulastri in 2011. The result of the research shows that IBT was effective improving students reading skills in SMPN 2 Barat-Magetan.

In the thesis entitled “Using inquiry-based Teaching strategy to improve descriptive writing ability of the second year students of MTs. Al Ikhwan Klitih Demak”. That is written by Muhammad Badrus Sholeh (2007). And in this case, IBT was effective in enhancing the students’ descriptive writing ability. It means IBT succeeded in improving students’ descriptive ability.

In the last review related study, the thesis entitled “The Effectiveness Of Inquiry-Based Teaching And Learning To Teach Reading Viewed From Students’

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Motivation (An Experimental Study In SMPN 26 Surakarta In 2008/2009 Academic Year)”. This thesis was conducted by Vera Dwi Martani in 2008. The result of the study shows that NHT successful in improving students reading comprehension.

Based on the review related study above, there are similarities and differences between those previous studies and the writer’s present study. The similarities are type of the study that written by Dwi Cahyono, Wahyu Trimastuti, Vera Dwi Martani and Safitri Wikan Nawangsari; all of them are experimental studies. It’s different with the thesis that written by Muhammad Badrus Sholeh, and Sri Sulastri that used other studies. On the other hands, on their population and the subject of the study or their learning material as the dependent variable while the writer’s present study would like to have an experimental research dealing with English subject with different population.

## **E. Rationale**

- I. The difference between the Inquiry-Based Teaching method and Direct Instruction Method in teaching reading.

Inquiry-based teaching (IBT) is process of learning which put the students as a center (student center style). It builds and develops concept, critical thinking skills, understandings, meanings and knowledge trough student exploration of material by posing, investigating, and answering questions, making discoveries and uses them to solve problems. Inquiry-based teaching is method of teaching-learning process that reinforces and builds several skills of students in the areas of

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physical, emotional, and cognitive. An Inquiry-based teaching (IBT) learning type involves discussion. Through discussion students are expected to promote their physiological aspects for example, self-esteem, and creativity. Furthermore Inquiry-based teaching (IBT) emphasizes on student problem solving ability based on their critical thinking. It is why inquiry-based teaching put the students as a center (students' center) of learning because students are expected to be active learning. In contrast of inquiry-based teaching (IBT) direct instructional (DI) method is a method in which the teacher transmits information directly to students through intensive instruction. Furthermore direct instruction is a teacher centered method, student acts passively received the instruction from teacher. Direct instruction (DI) method doesn't promote students' psychological aspects. Direct instruction (DI) method creates passive students in output. It is because the students have not struggled with the problem themselves they rely on teacher instruction which makes retention of how to solve the problems is low. Thus, it is assumed that inquiry-based teaching (IBT) method is more effective than Direct Instruction Method in teaching reading.

2. The difference in reading achievement between the students having high creativity and low creativity.

Based on definition of creativity by Guilford 1960 in Hanson & Eller (1999: 354) creativity is divided in creative thinking in terms of convergence and divergence. Convergent thinking implies deductive reasoning (going from general to specific). Convergent thinking leads to solutions that are generally accepted as correct. Divergent thinking uses inductive reasoning (going from specific to

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general). Divergent thinking produces optional ways of solving problem, some of which may be so unique or original that they are not readily accepted. Convergent and divergent thinking ability is very useful in comprehending text, because comprehending text itself is combining information from text or printed verbal symbols. The process of combining information needs deductive and inductive reasoning. It involves generalizing and specifying information in text and forms it into new ones. So, students with high creativity means their convergent and divergent thinking are high and are expected to have better comprehension ability and to be better problem solver (because their divergent thinking is also high) in facing problem during reading process.

In contrast students who have low creativity also have low divergent and convergent thinking. Students who have low divergent and convergent thinking will be poor readers. Their ability in comprehension and their ability in solving problems during reading process are also low. It means their achievement in reading is also low.

3. The interaction between teaching methods and the students' creativity in teaching reading.

One of the characteristics of students who have high creativity is inquisitive and curious. Furthermore inquiry-based teaching's (IBT) learning activities emphasize on students' problem solving based on critical thinking and discussion. Students who have high creativity also have the ability to solve problem better than students who have low creativity. Moreover inquiry-based teaching (IBT) principally combines the curiosity of students to explore material. There are the

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reasons why students who have high creativity are appropriate to be taught using inquiry-based teaching (IBT) better than students who have low creativity. On the other hand, direct instruction method (DI) emphasizes on effective instruction from teacher. Students are passive; they wait for the teachers' instruction. Direct instruction method (DI) doesn't involve students' curiosity and problem solving ability in learning process which creativity is needed. It means that direct instruction (DI) method is appropriate for students who have low creativity than for students who have high creativity. Therefore, it can be assumed that there is an interaction between teaching methods and the students' creativity in teaching reading.

#### **F. Hypothesis**

After discussing the teoritical review and rationale, the hypotheses of the study are:

1. In general, inquiry-based teaching (IBT) is more effective than Direct Instruction (DI) Method in teaching reading in the second year students of SMAN 1 Geger Madiun in the academic year of 2012/2013;
2. Students with high creativity have better reading comprehension than students with low creativity in the first year students of SMAN 1 Geger Madiun in the academic year of 2012/2013;
3. There is an interaction between teaching methods and the students' creativity in teaching reading to the first year students of SMAN 1 Geger Madiun in the academic year of 2012/2013.

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## CHAPTER III

### RESEARCH METHODOLOGY

In this chapter the researcher explains research methodology and design that are used. Research method is defined as overall research design and strategy (Burke & Christensen: 2000: 126). Research method is very important in a research. Each research method has different design and each of them provides different procedure and also different use. It is why appropriate research design is needed to answer research questions properly. This chapter will explain about: place and time of research, research design, population, sample and sampling, research instruments, variable, data collection techniques, and data analysis.

#### A. The Place and Time of The Study

The research will be held at SMAN 1 Geger Madiun from February 2012 up to May 2012. The following is the time schedule for the research.

Table 1. Research Frame Time

Activities	July '11	Aug '11	Sep '11	Oct '11	Nov '11	Dec '11	Jan '12	Feb '12	Mar '12	Apr '12
Proposal	X	X	X	X	X					
Developing instrument						X	X			
Doing the treatment								X	X	
Submitting the document									X	X

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## **B. The Method of Research**

This research is experimental research and using simple factorial design. According to Burke & Christensen (2000: 242) a factorial design is one in which two or more independent variables are simultaneously studied to determine their independent and interactive effect on the dependent variable. Experimental research designed for establishing causal relationship (247), furthermore factorial design which is one of experimental design develop each of two independent variables has two values on its simplest design (Ary et al. 1985: 247& 279). Furthermore Tuckman (1997: 133 & 135) state that factorial designs are modifications of the true experimental design, with further complication that additional independent variables are included in addition to the treatment variable. In addition, within this design, it is possible to assess the effect of each independent variable separately as well as their conjoint or simultaneous effect or interaction.

Based on the statements above the factorial design 2 by 2 is used in this research since this research simultaneously investigate several independent variables and dependent variable and interaction between them. Factorial design is considered as most appropriate research design to find out interactive effect among those variables.

## **C. Research Variables**

When variables are divided based on their use within the research under consideration, they are classified as independent or dependent variables (Ary et al, *commit to user*)

1985: 30). So, the classification of variables into independent and dependent is based on use. Independent variable itself is defined as variable that is presumed to cause a change in another variable (Burke & Christensen, 2000: 22). In this research there are two independent variables that are used; teaching methods (Inquiry-based learning and direct instruction method) and creativity. Meanwhile dependent variable is defined as a variable that is presumed to be influenced by one or more independent variables (Burke & Christensen, 2000: 22). In this research the dependent variable is reading comprehension. Furthermore when we discuss the experimental method independent variable can be classified into two types of variables, they are active variable and attribute variable (Ary et al, 1985: 31). Active variable is defined as one that can be directly manipulated by researchers, for instance method of teaching (Ary et al, 1985: 31-32). On the other hand an attribute variable is one that cannot be actively manipulated and attribute variable also means independent variables which has been divided into levels (Ary et al, 1985: 32&279).

Based on the explanation above teaching methods (inquiry-based teaching and direct instruction) are active variables and creativity is attribute variable. Furthermore creativity is classified into two levels; high creativity and low creativity. To determine creativity classification is based on the mean of creativity test. Fifty percent scores of creativity test which are above the mean will be considered as high creativity meanwhile fifty percent scores of creativity test which are below the mean will be considered as low creativity.

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## **D. Population, Sample, and Sampling**

### **1. Population**

Population is defined as the large group to which a researcher wants to generalize the sample results (Burke & Christensen, 2000: 158). The population of the research is the tenth grade of SMAN 1 Geger Madiun in the 2011-2012 academic year which consist of eight classes each class consists of thirty two students. So the population consist of two hundred and fifty five (256) students.

### **2. Sample**

Sample is defined as a set of elements taken from a larger population (Burke & Christensen, 2000: 158). Samples that will be used in this research are two classes of the tenth grade. One class will be treated as experimental class and another class will be treated as control class.

### **3. Sampling**

The technique that was used to get the sample was *cluster random sampling*. *Cluster random sampling* is a form of sampling in which clusters (a collective type of unit that includes multiple elements, such as school, classrooms, etc) rather than single unit elements (such as individual students, teacher, etc) are randomly selected (Burke & Christensen, 2000: 172). Furthermore cluster random sampling which is used in this research is one-stage cluster sampling. One-stage cluster sampling is a set of clusters is randomly selected from the larger set of all clusters in the population (Burke & Christensen, 2000: 173).

Sampling (cluster random one-stage) is done to get two classes as experimental and control. To determine experimental and control class researcher

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makes a rank list from those two classes and then makes a lot for each rank position for experimental class, the rest of lottery remains automatically is considered as control class (randomized matching). For example, the first rank position for experimental class is lot from the first position of class 1 and class 2. So, the researcher doesn't know whether the first rank of experimental class would be filled from class 1 or from class 2. The next arrangement will be also done with same way. Each class (experimental and control class) should consists two group levels, students who had high creativity and those who had low creativity. One of the two classes (experimental class) will be taught by using inquiry-based teaching (IBT) method, and the other class (control class) will be taught by using direct instruction (DI) method. Therefore, there were four groups (1) students having high creativity who were taught by using inquiry-based Teaching (IBT) method; (2) students having high creativity who were taught by direct instruction (DI) method ; (3) students having low creativity who were taught by using inquiry-based teaching (IBT) method; (4) students having low creativity who were taught by using direct instruction (DI) method.

#### **E. Technique of Collecting the Data**

Data collecting is a process of obtaining the primary data in research. For obtaining the data, the writer used document about the creativity test and the reading test.

In order to know students creativity score, the researcher got the document from school related to creativity test. The creativity test was performed by Mrs.

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Martini SP.d who has certificate in performing and analyzing Psychology test (including the creativity test).

Furthermore reading is used as instrument to measure students' reading comprehension ability. Reading test will be used in post test after subjects are treated with teaching methods as independent variables (inquiry-based teaching and direct instruction). In order to be a good instrument reading test should be both valid and reliable. Validity of test refers to judgment of the appropriateness of the interpretation and actions made on the basis of a test score or scores (Burke & Christensen, 2000: 106). According to Ary et al (1985: 213) validity is concerned with the extent to which an instrument measures what one thinks it is measuring. In conclusion validity test measure and judge appropriateness of the test interpretations. Is the test really measure the indicators that are used or the test interpret differently from the indicators? Those are question that should be answered in test validity. Furthermore to determine whether reading test that is used is valid or not it will be analyzed with the Biserial Point Correlation formula (Ngadiso, 2006: 2) as follows:

$$r_o = \frac{\bar{X}_i - \bar{X}_t}{s_t} \sqrt{\frac{pi}{qi}}$$

Where:

$$s_t = \sqrt{\frac{\sum x^2}{n}}$$

The item of reading test is valid if  $r_o$  is higher than  $r_t$  at the level of significance  $\alpha = 0.05$ .

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On the other hand, reliability of test refers to consistency or stability of the scores we get from our test and assessment procedure (Burke & Christensen, 2000: 100). Ary et al (1985: 225) define reliability as the degree of consistency with which it measures whatever it is measuring. In conclusion reliability test is consistency of test result. Test with high reliability means the result of that test has high consistency and stability. Furthermore internal reliability is used because it is measure a single concept or constructs (Burke & Christensen, 2000: 104). In addition Kuder and Richardson Formula ( $KR_{20}$ ) will be used to measure reliability as follows:

$$r_{kk} = \frac{k}{k-1} \left( 1 - \frac{\sum pq}{s^2} \right)$$

The reading test is reliable if  $r_o$  is higher than  $r_t$  at the level of significance  $\alpha = 0.05$

## F. The Technique of Analyzing the Data

The technique used in analyzing the data was descriptive analysis and inferential analysis. Descriptive analysis was used to know the mean, median, mode, and standard deviation of the scores of the reading test.

### 1. ANNOVA

The ANNOVA requires normal and homogenous data. The normality and homogeneity of data are analyzed with this following formula:

Formula to analyze homogeneity:

$$s = \frac{\sum}{\Sigma}$$

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Formula to analyze normality:

$$\left| \frac{L_o - s}{L_t - L_o} \right|$$

While:

$$\frac{L_o - s}{L_t - L_o}$$

(Ngadiso, 2006: 16)

Normality is analyzed by comparing the highest value of  $\left| \frac{L_o - s}{L_t - L_o} \right|$  ( $L_o$ ) and  $L_t$ . If  $L_o < L_t$  Sample is in normal distribution.

Inferential analysis that will be used is analysis of variance (ANOVA) and Tuckey test. Furthermore kind of ANNOVA that will be used is multifactor analysis of variance because the research design is factorial design. It is in line with Ary et al (1985: 170) statement; the results of factorial design are analyzed by means of a multifactor analysis of variance. Moreover the end of these analyses will be three *F*-ratios, two of which indicate the significance of the two main effects and the third that of the interaction effect (Ary et al, 1985: 279). So, the result of ANNOVA analyses will be used to answer the two main effects (teaching methods and creativity on reading) and the interaction between variables (teaching methods and creativity). The research design can be viewed from the table below (Ngadiso, 2006: 19):

Table 2. The Design of Multifactor Analysis of Variance

Teaching Method	Inquiry-Based Teaching (A <sub>1</sub> )	Direct Instruction (A <sub>2</sub> )	
Creativity			
High (B <sub>1</sub> )	A <sub>1</sub> B <sub>1</sub>	A <sub>2</sub> B <sub>1</sub>	B <sub>1</sub>
Low (B <sub>2</sub> )	A <sub>1</sub> B <sub>2</sub>	A <sub>2</sub> B <sub>2</sub>	B <sub>2</sub>
	A <sub>1</sub>	A <sub>2</sub>	

Note:

a. Independent variables:

- 1) Active variables: Teaching methods (inquiry-based teaching and Direct Instruction)

Experimental group:

The class which is taught by inquiry-based teaching (IBT) method

Control group:

The class which is taught by Direct Instruction (DI) Method

- 2) Attribute variable:  
Students' creativity
- b. Dependent variable:  
Reading comprehension

Note:

$A_1B_1$  : the mean score of reading test of students having high creativity that is taught by using inquiry-based teaching (IBT).

$A_2B_1$  : the mean score of reading test of students having creativity that is taught by using Direct Instruction (DI).

$A_1B_2$  : the mean score of reading test of students having low creativity that is taught by using inquiry-based teaching (IBT)

$A_2B_2$  : the mean score of reading test of students having low creativity that is taught by using Direct Instruction (DI)

$A_1$  : the mean score of inquiry-based teaching

$A_2$  : the mean score of direct instruction

$B_1$  : the mean score of students who have high creativity

$B_2$  : the mean score of students who have low creativity

The data are analyzed using the following ways:

1. The total sum of squares

$$\sum x_t^2 = \sum X_t^2 - \frac{(\sum X_t)^2}{n}$$

2. The sum of squares between groups

$$\sum x_b^2 = \frac{(\sum X_1)^2}{n_1} + \frac{(\sum X_2)^2}{n_2} + \frac{(\sum X_3)^2}{n_3} + \frac{(\sum X_4)^2}{n_4} - \frac{(\sum X)^2}{N}$$

3. The sum of squares within groups

$$\sum x_w^2 = \sum x_t^2 - \sum x_b^2$$

4. The between-columns sum of squares

$$\sum x_{bc}^2 = \frac{(\sum X_{c1})^2}{n_{c1}} + \frac{(\sum X_{c2})^2}{n_{c2}} - \frac{(\sum X)^2}{N}$$

5. The between-rows sum of squares

$$\sum x_{br}^2 = \frac{(\sum X_{r1})^2}{n_{r1}} + \frac{(\sum X_{r2})^2}{n_{r2}} - \frac{(\sum X)^2}{N}$$

6. The sum of squares interaction

$$\sum x_{int} = \sum x_b^2 - (\sum x_{bc}^2 + \sum x_{br}^2)$$

7. df for between-columns sum of squares = C-1

df for between-rows sum of squares = R-1

df for interaction (C-1) (R-1)

df for between-groups sum of squares = G-1

df for within-columns sum of squares =  $\sum (n-1)$

df for total sum of squares = N-1 *commit to user*

Where

C = the number of columns

R= the number of rows

G= the number of groups

n= the number of subjects in one group

N= the number of subjects in all groups

(Ngadiso, 2006: 20)

Table 3. Summary of a 2X2 Multifactor Analysis of Variance

Source of variance	SS	Df	MS $(MS = \frac{SS}{df})$	F <sub>o</sub>	F <sub>t(0,5)</sub>	F <sub>t(0,1)</sub>
Between Columns						
Between rows						
Columns by rows (interaction)						
Between groups						
Within groups						
Total						

## 2. Tuckey Test

Tuckey's test is done to look for  $q_0$  which is found by comparing the difference between the means by the square root of the ratio of the within group variation and sample size. Tuckey test is done to find out means are significantly different from one another. The purpose of tuckey test is to strengthen data analyses result from ANNOVA. The general formula is as follows (Ngadiso, 2006: 21)

$$q = \frac{\bar{x}_i - \bar{x}_j}{\sqrt{s_w^2/n}}$$

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- a. Comparing two means from two groups ( $A_1$  and  $A_2$ )

Inquiry-based teaching method is compared to Direct Instruction Method.

$$q = \frac{\bar{X}_{c1} - \bar{X}_{c2}}{\sqrt{\text{ErrorVariance}|n}}$$

- b. Comparing two means between  $A_1B_1$  and  $A_2B_1$

Inquiry-based teaching method is compared to Direct Instruction Method for students having high creativity

$$q = \frac{\bar{X}_{c1r1} - \bar{X}_{c2r1}}{\sqrt{\text{ErrorVariance}|n}}$$

- c. Comparing two means between  $B_1$  and  $B_2$

High creativity is compared with low creativity

$$q = \frac{\bar{X}_{r1} - \bar{X}_{r2}}{\sqrt{\text{ErrorVariance}|n}}$$

- d. Comparing two means between  $A_1B_2$  and  $A_2B_2$

Inquiry based teaching (IBT) compared to Direct Instruction for students having low creativity

$$q = \frac{\bar{X}_{c1r2} - \bar{X}_{c2r2}}{\sqrt{\text{ErrorVariance}|n}}$$

or

$$q = \frac{\bar{X}_{c2r2} - \bar{X}_{c1r2}}{\sqrt{\text{ErrorVariance}|n}}$$

The analysis result of the computation is (1)  $q_0$  is compared to  $q_t$ , if  $q_0 > q_t$ , the difference is significant; (2) to know which one is better, the means are compared.

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## G. Statistical Hypothesis

In this study the writer proposes for hypotheses. These hypotheses are based on the formulation of the problems are presented in the previous chapter and will be illustrated through null hypotheses.

1. The difference between Inquiry-Based Teaching method ( $A_1$ ) and Direct Instruction method ( $A_2$ ) for teaching reading.

$$H_0 = \mu_{A_1} = \mu_{A_2}$$

$$H_a = \mu_{A_1} > \mu_{A_2}$$

Note:

$H_0$ : There is no difference between Inquiry-Based Teaching method ( $A_1$ ) and Direct Instruction method ( $A_2$ ) for teaching reading.

$H_a$ : There is a significant difference between Inquiry-Based Teaching method ( $A_1$ ) and Direct Instruction method ( $A_2$ ) for teaching reading.

2. The difference on student's reading comprehension between those who have high creativity ( $B_1$ ) and those who have low creativity ( $B_2$ ).

$$H_0 = \mu_{B_1} = \mu_{B_2}$$

$$H_a = \mu_{B_1} > \mu_{B_2}$$

Note:

$H_0$ : There is no difference on students' reading comprehension between those who have high creativity ( $B_1$ ) and those who have low creativity ( $B_2$ ).

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$H_a$ : There is a significant difference on students' reading comprehension between those who have high creativity ( $B_1$ ) and those who have low creativity ( $B_2$ ).

3. Interaction between the two variables, teaching methods (A) and students' creativity (B) in teaching reading.

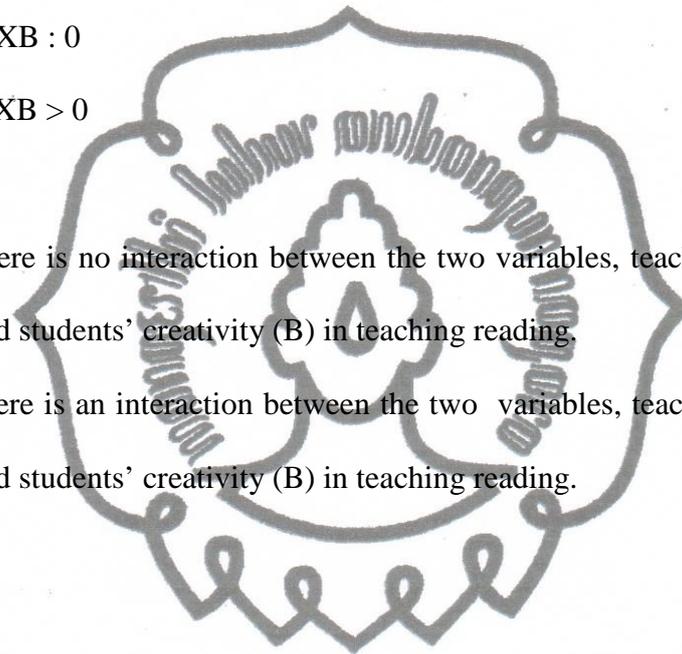
$H_o$  :  $AXB : 0$

$H_a$  :  $AXB > 0$

Note:

$H_o$ : There is no interaction between the two variables, teaching methods (A) and students' creativity (B) in teaching reading.

$H_a$ : There is an interaction between the two variables, teaching methods (A) and students' creativity (B) in teaching reading.



## CHAPTER IV

### THE RESULT OF THE STUDY

This chapter presents the result of the study. It is divided into four parts, the description of data, normality, and homogeneity test, hypothesis test, and the discussion of the result of the study.

#### A. The Description of the Data

The data described here are the result of the reading test. The description includes the mean, the mode, the median, the standard deviation and frequency distribution followed by histogram and polygon. Based on the group analyzed, the descriptions of the data are divided into eight groups, they are as follows:

1. The data of the reading test of the students who are taught by Inquiry-based teaching ( $A_1$ ).
2. The data of reading test of the students who are taught by direct instruction ( $A_2$ ).
3. The data of reading test of the students having high creativity who are taught by IBT and DI ( $B_1$ ).
4. The data of reading test of the students having low creativity who are taught by IBT and DI ( $B_2$ ).
5. The data of the reading test of the students having high creativity who are taught by inquiry-based teaching ( $A_1B_1$ ).
6. The data of the reading test of the students having high creativity who are taught by direct instruction ( $A_2B_1$ ).

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7. The data of the reading test of the students having low creativity who are taught by inquiry-based teaching ( $A_1B_2$ ).
8. The data of the reading test of the students having low creativity who are taught by direct instruction ( $A_2B_2$ ).

The data of each group are presented as follows:

1. The data of the reading test of the students who are taught by inquiry-based teaching ( $A_1$ ).

Descriptive analysis of the data of  $A_1$  shows that the score is 18 up to 33. The mean is 25.56, the standard deviation is 4.85, the mode is 30.2, and the median is 26.5. The frequency distribution of the data of  $A_1$  is in table 4; histogram and polygon are presented in figure 1.

Table 4. Frequency Distribution of Data  $A_1$

Class Limits	Class Boundaries	Midpoint ( $X_i$ )	Frequency ( $f_i$ )	Percentage
18-20	17.5-20.5	19	7	21.875
21-23	20.5-23.5	22	6	18.75
24-26	23.5-26.5	25	3	9.375
27-29	26.5-29.5	28	7	21.875
30-32	29.5-32.5	31	8	25
33-35	32.5-35.5	34	1	3.125
			32	100

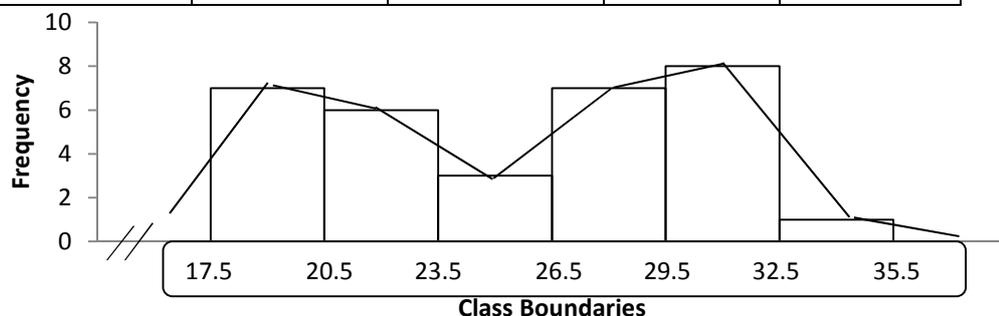


Figure 1. Histogram and Polygon of Data  $A_1$

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2. The data of the reading test of the students who are taught by direct instruction ( $A_2$ ).

Descriptive analysis of the data of  $A_2$  shows that the score is 18 up to 30. The mean is 24.5, the standard deviation is 2.96, the mode is 24.86, and the median is 25.38. The frequency distribution of the data of  $A_2$  is in table 5; histogram and polygon are presented in figure 2.

Table 5. Frequency Distribution of Data  $A_2$

Class Limits	Class Boundaries	Midpoint ( $X_i$ )	Frequency ( $f_i$ )	Percentage
18-20	17.5-20.5	19	3	9.375
21-23	20.5-23.5	22	8	25
24-26	23.5-26.5	25	13	40.625
27-29	26.5-29.5	28	7	21.875
30-32	29.5-32.5	31	1	3.125
33-35	32.5-35.5	34	0	0
			32	100

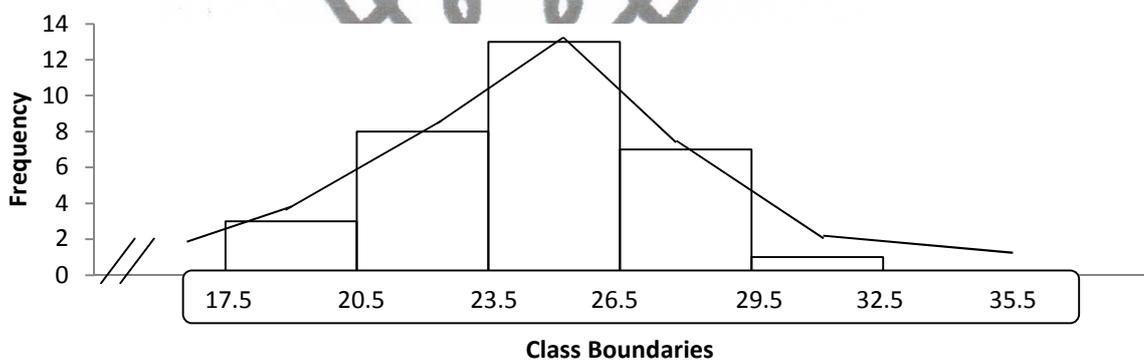


Figure 2. Histogram and Polygon of Data  $A_2$

3. The data of the reading test of the students having high Creativity who are taught by IBT and DI ( $B_1$ ).

Descriptive analysis of the data of  $B_1$  shows that the score is 18 up to 33. The mean is 26.22, the standard deviation is 4.30, the mode is 22.17, and the

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median is 26.86. The frequency distribution of the data of  $B_1$  is in table 6; histogram and polygon is in figure 3.

Table 6. Frequency Distribution of Data  $B_1$

Class Limits	Class Boundaries	Midpoint ( $X_i$ )	Frequency ( $f_i$ )	Percentage
18-20	17.5-20.5	19	3	9.375
21-23	20.5-23.5	22	8	25
24-26	23.5-26.5	25	4	12.5
27-29	26.5-29.5	28	8	25
30-32	29.5-32.5	31	8	25
33-35	32.5-35.5	34	1	3.125
			32	100

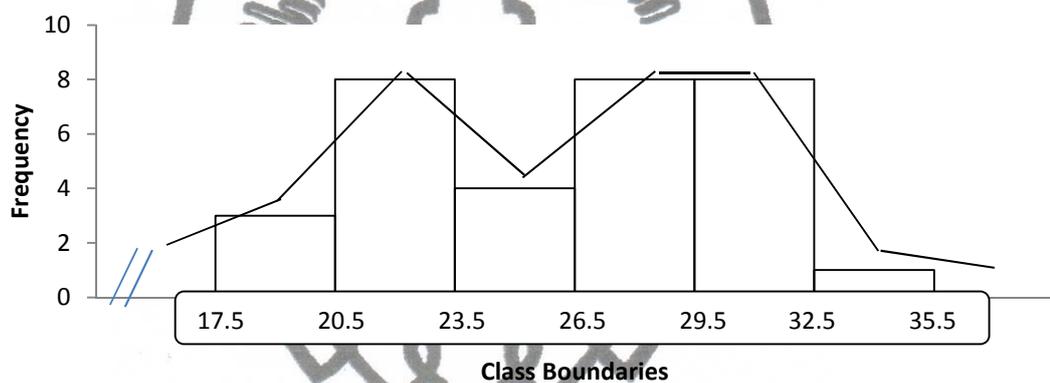


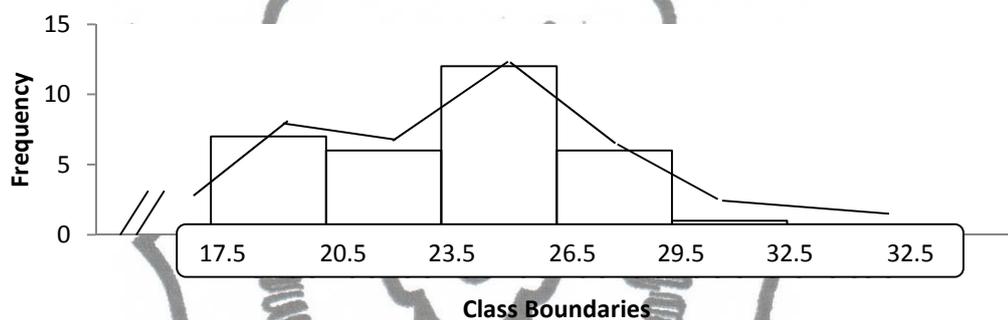
Figure 3. Histogram and Polygon of Data  $B_1$

- The data of the reading test of the students having low creativity who are taught by IBT and DI ( $B_2$ ).

Descriptive analysis of the data of  $B_2$  shows that the score is 18 up to 30. The mean is 23.86, the standard deviation is 3.86, the mode is 25, and the median is 24.5. The frequency distribution of the data of  $B_2$  is in table 7; histogram and polygon is in figure 4.

Table 7. Frequency Distribution of Data  $B_2$ 

Class Limits	Class Boundaries	Midpoint ( $X_i$ )	Frequency ( $f_i$ )	Percentage
18-20	17.5-20.5	19	7	21.875
21-23	20.5-23.5	22	6	18.75
24-26	23.5-26.5	25	12	37.5
27-29	26.5-29.5	28	6	18.75
30-32	29.5-32.5	31	1	3.125
33-35	32.5-35.5	34	0	0
			32	100

Figure 4. Histogram and Polygon of Data  $B_2$ 

5. The data of reading test of the students having high creativity who are taught by inquiry-based teaching ( $A_1B_1$ ).

Descriptive analysis of the data of  $A_1B_1$  shows that the score is 27 up to 33. The mean is 30.13, the standard deviation is 1.75, the mode is 30.5, and the median is 30.17. The frequency distribution of the data of  $A_1B_1$  is in table 8; histogram and polygon are presented in figure 5.

Table 8. Frequency Distribution of Data  $A_1B_1$ 

Class Limits	Class Boundaries	Midpoint ( $X_i$ )	Frequency ( $f_i$ )	Percentage
27-28	26.5-28.5	27.5	3	18.75
29-30	28.5-30.5	29.5	6	37.5
31-32	30.5-32.5	31.5	6	37.5
33-34	32.5-34.5	33.5	1	6.25
35-36	34.5-36.5	35.5	0	0
			16	100

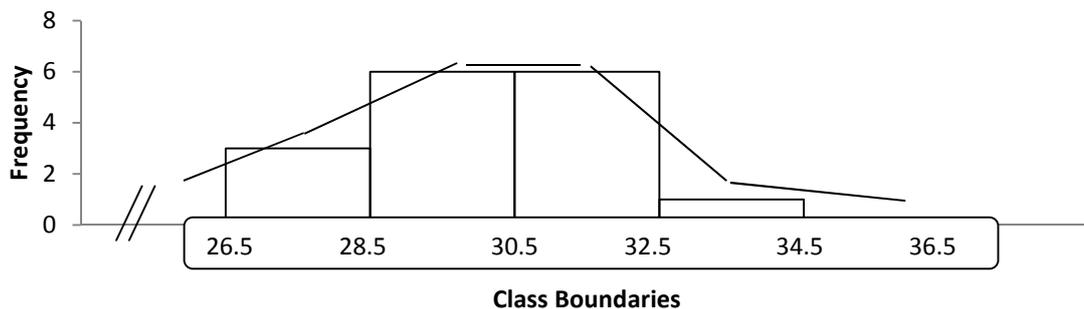


Figure 5. Histogram and Polygon of Data  $A_1B_1$

6. The data of the reading test of the students having low creativity who are taught by inquiry-based teaching ( $A_1B_2$ )

Descriptive analysis of the data of  $A_1B_2$  shows that the score is 18 up to 27. The mean is 21.38, the standard deviation is 2.42, the mode is 20.5, and the median is 21.1. The frequency distribution of the data of  $A_1B_2$  is in table 9; histogram and polygon are presented in figure 6.

Table 9. Frequency Distribution of Data  $A_1B_2$

Class Limits	Class Boundaries	Midpoint ( $X_i$ )	Frequency ( $f_i$ )	Percentage
18-19	17.5-19.5	18.5	4	25
20-21	19.5-21.5	20.5	5	31.25
22-23	21.5-23.5	22.5	4	25
24-25	23.5-25.5	24.5	2	12.5
26-27	25.5-27.5	26.5	1	6.25
			16	100

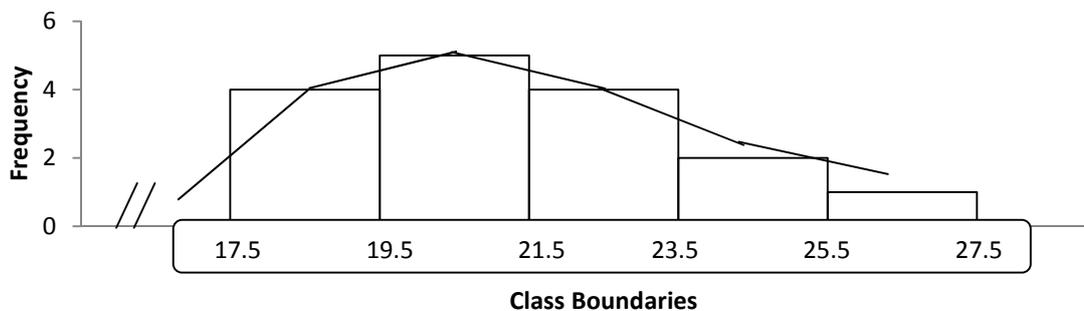


Figure 6. Histogram and Polygon of Data  $A_1B_2$

7. The data of the reading test of the students having high creativity who are taught by direct instruction ( $A_2B_1$ )

Descriptive analysis of the data of  $A_2B_1$  shows that the score is 18 up to 27. The mean is 22.5 the standard deviation is 2.42, the mode is 22.5, and the median is 22.5. The frequency distribution of the data of  $A_2B_1$  is in table 10; histogram and polygon are presented in figure 7.

Table 10. Frequency Distribution of Data  $A_2B_1$

Class Limits	Class Boundaries	Midpoint ( $X_i$ )	Frequency ( $f_i$ )	Percentage
18-19	17.5-19.5	18.5	2	12.5
20-21	19.5-21.5	20.5	3	18.75
22-23	21.5-23.5	22.5	6	37.5
24-25	23.5-25.5	24.5	3	18.75
26-27	25.5-27.5	26.5	2	12.5
			16	100

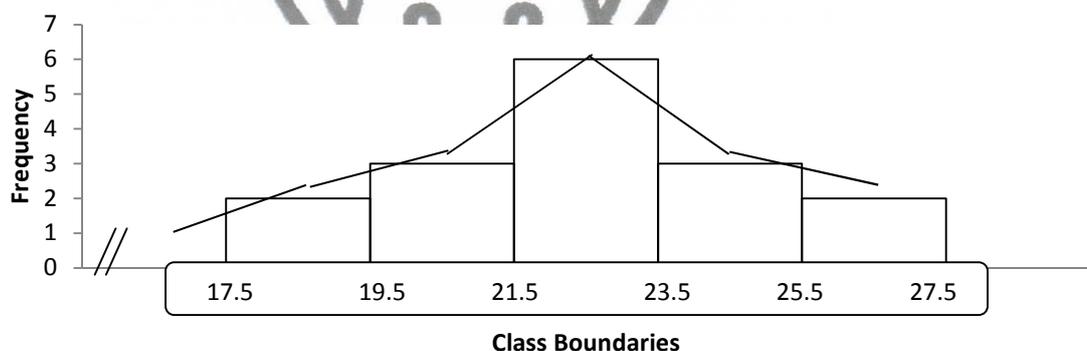


Figure 7. Histogram and Polygon of Data  $A_2B_1$

8. The data of the reading test of the students having low creativity who are taught by direct instruction ( $A_2B_2$ )

Descriptive analysis of the data of  $A_2B_2$  shows that the score is 24 up to 30. The mean is 26.62 the standard deviation is 1.54, the mode is 26.43, and the

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median is 26.5. The frequency distribution of the data of  $A_2B_2$  is in table 11; histogram and polygon are presented in figure 8.

Table 11. Frequency Distribution of Data  $A_2B_2$

Class Limits	Class Boundaries	Midpoint ( $X_i$ )	Frequency ( $f_i$ )	Percentage
24-25	23.5-25.5	24.5	3	18.75
26-27	25.5-27.5	26.5	10	62.5
28-29	27.5-29.5	28.5	2	12.5
30-31	29.5-31.5	30.5	1	6.25
32-33	31.5-33.5	32.5	0	0
			16	100

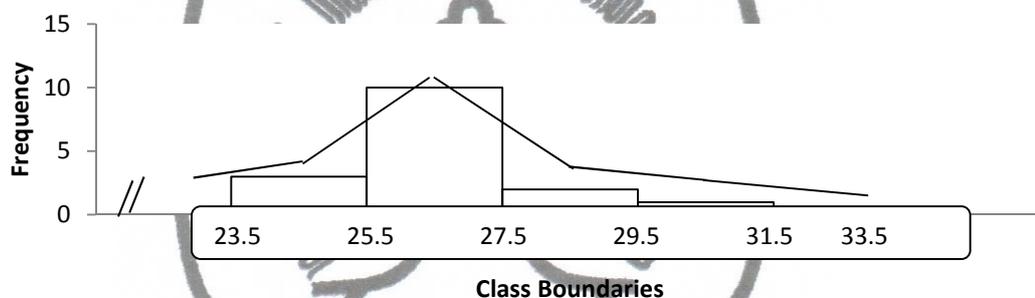


Figure 8. Histogram and Polygon of Data  $A_2B_2$

## B. Normality and Homogeneity Test

Before analyzing the data using inferential statistic, normality and homogeneity test must be done. The normality test is to know that the sample is in normal distribution and the homogeneity test is to know that the data are homogenous. Each test is presented in the following section.

### 1. Normality Test

The sample is in normal distribution if  $L_o$  ( $L$  obtained) is lower than  $L_t$  ( $L$  table), ( $L_o < L_t$ ) at  $\alpha = 0.05$ .

Table 12. The Normality Test

No.	Data	The Number of Sample	$L_o$	$L_t$	$\alpha$	Status
1	$A_1B_1$	16	0.0785	0.213	0.05	Normal
2	$A_1B_2$	16	0.1498	0.213	0.05	Normal
3	$A_2B_1$	16	0.1043	0.213	0.05	Normal
4	$A_2B_2$	16	0.1993	0.213	0.05	Normal
5	$A_1$	32	0.1186	0.1566	0.05	Normal
6	$A_2$	32	0.0930	0.1566	0.05	Normal
7	$B_1$	32	0.1172	0.1566	0.05	Normal
8	$B_2$	32	0.0997	0.1566	0.05	Normal

## 2. Homogeneity Test

Homogeneity test is done to find out the data homogeneity. If  $\chi_o^2$  is lower than  $\chi_t^2$ , it can be concluded that the data are homogeneous.

Table 13. The Homogeneity Test

sample	df	1/df	$s_i^2$	$\log s_i^2$	$(df) \log s_i^2$
1	15	0.067	2.996	0.48	7.148
2	15	0.067	5.983	0.78	11.654
3	15	0.067	5.867	0.77	11.526
4	15	0.067	2.000	0.30	4.515
	60	0.267			34.843

$\chi_o^2 = (\ln 10) \{ B - \sum (n_i - 1) \log s_i^2 \} = (2.3026)(37.466 - 34.843) = 6.039$ . Because  $\chi_o^2$  (6.039) is lower than  $\chi_t^2$  (7.815), the data are homogeneous.

## C. Hypothesis Test

In order to analyze the data, the researcher used Multifactor Analysis of Variance and Tuckey Test. The explanation of Multifactor Analysis of Variance and Tuckey Test are explained in the following explanation;

## 1. Multifactor Analysis Of Variance

After conducted normality and homogeneity test and the data are both normal and homogeneous then the data are analyzed using Multifactor Analysis of Variance. Multifactor Analysis of Variance is used to answer the problems as follows: (1) Whether Inquiry-Based Teaching method is more effective than Direct Instruction Method in teaching reading in the tenth grade students of SMAN 1 Geger Madiun in the academic year of 2011/2012, (2) Whether the students with high creativity have better comprehension in reading than the students with low creativity; (3) Whether there is an interaction between teaching methods and the students' creativity in teaching reading.

The calculation of Multifactor Analysis of Variance is described as follows: (see appendix). The tables are the data of Multifactor Analysis of Variance and Summary of a 2X2 Multifactor Analysis of Variance.

Table 14. The data of Multifactor Analysis of Variance

Reading Skill	IBT (A1)		DI (A2)					
Creativity								
High (B1)	27	33	Group 1	18	27	Group 3	$\sum X_{r1}$	841
	28	32		19	26		$X_{r1}$	26.28
	28	32		20	25			
	29	32		21	24			
	29	31		21	24			
	29	31		22	23			
	29	31		22	23			
	30	30		22	23			
	$\sum X$		481	$\sum X$		360		
			30.06			22.50		
Low (B2)	18	26	Group 2	24	30	Group 4	$\sum X_{r2}$	766
	18	25		25	28		$X_{r2}$	23.94

	19	24		25	28		
	19	23		26	27		
	20	23		26	27		
	20	23		26	27		
	20	22		26	27		
	21	21		26	26		
	$\Sigma X$		342	$\Sigma X$		424	
			21.38			26.50	
<b>TOTAL</b>						$\Sigma X =$	<b>1607</b>
							<b>25.11</b>
	$\Sigma X_{c_1} =$	823	$\Sigma X_{c_2} =$	784			
	$c_1 =$	25.72	$c_2 =$	24.50			

Table 15. Multifactor Analysis of Variance

Source of Variance	SS	df	MS	F <sub>o</sub>	F <sub>t(0,05)</sub>
Between Columns (method)	23,77	1	23,765625	5,64	4,00
Between rows (creativity)	87,890625	1	87,890625	20,87	
Columns by rows (interaction)	643,89	1	643,890625	152,89	
Between groups	755,546875	3	251,8489583	59,80	
Within groups	252,69	60	<b>4,21</b>		
Total	1008,234375	63			

From the summary of a 2 x 2 multifactor analysis of variance, it can be explained that:

$F_o$  between columns (5.64) is higher than  $F_{t(0,5)}$  (4.00). So the difference between columns is significant. It can be concluded that teaching methods (IBT and DI) for teaching reading differ significantly from one another. Therefore, the null hypothesis ( $H_o$ ) which states that there is no significant difference from one another between IBT and DI (teaching methods) for teaching reading is rejected. Because the mean score of students who are taught using inquiry-based teaching

(25.72) is higher than the one who are taught using direct instruction (24.50), teaching reading using inquiry-based teaching is more effective than direct instruction.

$F_o$  between rows (20.87) is higher than  $F_{t(0.5)}$  (4.00). So the difference between rows is significant. Thus, it can be concluded that there is a significant difference on student's reading comprehension between those who have high creativity and those who have low creativity. Therefore, the null hypothesis ( $H_o$ ) which states that there is no significant difference on student's reading comprehension between those who have high creativity and those who have low creativity is rejected. Based on the calculation of the mean scores, the mean score of the students having high creativity (26.28) is higher than those who have low creativity (23.94). Thus, it can be concluded that the students who have high creativity have better reading comprehension than those who have low creativity.

$F_o$  interaction (152.89) is higher than  $F_{t(0.5)}$  (4.00). So the difference of columns by rows is significant. It can be concluded that there is an interaction between the two variables, teaching methods and student's creativity in teaching reading. Therefore, the null hypothesis ( $H_o$ ) which states that there is no interaction between two variables, teaching methods and student's creativity in teaching reading is rejected. In other words, it can be said that the effect of teaching methods on the student's reading comprehension depends on the student's degree of creativity.

## 2. Tukey Test

Tukey test is done to find out the significant difference of means from one another. Tukey test is statistical test generally used in conjunction with an ANOVA to find which means are significantly different from one another. Tukey test compares all possible pairs of means, and is based on a student range distribution  $q$  (this distribution is similar to the distribution of  $t$  from the  $t$ -test). The test compares the means of every treatment to the means of every other treatment. “ $q$ ” is found by dividing the difference between means by square root of the ratio of the within group variation and sample size.

Table 16. The Tukey Test

No	Data	Sample	$q_o$	$q_t$	$\alpha$	Status
1.	$A_1$ and $A_2$	32	3.3594	2.86	0.05	significant
2.	$B_1$ and $B_2$	32	6.4605	2.86	0.05	significant
3.	$A_1B_1$ and $A_2B_1$	16	14.7403	3	0.05	significant
4.	$A_1B_2$ and $A_2B_2$	16	9.9893	3	0.05	significant

1. The score of  $q_o$  between columns is 3.3594 and the score of  $q_t$  of Tukey's table at the level of significance  $\alpha = 0.05$  is 2.86. Because  $q_o > q_t$  or  $q_o (3.3594) > q_{t(0.05)} (2.86)$ , it can be concluded that there is significant difference on the student's reading comprehension between those who are taught using Inquiry-Based Teaching and those who are taught using Direct Instruction. Furthermore, based on the calculation result, the mean of the students who are taught using Inquiry-Based Teaching (25.72) is higher than that of those who are taught using Direct Instruction (24.50). It can be concluded that Inquiry-Based Teaching is more effective than Direct Instruction.

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2. The score of  $q_o$  between rows is 6.46 and the score of  $q_t$  of Tukey's table at the level of significance  $\alpha = 0.05$  is 2.86. Because  $q_o > q_t$  or  $q_o (6.46) > q_{t(.05)} (2.86)$ , it can be concluded that there is a significant difference on the student's reading comprehension between those who have high creativity than those who have low creativity. Based on the calculation of the mean score, the mean score of the students who have high creativity (26.28) is higher than that of those who have low creativity (23.94). Thus, it can be concluded that the students who have high creativity have better reading comprehension than those who have low creativity.
3. The score of  $q_o$  between cells  $A_1B_1$  and  $A_2B_1$  is 14.74 and the score of  $q_t$  of Tukey's table at the level of significance  $\alpha = 0.05$  is 3.00. Because  $q_o > q_t$  or  $q_o (14.74) > q_{t(.05)} (3.00)$ , it can be concluded that using Inquiry-Based Teaching differs significantly from Direct Instruction to teach reading to the students who have high creativity. Moreover, Based on the calculation of the mean scores, the mean score of  $A_1B_1$  (30.06) is higher than the mean scores of  $A_2B_1$  (22.50), so it can be concluded that Inquiry-Based Teaching is more effective than Direct Instruction for teaching reading to the students having high creativity.
4. The score of  $q_o$  between cells  $A_1B_2$  and  $A_2B_2$  is 9.99 and the score of  $q_t$  of Tukey's table at the level of significance  $\alpha = 0.05$  is 3.00. Because  $q_o > q_t$  or  $q_o (9.99) > q_{t(.05)} (3.00)$ , it can be concluded that using Direct Instruction differs significantly from Inquiry-Based Teaching to teach reading to the students who have low creativity. Direct Instruction is more effective than Inquiry-Based Teaching to teach reading for the students who have low creativity. It can be seen from the mean score of  $A_1B_2$  that is 21.38, while the mean score of  $A_2B_2$  is 26.50.

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5. Based on summarized from point 3 and 4, stating that Inquiry-Based Teaching is more effective than Direct Instruction for teaching reading to the students who have high creativity and Direct Instruction is more effective than Inquiry-Based Teaching for teaching reading to the students who have low creativity, so it can be concluded that there is an interaction between teaching methods and student's creativity. In other words, the effect of teaching methods on the student's reading comprehension depends on the student's degree of creativity.

#### **D. The Discussion of the Result of the Study**

1. There is significant difference on the effect between teaching reading using Inquiry-Based Teaching (IBT) and teaching reading using Direct Instruction (DI). Teaching reading using IBT to tenth grade students of SMAN 1 Geger Madiun is more effective than teaching reading using Direct Instruction. Inquiry-based teaching (IBT) is process of learning which put the students as a center (student center style) that encourages students to be active in teaching learning process. It is in line with expert statement; Inquiry-based instruction is a student-centered and teacher-guided instructional approach that engages students in investigating real world questions that they choose within a broad thematic (northern Illinois university: 2010: 1). Also another expert state that:

An educational activity in which students individually or collectively investigate a set of phenomena – virtual or real – and draw conclusions about it. Students direct their own investigatory activity, but they may be prompted to formulate questions, plan their activity, and draw and justify conclusions about what they have learned (Kuhn in Schindler 2002: 1)

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Inquiry-Based Teaching also involves students' psychological aspects and problem solving in teaching learning process. It is line with expert statement;

Inquiry-based learning emphasizes the importance of involving students in the formation of the purposes which direct their activities and in selecting the kind of present experiences that live fruitfully and creatively in future experiences (Haury in Schindler. 2002. 1).

Another expert state; the inquiry approach is more focused on using and learning content as a means to develop information processing and problem solving skills (Schindler. 2002. 2). Furthermore, Inquiry-Based Teaching also teaches problem-solving, critical thinking skills and disciplinary content (northern Illinois university: 2010). Inquiry-Based Teaching builds and develops concept, critical thinking skills, understandings, meanings and knowledge trough student exploration of material by posing, investigating, and answering questions, making discoveries and uses them to solve problems, (Warner and Myers, 2011; Morse 1998; Stewart and Rivera 1998; Alberta 2004). Stewart and Rivera (1998) belief Inquiry-based teaching is method of teaching-learning process that reinforces and builds several skills of students in the areas of physical, emotional, and cognitive. In the other hands, Direct Instruction (DI) method is a teacher centered method, student acts passively received the instruction from teacher (Sullivan, 2008). Another also state in Direct Instruction teacher's role is to pass facts rules or action sequences on to students in most direct way possible (Christian, R. 2001: 5).

From explanation above it can be concluded that Inquiry-Based teaching is more effective than Direct Instruction (DI) method because Inquiry-Based Teaching encourage students to be active and involves students' psychological

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and problem solving ability in teaching learning process while Direct Instruction method creates passive students in output and makes students' problem solving ability become low. It is because they have not struggled with the problem themselves, they rely on teacher instruction.

2. There is significant difference in reading comprehension between students having high creativity and those having low creativity. Reading comprehension of the students having high creativity is better than the one of those having low creativity. Based on definition of creativity by Guilford 1960 in Hanson & Eller (1999: 354) creativity is divided in creative thinking in terms of convergence and divergence. Convergent thinking implies deductive reasoning (going from general to specific). Convergent thinking leads to solutions that are generally accepted as correct. Divergent thinking uses inductive reasoning (going from specific to general). Divergent thinking produces optional ways of solving problem, some of which may be so unique or original that they are not readily accepted. Related to problem solving ability, creativity put it in its elements as stated by European University Association (2007: 1), one of the creativity core characteristics is problem-solving ability; the capability to identify new solutions to problems. Furthermore, according to Clark (2006. p 29) creativity characteristics include high in divergent thinking ability and high in memory, good attention to detail. Convergent and divergent thinking ability is very useful in comprehending text, because comprehending text itself is combining information from text or printed verbal symbols. The process of combining information needs deductive and inductive reasoning (Stanovich in Nunan, 2003). Another expert state that

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creativity is a process of sensing problem that includes original ideas, a different point of view, breaking out of the mould, recombining ideas or seeing new relationships among ideas (Torrens in Craft: 2001: 13). Recombining ideas or seeing new relationship among ideas is very important in reading process. It is strengthen by the expert statement; Reading is the process of deriving or constructing meaning from text that involve coordination of a number of interrelated sources of information (Anderson et al in Mifflin, Houghton, 1997 and Cline, 2006).

From the explanation above it can be concluded that creativity significantly influenced reading comprehension ability because creativity involve several elements that also very important in reading comprehension process. The elements are divergent, convergent thinking and combining new ideas. So, students with high creativity means their convergent, divergent thinking and the ability of combining ideas are high and are assumed to have better comprehension ability and to be better problem solver in facing problem during reading process.

3. There is an interaction between teaching methods and creativity. The teaching methods that are used by teacher in the class give a big influence for the success of the teaching and learning process. One of the characteristics of students who have high creativity is having high curiosity that means openness to new ideas and experiences and action; the ability to put ideas in action; to begin, help, shape, with high energy and enthusiasm these ideas; (Guilford: 1973: 5). European University Association (2007: 1) stated that, one of the creativity core characteristics is problem-solving ability; the capability to identify new solutions

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to problems. It is in line with inquiry-based teaching (IBT) learning activities which emphasizes on students' problem solving based on critical thinking and discussion (Khan & Iqbal, 2011; Lane, 2001). Students who have high creativity also have the ability to solve problem better than students who have low creativity (Hanson & Eller, 1999).

Moreover inquiry-based teaching (IBT) principally combines the curiosity of students to explore material (Sweetland, 2008). It is in line with one of the creativity's characteristics; curiosity that means openness to new ideas and experiences and action; the ability to put ideas in action; to begin, help, shape, with high energy and enthusiasm these ideas; (Guilford: 1973: 5). There are the reasons why students who have high creativity are appropriate to be taught using inquiry-based teaching (IBT) better than students who have low creativity. On the other hand, direct instruction method (DI) emphasizes on intensive instruction from teacher (Schug et al, 2001). Students are passive; they wait for the teachers' instruction (Sullivan, 2008). Direct instruction method (DI) doesn't involve students' curiosity and problem solving ability in learning process which creativity is needed.

## CHAPTER V

### CONCLUSION, IMPLICATION, AND SUGGESTION

As the end chapter of this research report, this part discusses the conclusion and implication of the research and suggestion for the teachers, students and researchers based on the findings of the research discussed on the previous chapter.

#### A. Conclusion

The research findings are as follows:

1. Inquiry-Based Teaching (IBT) is more effective than Direct Instruction (DI) to teach reading to the tenth grade students of SMAN 1 Geger in the 2011/2012 academic year.
2. The students having high creativity have better reading comprehension than those having low creativity in the tenth grade students of SMAN 1 Geger in the academic year of 2011/2012
3. There is an interaction between teaching methods and creativity in teaching reading to the tenth grade students of SMAN 1 Geger in the 2011/2012 academic year;
  - a. Inquiry-Based Teaching (IBT) is more effective than Direct Instruction (DI) in teaching reading to students having high creativity.
  - b. Direct Instruction (DI) is more effective than Inquiry-Based Teaching (IBT) in teaching reading to students having low creativity.

Based on the research findings above, it can be concluded that Inquiry-Based Teaching is proved as a method which is effective to teach reading for the tenth grade students of SMAN 1 Geger in the 2011/2012 academic year. The effectiveness is affected by students' creativity.

## **B. Implication**

The research shows that the implementations of teaching methods have a strong influence on students' reading comprehension. The application of Inquiry-Based Teaching during classroom activities gives a greater effect than the application Direct Instruction. It is because the students are encouraged to be actively involved in every activity. Their critical thinking and understanding are also developed during teaching learning process. Students is act like investigator, they work and cooperate on groups. Using curiosity and critical thinking, questions are posed in order to solve the problem as a final goal. Moreover, Inquiry-Based Teaching (IBT) validates 'habits of minds' that characterize a life-long learner. Inquiry-Based Teaching allows students to draw connections between academic content and their own life which is very important in teaching and learning. It is why the students were able to acquire the material more easily and comprehend the concepts and materials more deeply

The research also shows that students' creativity give an effect on students' reading comprehension ability. By considering the psychological aspect, maximum result will be gotten. It can be seen that the students who have high creativity had

better reading comprehension than those having low. Creative students have high degree of convergence and divergence thinking which is very important in combining information during comprehending text. On contrary, the students who have low creativity, they also have low degree of convergence and divergence thinking which make their comprehension ability is low.

### **C. Suggestion**

#### 1. For the Teacher

- a. In order to get maximum result and effect on students' reading comprehension, English teachers are suggested to apply appropriate methods by considering students' psychological aspects especially based on their creativity.

#### 2. For the Students

- a. Students must be active and involve thoroughly in the teaching learning process in order to improve their reading skills and English achievement.
- b. For students having low creativity, they should encourage themselves and realize the importance of active involvement in the teaching learning process.

#### 3. For Other Researcher

- a. Other researches can make this research as a reference to continue some related research in different condition and characteristic.
- b. They are also able to create a better study after they know the weaknesses of this research.