THESIS

THE EFFECTIVENESS OF PWIM TO TEACH VOCABULARY VIEWED FROM STUDENTS' INTELLIGENCE

(An Experimental Research at the Fifth Grade Students of SD Negeri Ajibarang Kulon in the Academic Year of 2011/2012)

By :

LIA HENDRAWATI

(S891102022)

Submitted to Graduate School of Sebelas Maret University as Partial Fulfillment for Getting the Graduate Degree in English Education

ENGLISH EDUCATION DEPARTMENT

GRADUATE SCHOOL

SEBELAS MARET UNIVERSITY

SURAKARTA

2012

APPROVAL

THE EFFECTIVENESS OF PICTURE WORD INDUCTIVE MODEL (PWIM) TO TEACH VOCABULARY VIEWED FROM STUDENTS' INTELLIGENCE

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Arranged by:

LIA HENDRAWATI
S891102022

This thesis has been approved by the consultants of English Education Department of Graduate School of Sebelas Maret University on November3rd , 2012

Consultant 1,

Dr. Ngadiso, M.Pd
NIP.19621231 198803 1 009

Consultant 2,

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

The Head of the English Education Department of Graduate School

Dr. Abdul Asib, M.Pd
NIP. 19520307 1980031 005

LEGITIMATION FROM THE BOARD OF EXAMINERS

THE EFFECTIVENESS OF PICTURE WORD INDUCTIVE MODEL (PWIM) TO TEACH VOCABULARY VIEWED FROM STUDENTS' INTELLIGENCE
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By
LIA HENDRAWATI
S891102022

This thesis has been examined by the Board of Thesis Examiners of English Education Department of Graduate School of Sebelas Maret University on 22 December, 2012

Board of Examiners:		Signature
Chairperson	Dr. Sujoko, M.A. NIP. 19510912 198003 1 002	(.....)
Secretary	Dra. Dewi Rochsantiningsih, M.Ed, Ph.D. NIP. 19600918 198702 2 001	(.....)
Members		
Examiners 1.	Dr. Ngadiso, M.Pd. NIP. 19621231 198803 1 009	(.....)
2.	Dr. Abdul Asib, M.Pd. NIP. 19520307 198003 1 005	(.....)

The Director of Graduate School

Prof. Dr. Ir. Ahmad Yunus, M.S.
NIP. 196107171986011001

The Head of English Education Department of Graduate School

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

MOTTO

Strive for Excellence

(Lia Hendrawati)

DEDICATION

This thesis is dedicated to:

Parents

Husband

Son

Colleagues

ABSTRACT

LIA HENDRAWATI, S891102022, 2012. *The Effectiveness of PWIM to Teach Vocabulary Viewed from Students' Intelligence* (An Experimental Research at the Fifth Grade Students of SD Negeri Ajibarang Kulon in the Academic Year of 2011/2012). Thesis. Surakarta. English Education Department of Graduate School, Sebelas Maret University. 2012.

The objectives of this study are: (1) to reveal whether PWIM is more effective than Direct Instruction to teach vocabulary; (2) to reveal whether students having high intelligence have better vocabulary mastery than those having low intelligence; and (3) to reveal whether there is an interaction effect between teaching methods and the students' intelligence on the students' vocabulary mastery.

The research was conducted at SD Negeri Ajibarang Kulon, from April to May 2012. The method used for the research was experimental study. The population of the research was the fifth grade students. The sampling technique used was total sampling. The sample of the research was two classes; those were V A which was treated as experimental class taught by using PWIM and V B which was treated as control class taught by using direct instruction. Each of them consisted of 22 students. The technique of collecting data was documentary and test technique. The first was used to collect the data of students' intelligence scores. The second was used to know the students' vocabulary mastery. The vocabulary test was in the form of objective test, oral test, and essay test. It had been tried out first in order to know the validity and reliability. Meanwhile, to analyze the data, Multifactor Analysis of Variance (ANOVA) test of 2x2 and Tukey test were used. Before conducting the ANOVA test, normality and homogeneity were conducted.

Based on the result of data analysis, the research findings are: (1) PWIM is more effective than direct instruction to teach vocabulary; (2) the students having high intelligence have better vocabulary mastery than those having low intelligence; and (3) there is an interaction between teaching methods and students' intelligence on the students' vocabulary mastery.

Related to the research findings, it can be concluded that the use of PWIM in teaching vocabulary is effective. Therefore, PWIM can be implemented as one of the effective teaching methods to teach vocabulary in order to get good achievement in vocabulary.

Keywords: *PWIM, direct instruction, intelligence*

PRONOUNCEMENT

This is to certify that I myself write this thesis entitled "*The Effectiveness of PWIM to Teach Vocabulary Viewed from Students' Intelligence* (An Experimental Research at the Fifth Grade Students of SD Negeri Ajibarang Kulon in the Academic Year of 2011/2012).

It is not a plagiarism or made by others. Anything related to others' works is written in quotation, the sources of which are listed on the list of references. If then the pronouncement proves wrong, I am ready to accept any academic punishment, including the withdrawal or cancellation of my academic degree.

Surakarta, December 2nd, 2012

Lia Hendrawati

ACKNOWLEDGMENT

Alhamdulillahi rabbil ‘aalamiin. Praise be to Allah for His blessing so that the writer can accomplish her thesis. Writing this thesis is not easy; the writer has encountered many problems and obstacles to overcome it. In the process of its completion, she received support, advice, contribution, and assistance from many people. Thus, she can express her gratitude and appreciation to:

1. Prof. Dr. Ir. Ahmad Yunus, M.S., as The Director of Graduate School of Sebelas Maret University for facilitating and allowing the writer to write the thesis.
2. Dr. Abdul Asib, M.Pd., as the Head of English Education Department of Graduate School and also as the second consultant, for his suggestion; advice; and guidance, Dr. Ngadiso, M.Pd., as the first consultant, for his support; guidance; helpful correction; and encouragement to accomplish this thesis, all of the lecturers of English Education Department of Graduate School of Sebelas Maret University, for the knowledge transfered to the writer.
3. The Principal of SD Negeri Ajibarang Kulon, for her permission to the writer to conduct research at the school.
4. The English teacher of SD Negeri Ajibarang Kulon, for his help and contribution during the research.
5. The fifth grade students of SD Negeri Ajibarang Kulon, for participating in this research.
6. Her dearest parents, husband, and son for their caring, love, sincerity, and every single thing they did.
7. Her colleagues who always support her every time.

Her journey into teaching and language literacy never ends.

Surakarta, December 2nd 2012

Lia Hendrawati

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CHAPTER I

INTRODUCTION

A. Background of the Study

Mastering vocabulary is very important for the students who learn English as a foreign language because learning a foreign language involves the acquisition of thousand of words. That is why everybody who learns English or a certain language should know the words. Wilkins (1974: 111) asserts that "without grammar, very little can be conveyed, without vocabulary, nothing can be conveyed." This idea is strongly supported by Rivers (1983: 43) who argues that the acquisition of an adequate vocabulary is essential for successful second language use because without an extensive vocabulary, we will be unable to use the structure and functions that we have learned for comprehensible communication.

Therefore, vocabulary takes a main part in many cases of both receptive and productive process of language. Vocabulary mastery can support student's listening and reading to understand the text they are listening and reading. Vocabulary mastery can also support student's speaking and writing to communicate their ideas in a spoken and written form. For this reason it is very important for students to build up a large store of vocabulary and to have a rich vocabulary.

However mastering vocabulary is not an easy task for the students. Based on the researcher's experience in teaching fifth grade students of SD Ajibarang Kulon and based on the researcher's interview to the current

teacher there, students always get problem in conducting English mid semester test and English final semester test which are not made by their own classroom teacher. Their problem deals with comprehending the test items. They can't comprehend some particular questions and options of answers because they do not know the meaning of some words in those items. Researcher often found that they got problem in answering the test items because they didn't know the meaning of some words. This is because of the lack of vocabulary. In fact to get meaning from what is read, students need many words in their vocabulary. This problem condition can be seen from the fact that from 46 students (2 classes) of fifth grade of SD Ajibarang Kulon, students who got the score under the KKM (*Kriteria Ketuntasan Minimal*) of English subject are 16 students, a great number to achieve the learning success. Besides getting problem with the word meaning, students also get problems deal with pronunciation and word usage. In pronunciation, students usually get difficult in pronuncing words that contain silent letters, e.g. cupboard, blackboard, chalk, ect. In word usage, students usually get difficult in using "s" as the plural ending and the third person singular.

Teaching vocabulary is clearly more than just presenting new words in a list and asking students to memorize them. Even, such a teaching means to make the words in isolation, whereas words are never found in isolation. They cannot stand by themselves, but nearly always have partners that together form meanings in certain ways. It is believed that students will learn vocabulary well when they are actively involved in words learning and at

different level of mental activity. If a student just repeats a word over and over, the process is quite shallow because it is just maintaining knowledge. Therefore, it is important for the teachers to engage in the activities for vocabulary practice which can help the students deepen their understanding of the words.

According to a study by Thornbury (2002), there are some principles in learning a word that can be considered as a good criteria of vocabulary practice. The first is repetition. The time-honored way of memorising new material is through repeated rehearsal of the material while it is still in working memory. Repetition can be in the form of listening drill, and oral drill. The second is retrieval. This means, simply, that the learner will be able to recall it again later. Activities which require retrieval, such as using the new word in written sentences. The third is pacing. Learners have difference learning styles, and process data at different rates, so ideally they should be given the opportunity to pace their own rehearsal activities. This may mean the teacher allowing time pacing vocabulary learning for learner to do memory work such as reviewing their vocabulary silently and individually. The forth is cognitive depth. The more decisions the learner makes about a word, and the more cognitively demanding these decisions (requiring more brain work), the better the word is remembered. For example, a relatively superficial judgment might be simply to match it with a word that rhymes with it: e.g. *tango/mango*. A depeer level decision might be to decide on its part of speech (noun, adjective, verb, ect). Deeper still might be to use it to

complete a sentence. The fifth is use. Putting words to use in production tasks. Production tasks require learners to incorporate the newly studied words into some kind of speaking or writing activity. The decision-making tasks have been discussed before are principally receptive; learners make judgements about words, but do not necessarilly produce them. (Of course, they can then become production tasks by inviting the learners to talk about these judgements in speaking activity. The activities in writing can be in the form of completion sentences/texts and creation of sentences/texts.

The classroom activities/practices depends on the method used by the teachers because the teacher is the designer of the instructional program. That is why the teachers are demanded to use the method which is appropriate with the students' need to achieve the good criteria of vocabulary learning. One method that has good criteria for teaching vocabulary is The Picture Word Inductive Model (PWIM). The PWIM is used with a whole class, small groups, pairs, or individually to lead students into inquiring about words and adding them to their vocabularies, discovering phonetic and structural principles present in those words. The PWIM can be used to teach phonics and spelling both inductively and explicitly. However, the model is designed to capitalize on children's ability to think inductively. The PWIM enables them to build generalizations that form the basis of structural and phonetic analysis. And it respects their ability to think. PWIM induces students to classify their new words, building the concepts that will enable them to "make sense" of words they have not seen before. The instructional sequence of the

PWIM cycles and recycles through the following activities: The students study a picture selected by the teacher; identify what they see in the picture for the teacher to label; read and review the words generated; use the picture word chart to read their own sets of words; classify words according to properties they can identify (meanings, phonics patterns, syllabels); and develop titles, sentences, and paragraphs about their picture.

The PWIM is designed to enable students to be immediately successful as language learners in the formal school setting and to immerse them in how language works. They connect something in the picture with a word and then watch and hear the teacher writes and says aloud the word. They repeat saying each letter of the word. They can then read that word. Shortly, they learn that they always spell that word the same way. They identify a dog in the picture, see *dog* written, hear it spelled, spell it themselves, and use the word.

Besides the method used by the teachers, the other factor that plays an important role in mastering vocabulary is intelligence. Intelligence is a major contributing factor in the acquisition of vocabulary (Rao, 2006: 160). Intelligence is included in cognitive ability which is very influential and plays an important role in the process of teaching and learning. Students having high intelligence usually perform better learning than students having low intelligence. It is probably true that highly intelligent students find language acquisition easier than students of low intelligence.

Based on the description above, the researcher is interested in conducting a research entitled "The Effectiveness of PWIM in Teaching Vocabulary Viewed from Students' Intelligence" (An Experimental Study in the Fifth Grade Students of SD Negeri Ajibarang Kulon in the Academic Year of 2011/2012).

B. Problem Identification

Dealing with the background of the study, there are some problems that can be identified:

1. Why do the students in fifth Grade of SD Negeri Ajibarang Kulon get difficulties in vocabulary mastery?
2. What are the methods to make a good vocabulary mastery for the fifth Grade students of SD Negeri Ajibarang Kulon?
3. Is PWIM effective to guide the students in making a good vocabulary for the fifth Grade students of SD Negeri Ajibarang Kulon?
4. How is students' achievement in vocabulary by using PWIM at the fifth Grade students of SD Negeri Ajibarang Kulon?
5. Does intelligence affect the students' vocabulary mastery of the fifth Grade students of SD Negeri Ajibarang Kulon?

C. Problem Limitation

Due to the researcher's limitation and weaknesses even the limited time, all the problems, which are identified, cannot be observed wholly. Furthermore, the researcher limits only to know the significant difference

from the students' mastery of vocabulary between those who are taught by using PWIM and those who are taught by using Direct Instruction viewed from their intelligence.

D. Statement of the Problem

From the background of the study, problem identification, and problem limitation, there are three problems that are formulated, as follows:

1. Is PWIM more effective than Direct Instruction in teaching vocabulary to the fifth grade students of SD Negeri Ajibarang Kulon?
2. Do the fifth grade students of SD Negeri Ajibarang Kulon who have high intelligence have better vocabulary mastery than those having low intelligence?
3. Is there any interaction between teaching methods and students' intelligence in teaching vocabulary to the fifth grade students of SD Negeri Ajibarang Kulon?

E. Purpose of the Study

Based on the problem statements above, the purposes of the study are as follows:

1. To show whether PWIM is more effective than Direct Instruction in teaching vocabulary to the fifth grade students of SD Negeri Ajibarang Kulon;
2. To show whether the fifth grade students of SD Negeri Ajibarang Kulon who have high intelligence have better vocabulary than those having low

intelligence;

3. To show whether there is an interaction between teaching methods and students' intelligence to teach vocabulary to the fifth grade students of SD Negeri Ajibarang Kulon.

F. Benefits of the Study

The result of the study is expected to bring some significance and contribution to the teaching and learning English as follows:

a. For English Teacher

The result of this study is expected to be useful for the teacher. Since it provides theories and research findings related to the vocabulary teaching, it will enrich the teacher with the related theories. Based on the research finding, PWIM is more effective than Direct Instruction. Therefore, the teacher can implement PWIM as the effective method to teach vocabulary. This study provides the lesson plan to teach vocabulary using PWIM completed with the teaching procedure, teaching media, teaching material, and evaluation as guidance for the teacher to use the method.

b. For Researcher

This study is a chance for the researcher to generate the theories into the practice. The researcher is able to prove the theories have been learnt. In the process of writing the report, the researcher enhances critical skills in communication, independent thinking, creativity and problem-solving. The researcher develops her ability in how she can best

stimulate her students to use their higher-order thinking powers. The researcher also engages in the creation of new knowledge and applies that knowledge to real-world problems. The study has developed the researcher's knowledge on the various teaching method in vocabulary learning.

c. For the Students

This study is expected to make the students aware about the importance of vocabulary, both in the study at school and in the real life. It also gives the students an effective method in learning vocabulary. The students can learn the concept in a fun and productive way because the teaching procedures and the media are arranged interestingly. The method engages the students to activate their maximum capacity to achieve the maximum result. The students will know how to learn by using their background knowledge, their visual-spatial intelligence, their ability to think inductively and their ability to solve the problem.

d. For the other Researcher

The result of this research is expected can be used as a starting point of conducting the further research by extending it to other levels and subjects. The research can give additional contribution to develop instructional model and strengthen the similar theory.

CHAPTER II

REVIEW OF RELATED LITERATURE

A. The Nature of Vocabulary

1. The Definition of Vocabulary

Hornby (1997: 1331) states that vocabulary is the total number of words in a language. Vocabulary is a stock of words used by person, class or profession when they are learning a foreign language and expressing the meaning or idea to construct sentences for communication. It is the basic of language and the basic of communication. Meanwhile, Ur (1996: 60) defines vocabulary as the words we teach in the foreign language. It means that all words in foreign language that have been taught by teachers in order that the students can use those words in sentences or daily communication. Read (2000: 16) adds that vocabulary is knowledge involving knowing the meanings of words. According to Crystal (2003: 2), the vocabulary of a person is defined either as the set of all words that are understood by that person or the set of all words likely to be used by that person when constructing new sentences. Brown (2001: 337) views vocabulary items as a boring list of words that must be defined and memorized by the students, lexical forms are seen in their central role in contextualized, meaningful language. Hatch and Brown (1995: 1) argue that the term vocabulary refers to a list or set of words for a particular language or words that individual speakers of language might use.

Based on the definitions above, it can be concluded that vocabulary is the total numbers of words, a list or set of words in a particular language which expresses the meaning or idea that a person knows or uses to construct sentences for communication.

2. The Types of Vocabulary

Generally, some experts distinguish two types of vocabulary: active and passive vocabulary. Harmer (1991: 150) distinguishes between these two kinds of vocabulary. The first kind of vocabulary refers to the stock of words which have been taught by the teacher or learnt by the students and which are expected to be able to use. While the second term refers to the words of which the students will recognize when they meet them, but of which they will probably not be able to pronounce.

In line with the previous classifications, Haycraft (1997) divides two kinds of vocabulary, namely receptive and productive vocabulary.

a. Receptive Vocabulary

Receptive vocabulary is words that the learners recognize and understand when they occur in context, but which cannot produce correctly. It is vocabulary that the learners recognize when they see it in reading context but do not use it in speaking and writing. The receptive vocabulary is also called a passive process because the learner only receives thought form others. In language application, the receptive vocabulary is considered the basic vocabulary. It is

much larger than productive vocabulary because there are many words recognized when the learner hears or reads but do not use when he speaks or writes.

b. Productive Vocabulary

Productive Vocabulary is the words, which the learners understand, can pronounce correctly, and use constructively in speaking and writing. It involves what is needed for receptive vocabulary plus the ability to speak or write the appropriate time. Therefore, productive vocabulary can be addressed as an active process, because the learners can produce the words to express their thought to others.

3. Aspects of Vocabulary

Ur (1996: 60-62) provides six aspects of vocabulary that are needed to be taught by the teacher. They are:

a. Form: Pronunciation and Spelling

The learner has to know how a word is pronounced (its pronunciation) and what it looks like (its spelling). These are fairly obvious characteristics, and one or the other will be perceived by the learner when encountering the item for the first time. In teaching, the teacher needs to make sure that both these aspects are accurately presented and learned.

b. Grammar

The grammar of a new item will need to be taught if this is not obviously covered by general grammatical rules. An item may have an unpredictable change of form in certain grammatical contexts or may have some idiosyncratic way of connecting with other words in sentences; it is important to provide learners with this information at the same time as the teacher teach the base form. When teaching a new verb, for example, teachers might give also its past form, if this is irregular (think, thought) and, teachers might note if it is transitive or intransitive. Similarly, when teaching a noun, teachers have to teach the plural form.

c. Collocation

The typical collocations of particular items are another factor that makes a particular combination sound 'right' or 'wrong' in a given context. So, this is another piece of information about a new item which may be worth teaching. When introducing words like *decision* and *conclusion,* for example, students may note that they *take* or *make* the one, but usually *come* to the other.

d. Aspects of meaning (1): denotation, connotation, appropriateness

The meaning of a word is primarily what it refers to in the real world, its denotation; this is often the sort of definition that is given in a dictionary. For example, *dog* denotes a kind of animal; more

specifically, a common, domestic carnivorous mammal; and both *dank* and *moist* mean slightly wet.

A less obvious component of the meaning of an item is its connotation: the associations, or positive or negative feelings it evokes, which may or may not be indicated in a dictionary definition. The word *dog*, for example, as understood by most British people, has positive connotations of friendship and loyalty; whereas the equivalent in the Arabic, as understood by most people in Arab countries has negative associations of dirt and inferiority.

A more subtle aspect of meaning that often needs to be taught is whether a particular item is the appropriate one to use in a certain context or not. For example, learners may know that weep is virtually synonym in denotation with cry, but it is more formal, tends to be used in writing more than speech, and is in general much less common.

e. Aspects of Meaning (2): meaning relationships

How the meaning of one item relates to the meaning of others can also be useful in teaching. There are various such relationships: here are some of the main ones.

1) Synonyms: Items that mean the same, or nearly the same; for example bright, clever, smart are the synonyms of intelligence.
2) Antonyms: Items that mean the opposite; rich is the opposite of poor.

3) Hyponyms: Items that serve as specific examples of a general concept; dog, lion, mouse are hyponyms of animal.
4) Co-hyponyms or Co-ordinates: Other items that are the "same kind of thing□ ; red, blue, green, and brown are co-ordinates.
5) Superordinates: General concepts that cover specific items; animal is superordinate dog, lion, horse.
6) Translation: Words or expressionism the learners□ mother tongue that is (more or less) equivalent in meaning to item being taught.

f. Word Formation

One word or multi-word, vocabulary item can often be broken down into small component or "bits". Exactly how these bits are put together is another piece of useful information-perhaps mainly for more advanced learners. The teacher may wish to teach the common prefixes and suffixes: for example, if learners know the meaning of sub-, un- and –able, this will help them guess the meaning of words like substandard, ungrateful and untranslatable. Another way vocabulary items are built is by combining

two words (two nouns, or gerund and noun, or a noun and verb) to make one item. For example: bookcase, follow-up, swimming pool.

Nation (1990: 30) states about what the learner needs to know of "a word".

Table 2.1 Components of Word Knowledge

Form		
Spoken form	R	What does the word sound like?
	P	How is the word pronounced?
Written form	R	What does the word look like?
	P	How is the word written and spelled?
Position		
Grammatical pattern	R	In what pattern does the word occur?
	P	In what pattern must we use the word?
Collocations	R	What words or types of words can be expected before or after the word?
	P	What words or types of words must we use with this word?
Function		
Frequency	R	How common is the word?
	P	How often should the word be used?
Appropriateness	R	Where would we expect to meet this word?
	P	Where can this word be used?
Meaning		
Concept	R	What does the word mean?
	P	What word should be used to express this meaning?
Associations	R	What other words does this word make us think
	P	What other words could we use instead of this

R = receptive, P = productive

Harmer (1991: 156-158) states that from the students' point of view, vocabulary mastery contains the following items:

1. Meaning

   The first thing to realize about vocabulary items is that they frequently have more than one meaning. When students come across a word, then, and try to decipher its meaning students will have to look at the context in which it is used. The students, thus, need to understand the importance of meaning in context. Besides, they also

need to know about sense relation, since sometimes words have meanings in relation to the other words.

2. Word Use

What a word means can be changed, stretched or limited by how it is used and it is something students need to know about. Word meaning is frequently stretched through the use of metaphor and idiom.

3. Word Formation

Words can change their shape and their grammatical value, too. Students need to know facts about word formation and how to twist words to fit different grammatical context. Students need to know suffixes and prefixes words. Students also need to know how words are spell and how they sound. Word formation, then, means knowing how words are written and spoken and knowing how they can change their form.

4. Word Grammar

The use of certain words can trigger the use of certain grammatical patterns for example a distinction between countable and uncountable nouns, phrasal verbs, verb complementation, the position of adjective and adverbs.

Thronbury (2002: 15) states that at the most basic level, knowing a word involves knowing its form and its meaning. Part of knowing the meaning of word is knowing its grammatical function,

whether it is noun or verb. Knowing the meaning of a word is not just knowing its dictionary meaning (its denotations), it also means knowing the words commonly associated with it (its collocations) as well as its connotations, including its register and its cultural accretions.

Roger (1995: 43) states that knowing a word is important by knowing:

1. Part of speech of word: whether it is noun, verb, adjective.
2. The form: form here includes how the word is spelled. If the word has more than one syllables, the teachers should know where the stress are.
3. The meaning: What exact meaning in which context the teachers want to focus on is extremely important.
4. The use: some words and expressions have a restricted use.

Folse (2004: 10-18) states that what it means to "know" a word includes seven things

1. Polysemy

   Indicating that a word rarely has more than one meaning, for example "head" (of a person, of a pin, of an organization).

2. Denotation and connotation

   Denotation refers to the most basic meaning of a word. Connotation is an idea that is suggested by or associated with a word.

3. Spelling and pronunciation
4. Part of speech

5. Frequency
6. Usage

   It is appropriate to use that word instead of a synonim.

7. Collocation

   A word or phrase that naturally and frequently occurs before, after, or very near the target vocabulary item

From the theories above, it can be concluded that vocabulary is the total numbers of words, a list or set of words in a particular language which expresses the meaning or idea that a person knows or uses to construct sentences for communication. The indicators of vocabulary are: (1) finding meaning; (2) pronouncing words; (3) spelling of words; and (4) using words.

B. The Nature of Teaching Method

1. The Nature of PWIM

The PWIM is a practical guide to teaching beginning language learners of all ages. It begins with what the students already know and respects their ability to think. It allows students to hear the words pronounced correctly many times and develops sight-word vocabulary. The PWIM can be used to teach phonic and spelling both inductively and explicitly. However, the model is designed to capitalize on students' ability to think inductively. The PWIM can not only be used for teaching the correct spelling or pronunciation of the words that the learners already

know but also be used for teaching new vocabulary (Joyce, Calhoun, & Hopkins, 2009: 64).

The PWIM is developed by Joyce and Calhoun in 1998; it uses pictures containing familiar objects and actions to elicit words from children's listening and speaking vocabulary. A central assumstion is that students need to become inquirers into language, seeking to build their sight vocabularies and studying characteristics of those words, trying to build generalizations about phonetic and structural characteristics that can help them to master the conventions of language. The PWIM has been used in Calhoun's teaching for American children in the primary school and the kindergarden since 1976, and it has become more and more popular for the other teachers in teaching young ESL learners.

a. The Definition of PWIM

Calhoun (1999: 21) states that The PWIM is an inquiry-oriented language arts strategy that uses pictures containing familiar objects and actions to elicit words from children's listening and speaking vocabularies. Teachers use the PWIM with classes, small groups, and individuals to lead them into inquiring about words, adding words to their sight reading and writing vocabularies, discovering phonetic and structural principles, and using observation and analysis in their study of reading and writing. Meanwhile, Woetsman (2009: 157) defines The PWIM as a literacy program that uses image analysis to enggage children in vocabulary acquisition,

inductive reasoning activities, and writing. Jack (2005: 173) argues that The PWIM is inductive, inquiry-based vocabulary building strategy that presents new words in conjuction with photograph. According to Johnson and Jimenez (2008: 4), The PWIM is an instructional approach for the teaching of reading that uses pictures containing familiar objects, actions and scenes, to draw out known words from students' listening and speaking vocabularies. This strategy helps students add words to their sight reading vocabulary, as well as their writing vocabulary, and to examine and categorize phonetic and structural principles represented in those words. Rothenberger (2011: 1) adds that The PWIM is a multidimensional approach that addresses several aspects of literacy simultaneously.

Based on the definitions above, it can be concluded that The PWIM is an inductive teaching method that uses pictures and words analysis to enhance students' vocabulary and to develop students' writing and reading skills. This method begins by giving the students chance to label the picture with the words. In this process, the students hear and watch the words being spelled, read, and written by the teachers. It is followed by classifying the words according to properties they can identify (phonics pattern, syllable, meaning, part of speech, word grammar); and develop titles, sentences, and paragraphs about their picture.

b. The Goals of PWIM

Although the activities may differ, the instructional goals for students of all ages are the same (Calhoun, 1999: 21). The PWIM goals are to:

1) build sight vocabulary as a basis for reading, learning phonic, and spelling generalizations
2) gain confidence in one's ability to learn
3) learn how to inquire into language and use knowledge and skills to read, write and participate fully in education.

For language arts curriculum, the PWIM can be focused on building sight vocabulary, on letter and sound relationships, on phonetic and structural analysis, on spelling, on reading comprehension, on writing (including composition, mechanics, and penmanship), and on reference skills.

According to Johnson and Jimenez (2008: 4), the purpose of using The PWIM is to develop students' vocabulary, concepts about words, and sentence and paragraph structures through reading and content areas such as math, science, social studies, and health.

c. The Move of the PWIM

According to Calhoun (1999: 23), the moves of PWIM are:

1) Select a picture.
2) Ask students to identify what they see in the picture.

3) Label the picture parts identified. (Draw a line from the identified object or area, say the word, write the word; ask students to spell the word aloud and then to pronounce it.)
4) Read and review the picture word chart aloud.
5) Ask students to read the words (using the lines on the chart if necessary) and to classify the words into a variety of groups. Identify common concepts (e.g., beginning consonants, rhyming words) to emphasize with the whole class.
6) Read and review the picture word chart (say the word, spell it, say it again).
7) Add words, if desired, to the picture word chart and to the word banks.
8) Lead students into creating a title for the picture word chart. Ask students to think about the information on the chart and what they want to say about it.
9) Ask students to generate a sentence, sentences, or a paragraph about the picture word chart. Ask students to classify sentences; model putting the sentences into a good paragraph.
10) Read and review the sentences and paragraphs.

The full sequence of a PWIM unit may take three days or two months. The length of units and number of lessons within a unit depend on the richness of the picture, the age, and language development of the students, and the language objectives of the

teacher. For example, teachers using the model to develop sight-word vocabulary and to work on phonemic and graphemic awareness may stop at #7. Teachers who want to work with their students on reading and writing sentences and paragraphs use all the moves of the model. Teachers may recycle 4 through 9 completely or move backward or forward depending on student performance and the objectives for that lesson.

According to Ferlazzo (2010: 4), the move of PWIM is as follows:

1) Introduce a very large photo to the class connected to the theme will be studied.
2) Ask students to share words they know that describe the objects in the photo.
3) Write the words on the outer edges of the photos with an arrow pointing to the item say each letter of the word and ask students to repeat.
4) Review the words on the photo
5) Ask students to categorize the identified words by placing the words into at least three or four categories (e.g., words that start with the letter b, words that describe fruit, etc.), then ask them to use their dictionaries to identify additional words that fit into the same categories.
6) Review again the picture

7) Give students a sheet with sentences that include a "blank." Under each sentence are three words, including some from the photo. Ask students to choose the word that correctly completes the sentence (each sentence describes something in the photograph).
8) Ask students to categorize those sentences into three or four groups. Then, ask them to add sentences of their own related to the picture that fits into those categories.
9) Ask students to turn all their sentences into paragraphs
10) Ask students to develop different potential titles for their essay, choose one, and complete their essay.

PWIM is used in Howard county public school. The procedure of PWIM used in Howard county public school is as follows:

1) Choose the content area and topic.
2) Check student data and/or observation notes for differentiation of activities.
3) Designate curriculum objectives for content and language arts.
4) Introduce and/or discuss the content specific and language arts curriculum objectives with the students.
5) Post a content related picture chart with familiar objects for reading and labeling.
6) Gather the students and discuss the Picture Word Inductive Model approach with them for setting the classroom environment.

7) Talk with the students about how this picture chart fits the lesson/content area.
8) Relate the content information involved and have students share what they think they know about this topic and what they would like to know about this topic.
9) Discuss how this picture and these words will enrich their understanding of the content.
10) Have students use prior knowledge, look at the picture chart and name the familiar picture as the teacher labels the pictures and draws the lines connecting the words to the picture.
11) Have students generate more words for the picture chart.
12) Examine each word with the students for phonics commonalities and phonemic awareness and spelling patterns.
13) Review and read the words in the word chart with students.
14) Have the students find the words from the picture word chart in the content specific book that they will read in class and at home with their family. Summarize the content lesson with the students with the use of the new words and knowledge gained about the content and the mechanics of the language.

Next day

15) Have the students review and read words in the picture and word charts.

16) Give students a set of the word cards that match the words in the picture and word charts.
17) Discuss and demonstrate the use of the set of matching word cards.
18) Demonstrate how the word cards can be used as a resource similar to the word wall during listening, reading, speaking, and writing.
19) Have students play a matching game with the set of word cards and the words in the picture with a partner. Take turns matching and reading the words. Take turns reading the words and finding a generalization about this word and another on the word list (for example, same initial letter or letter sound, same word family).
20) Make charts and place the words in categories (for example, all the words with the same initial letter sounds in one row of the chart, all the words in the same word family in one row/category, or all the words referring to one object in the picture in one row/category).
21) Read content specific information and check for understanding through a series of open-ended questions: "Share what you know about….? How do you know …..? Tell me more about…." Students are to respond in complete sentences while including the words from the picture and/or chart.
22) Have students read content specific information.

23) Model writing thoughts on the content topic while interspersing the new words or familiar words from the picture in your sentences.
24) Have students write about the topic and use the picture words and/or word cards as a resource.
25) Summarize the lesson with the use of the content information learned and the words from the word picture and chart.
26) Observe for understanding of content and word knowledge through their usage as the students converse, match word cards, and/or write using the word and sentence structure knowledge ("Instructional strategies", n.d.).

The purpose of using PWIM is to develop students' vocabulary, reading, and writing skills. In this research, the method is used to develop students' vocabulary. The indicators of vocabulary are finding meaning, pronouncing, spelling, and using words. Based on some PWIM procedures above, it can be concluded a procedure that can be used to develop all intended indicators as follows:

1) Showing a very large picture connected to the theme which will be studied.
2) Asking students to share words they know that describe the objects in the picture.
3) Labeling the picture parts identified. (Draw a line from the identified object or area, say the word, write the word on the outer

edges of the picture, spell the word; ask students to spell the word aloud and then to pronounce it.)

4) Guiding the students to read and review the picture word chart (say the word, spell it, say it again).

5) Giving students a set of the word cards that match the words in the picture word charts.

6) Guiding the students to use the word cards to find a generalization about the words (to classify the words into a variety of groups; e.g., the same initial letter, the same number of syllable, the same category of meaning, part of speech, etc.).

7) Guiding the students to make a word bank/a word list as their own dictionary by giving some attributes to each word (e.g., part of speech, meaning).

8) Giving students a sheet with sentences that include a "blank." Under each sentence are three words, including some from the picture. Ask students to choose the word that correctly completes the sentence (each sentence describes something in the picture).

9) Leading students into creating a sentence, sentences, or a paragraph connected to the basic competence of the lesson and to the picture word chart.

10) Reading and reviewing the sentence or paragraph.

d. The Selection of Picture

Non-fiction pictures/photographs are preferred due to "common" vocabulary that students possess. That is, fiction-based photographs or images will more likely than not have objects that only a portion of classroom students can relate to or identify. The photograph that is selected needs to be large enough so that all students in the classroom can see it from their seats (Johnson and Jimenez, 2008: 5).

The photograph should be one that has the following characteristics:

1) The photograph contains a plethora of familiar objects that all students can identify. This point is critical in that it allows all students to actively participate while also differentiating their learning experience.

2) The photograph should be the foundation for a unit of study. For example, if a photograph of an astronaut was selected, the photograph could be the foundation of a unit of study on space exploration, the planets, careers, explorers, and so forth.

   The image serves as a starting point for vocabulary development in a whole unit of study.

e. The Strengths of the PWIM

The basic moves of the PWIM stress these components of phonics, grammar, mechanics, and usage (Calhoun, 1999: 23)

1) Students hear the words pronounced correctly many times and the picture word chart is an immediate reference as they add these words to their sight vocabulary. The teacher can choose to emphasize almost any sound and symbol relationship (introduced or taken to mastery).
2) Students hear and see letters identified and written correctly many times.
3) Students hear the words spelled correctly many times and participate in spelling them correctly.
4) In writing the sentences, the teacher uses standard English (transforming student's sentences if necessary) and uses correct punctuation and mechanics (e.g, commas, capital letters). As different mechanical and grammatical devices are used, the teacher describes why the device is used. After many lessons and experiences with the teacher modeling the devices, the students learn how to use them too.

f. The Weaknesses of the PWIM

Feng (2011: 128) states that there are several challenges in the implementation of PWIM, those are:

1) Not every section of each unit in the textbook can be introduced by using this method such as sections of songs/rhymes and short paragraphs are difficult to teach by using the PWIM.
2) PWIM increases teachers' workload because they have to design their own teaching materials.
3) Practicing the full sequence of PWIM is time-consuming.

2. The Nature of Direct Instruction

Direct Instruction is often reffered to by other names, such as active teaching, mastery teaching, explicit instruction and often contrasted with tutorials, participatory laboratory classes, discussion, recitation, seminars, workshops, observation, case study, active learning, practica or interships (Siddiqui, 2008: 1).

Direct Instruction plays a limited but important role in a comprehensive educational program. The most prominent features are an academic focus, a high degree of teacher direction and control, high expectations for pupil progress, a system for managing time, and an atmosphere of relatively neutral affect that is positive social climate and free of negative affect.

a. The Definition of Direct Instruction

Arends (1997: 64) states that Direct Instruction is an approach to teaching that helps students to learn basic skill and acquire information that can be taught in step by step fashion. He adds that Direct Instruction model was specifically designed to promote

student learning of procedural knowlegde (knowledge about something) and declarative knowledge (knowledge about how to do something) that is well structured and can be taught in a step by step fashion. Meanwhile, Engelmann and Becker from NIFDI (The National Institute for Direct Instruction) in their article *"NIFDI Consultants Only"* say that Direct Instruction (DI) is a model for teaching that emphasizes well developed and carefully planned lessons designed around small learning increments and cleanly defined and prescribed teaching tasks. In addition, Joyce, Weil, and Calhoun (2000: 339) define Direct Instruction as a pattern of teaching that consists of the teacher's explanation of a new concept or skill to a large group of students, having them test their understading by practicing under teacher direction (that is, controlled practice), and encourage them to continue to practice under teacher guidance (guided practice). According to Queen (2003: 105), Direct Instruction is a teaching method in which teachers direct the instruction from one lesson to the next within a fixed time period that emphasis on the completion of academic tasks. Further, Duran and Carnine (2003: 3) argue that Direct Instruction is a method by which students are taught face to face in small or large group utilizing systematic and explicit instruction. This specific means of teaching students may include the teacher signaling, modeling, and following a lesson which is scripted and is designed to have the student respond chorally as the teacher

signals the small group or an entire group of students. The pace of a lesson being presented by the teacher is brisk so that the students will respond to what is being presented and will not be distracted.

Based on the definitions above, it can be concluded that Direct Instruction is a teaching method that helps students to learn basic skill and acquire information in which teachers direct the instruction from one lesson to the next within a fixed time period that emphasizes on the completion of academic tasks.

b. The Procedures of Direct Instruction

According to Siddiqui (2008: 1), this model proposes four categories of events of instruction:

1) Presentation

There are five important instructional events that should occur during the presentation phase of Direct Instruction.

a) review the previous material and/ or presequisite skills,
b) a statement of the specific knowledge or skills to be learned,
c) a statement or experience that privide students with reason or explanation of why these particular objectives are important,
d) a clear, active explanation of the knowledge or skills to be learned, and
e) multiple opportunities for students to demonstrate their initial understandings in response to teacher probes.

2) Practice

There are three events of instruction in the practice phase of a Direct Instruction approach to learning:

a) guided practice under the teacher's direct and immediaate supervision,

b) independent practice where the student is working on his or her own,

c) periodic review (often incorporated daily in guided and independent practice) whereby students are utilizing previously learned content or skills.

3) Assesment and evaluation

There are two instructional events in the assesment and evaluation phase of the Direct Instruction model:

a) collecting data on a daily basis to make judgments of student success, and

b) collecting data on longer intervals such as weekly, biweekly, monthly, ect.

4) Monitoring and feedback

There are two important instructional events that should occur through the lesson on an "as needed" basis:

a) providing cues and prompts, and

b) providing corrective feedback and reinsforment.

Joyce, et al. (2000: 339) provide five phases of activity in Direct Instruction, namely:

1) Orientation phase

Phase one is the orientation phase in which a framework for the lesson is established. During this phase the teacher's expectations are communicated, the learning task is clarified, and student accountability is established. Three steps are particularly important in carrying out the intent of this phase.

a) the teacher provides the objective of the lesson and the level of performance
b) the teacher describes the content of the lesson and its relationship to prior knowledge and/or experience
c) the teacher discusses the procedures of the lesson that is the different parts of the lesson and students' responsibilities during those activities.

2) Presentation phase

Phase two is the presentation phase in which the teacher explains the new concept or skill and provides demonstrations and examples. If the material is a new concept, it is important that the teacher discuss the characteristics (*or attributes*) of the concept, the rule or definition, and several examples. Another part of of this phase is checking to see that students have understood the new information before they apply it in the practice phases (e.g., can

they recall the attributes of the concept that the teacher has explained).

3) Structured practice

The teacher leads students through practice examples. The students practice as a group. The teacher's role in this phase is to give feedback on the students' responses, to reinforce accurate responses, and to correct errors.

4) Guided practice

The teacher gives students the opportunity to practice on their own while the teacher is still in the environment. Guided practice enables the teacher to make an assesment of the students' abilities to perform the learning task by assessing the amount and types of errors the students are making. The teacher's role in this phase is to monitor students' work, providing corrective feedback when necessary.

5) Independent practice

It begins when students have achieved an accuracy level of 85 to 90 percent in guided practice. The purpose is to reinforce the new learning to ensure retention as well as to develop fluency. In independent practice, students practice on their own without assistance and with delayed feedback. This can be done in the classroom, if the teacher is not involved, but it can be done in any appropriate setting. The teacher's role in this phase is to make sure

the independent practice work is reviewed soon after completion to assess whether the students' accuracy level has remained stable and to provide corrective feedback for those who need it.

Arends (1999: 64) proposes the syntax of Direct Instruction as follows:

Table 2.2 Syntax of Direct Instruction

Phases	Teacher Behavior
Phase 1 Provide objective and establish set	Teacher goes over objectives for the lesson, gives background information and explains why the lesson is important. Get students ready to learn.
Phases 2 Demonstrate knowledge or skill	Teacher demonstrates the skill correctly or presents step by step information
Phase 3 Provide guided practice	Teacher structures initial practice
Phase 4 Check understanding and and provides feedback.	Teacher checks to see if students are performing correctly and provides feedback.
Phase 5 l extended practice and transfer	Teacher sets conditions for extended practice with attention to transfer to more complex and and transfer real life situation.

Based on some procedures of Direct Instruction above, it is concluded a procedure that can be used to develop all indicators of vocabulary as follows:

1) Orientation phase

   a) the teacher provides the objective of the lesson and the level of performance

   b) the teacher describes the content of the lesson and its relationship to prior knowledge and/or experience

c) the teacher discusses the procedures of the lesson that is the different parts of the lesson and students' responsibilities during those activities.

2) Presentation phase

Teacher explains the new concept or skill and provides demonstrations and examples.

3) Structured practice

The teacher leads students through practice examples. The students practice as a group.

4) Guided practice

The teacher gives students the opportunity to practice on their own while the teacher is still in the environment.

5) Independent practice

Students practice on their own without assistance and with delayed feedback. This can be done in the classroom, if the teacher is not involved, but it can be done in any appropriate setting.

c. **The Advantages of Direct Instruction**

The advantages of Direct Instruction teaching are that:

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. If the teacher want to reward the middle class students, this is the kind of teaching method to use.

4) The curriculum can be covered, so the teacher can say that she/he taught the material.

5) Some material should be taught this way. Any information for which there is one right answer, and for which that answer is relatively simple, can be taught efficiently and honestly by using Direct Instruction.

When used appropriately, Direct Instruction enables the teacher to communicate complex knowledge/information at the students' level. Direct Instruction also allows the teacher to present information that is not readily available to the students from other sources or by other means. It may also be an excellent way for a teacher to communicate enthusiasm for the subject and arouse the students' interest. A teacher may use Direct Instruction to focus the students' attention on relevant content and to assist the students in connecting new information to current knowledge and past experiences ("Direct Instruction", n.d.).

Direct teaching is best for learning specific concepts or skills. The specificity of the objectives or learning targets also makes it easier for teachers to create assessment tests of high validity and high reliability. Students, for their part, do not suffer much confusion in determining which part of the lesson is important and which part is not. However, to take advantage of these benefits of direct teaching or Direct Instruction, the teacher must ensure that the

contents of instruction are logically organized. The teacher must also ensure that the students already possess the prerequisite knowledge (Marcusic, 2012: 1).

d. The Disadvantages of Direct Instruction

The disadvantages of Direct Instruction teaching are that:

1) It is based on old learning theories: that we must learn simple tasks before complex ones, and that only measurable learning is worth while.
2) Students do not have a sense of the overall purpose of the simple steps. However, if you tell them the purpose, by using advance organizers, this disadvantage is overcome.
3) Students do not have a sense of the overall purpose of the simple steps. However, if you tell them the purpose, by using advance organizers, this disadvantage is overcome.
4) Teachers cannot assess what the students' prior knowledge is, so will be unaware of why particular students cannot learn.
5) Retention of how to solve the problems is low, because the students have not struggled with the problem themselves. This disadvantage can be overcome by having the students do many complex problems on their own. However, this means that one of the advantages (time efficiency) is lost.
6) Direct Instruction as an instructional method works for only a small per centage of students, not for a great variety. The students

who have other than verbal "intelligence", or who come from different cultural world views will fail.

Perhaps the greatest disadvantage of Direct Instruction is the inappropriate use of the methods: teachers fail to appreciate that there are limitations to the methods of Direct Instruction. One must acknowledge that Direct Instruction is limited in its ability to help students to fully develop their abilities to think critically and to work well in a group setting. Thus, Direct Instruction should be seen as one of a number of strategies that may be effectively employed by teachers ("Direct Instruction", n.d.).

The structure of direct teaching can be rigid enough to hinder the creativity of the teacher. There is very little room to improvise because this technique follows a step-by- step procedure. The procedure usually starts with an introduction, followed by the rationale for the instruction, then by the instruction itself. The procedure ends with a summary and then followed by an assessment. Direct teaching, if utilized by unprepared teachers, can be disastrous. For direct teaching or Direct Instruction to be effective, the teacher must have a mastery of the subject matter, must prepare a well-organized content, and must have excellent communication skills. Without these traits, a teacher could not effectively carry out direct teaching or Direct Instruction. And without these traits, direct teaching could not develop higher order

thinking skills in the student (Marcusic, 2012: 1).

3. The Comparison between Two Teaching Methods

a. The differences of two teaching models.

Based on the discussion about two teaching methods above, the differences of PWIM and Direct Instruction can be summarized as follows:

Table 2.3 The differences between PWIM and Direct Instruction

PWIM	Direct Instruction
1. PWIM is an inductive teaching strategy (inquiry teaching/discovery teaching). The teacher begins by exposing students to a concrete instance of a concept then students are encouraged to observe patterns, raise questions, and make generalizations from their observations.	1. Direct Instruction is an active teaching/mastery teaching/explicit instruction that consists of the teacher's explanation of a new concept to a large group of students, having them test their understading by practicing under teacher direction and encourage them to continue to practice under teacher guidance.
2. PWIM is student-centered. It leads the students to become inquirers into language.	2. Direct Instruction is more teacher-centered. The teacher maintains a central role during instruction.
3. The students' engagement is through seeking and building their sight vocabularies and studying characteristics of the words, trying to build generalizations about phonetic and structural characteristics that can help them to master the conventions of language.	3. The teacher's management system must ensure student engagement, mainly through watching, listening, and structured recitations.
4. A matching game with the set of word cards is used in learning words.	4. The use of nonacademic materials-for example, toys, games, and puzzles is deemphasized or even discouraged.
5. The goal is to gain conficence in one's ability to learn.	5. The goal is the maximization of student learning time.

b. The Comparison of the Steps of Teaching Methods

There are some different steps in conducting the treatment by PWIM and Direct Instruction. The comparison of two teaching methods can be shown as follows:

Table 2.4 The differences of teaching steps between PWIM and Direct Instruction in teaching vocabulary

PWIM	Direct Instruction
1. Teacher shows a very large picture connected to the theme which will be studied	1. Orientation phase a. Teacher explains the standard competence, basic competence, and the indicators of the lesson
2. Teacher asks students to share words they know that describe the objects in the picture.	b. Teacher describes the content of the lesson c. Teacher describes the procedure/step of the lesson (the teacher's role and the students' role in each activity).
3. Teacher labels the picture parts identified. (Draw a line from the identified object or area, say the word, write the word on the outer edges of the picture, spell the word; ask students to spell the word aloud and then to pronounce it.)	2. Presentation a. Teacher asks the students to mention some objects in their classroom b. Teacher gives a word list of the classroom objects on the blackboard c. Teacher explains the meaning and part of speech of each word in the list
4. Teacher guides the students to read and review the picture word chart (say the word, spell it, say it again)	d. Teacher adds the words used for asking help, asking thing, and giving thing in the word list.
5. Teacher gives students a set of the word cards that match the words in the picture word charts.	e. Teacher explains the meaning of the words used for asking help, asking thing, and giving thing.
6. Teacher guides the students to use the word cards to find a generalization about the words (to classify the words into a variety of groups; e.g., the same initial letter, the same number of syllable, the same category of meaning, etc.	f. Teacher demonstrates how to pronounce each word given and asking the students to repeat pronouncing after the teacher. g. Teacher demonstrates how to spell each word given and asking the students to repeat spelling after the teacher.
7. Teacher guides the students to make a word bank/ a word list as their own dictionary by giving some attributes to each word have been identified (e.g., meaning).	h. Teacher explains how to make expression for asking help, asking thing, and giving thing. 3. Structured Practice a. Teacher asks the students to pronounce the words together
8. Teacher gives students a sheet with sentences/expressions for asking help, asking thing, and giving thing that	b. Teacher asks the students to spell the words together c. Teacher asks the students to arrange

include a "blank." Under each sentence are three words, including some from the picture. Ask students to choose the word that correctly completes the sentence/expression (each sentence describes something in the picture). 9. Teacher guides the students to find the pattern and the words used in the expressions of asking help, asking thing, and giving thing and then discuss it together. 10. Teacher leads students into creating sentences/expressions of asking help, asking thing, and giving thing using the words they have learnt.	the jumbled letters into good word. 4. Guided Practice a. Teacher asks the students to complete the sentences by using the appropriate word. b. Teacher asks the students to arrange the jumbled words into good order. 5. Independent Practice a. Teacher asks the students to make some expressions for asking help, asking thing, and giving thing. b. Teacher asks the students to practice their expressions in a short dialogue with their partner.

C. The Nature of Intelligence

The term "intelligence" comes from two Latin words: *intellegentia* and *ingenium*. The first word means something like "understanding" and "knowledge". The second word means"natural disposition" or "ability". Fundamental to intelligent behaviour is an underlying disposition that enables us to reason, to think abstractly, to learn. The greater this ability, the more people are likely to learn, and to know. This knowledge is thus itself a sign of high intelligence (Eysenck, 2000: 14).

Raymont Cattell, one of the famous names in intelligence research, labelled those two aspects of intelligence "fluid" and "crystallized ability". "Fluid ability" (often written g_f) refers to the dispositional concept, the ability to acquire many kinds of knowledge. "crystallized ability" (often written g_c) refers to the knowledge already gained. Those two aspecs of intelligence are of course closely related. A vocabulary test is one of the best measures of intelligence because it is obviously a test of g_c, the number of words acquired

by listening and reading is a function of g_f provided the environment contains a sufficient supply of spoken and written words.

1. The Definition of Intelligence

The definition of intelligence has been controversial among many intelligence experts. Binet and Simon (1905: 194) who develop the original IQ test define intelligence as follows:

> It seem to us that in intelligence there is a fundamantal faculty, the alteration or the lack of which, is of the utmost important for practical life. This faculty is judgment, otherwisw called good sense, practical sense, initiative, the faculty of adapting one's self to circumstances.

Wechsler who developed another IQ test that is the most widely used in IQ test today defines intelligence as the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectivelly with his environment (Garlick, 2010: 5). In response to the controversy, fifty-two intelligence experts put forward a statement listing what is scientifically known about intelligence. They wrote that "Intelligence is a very general mental capability that, among other things. involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience. It is not merely book learning, a narrow academic skill, or test-taking smarts. Rather, it reflects a broader and deeper capability for comprehending our surroundings 'catching on', 'making sense' of things, or 'figuring out' what to do" (Garlick, 2010: 5). Meanwhile, Gardner (2006: 6) defines intelligence as "the ability or set of abilities that allows a person to solve

a problem or create a product that is of value in one or more cultures". Garlick (2010: 6) argues that those definitions indicate that the characterization of intelligence has grown broader over time. However, this broadening of the definition also means that the term intelligence has lost a lot of its meaning. Then, Garlick (2010: 6) defines intelligence as the ability to understand abstract meaning. He says that this equating of intelligence with the ability to understand is not controversial. The first definition of intelligence in the oxford English Dictionary is the "faculty of understanding". So, he concluded that intelligence is about understanding.

2. Aspects of Intelligence

Cash (2012: 2) states about two factor-theory of intelligence, namely:

a. g-factor

Some psychologist comes up with a test of mental abilities and administers it to many people. When a score is calculated and averaged across abilities, a general intelligence factor is established. This is factor one of the two-factor theories, commonly referred to as the *g-factor,* or the *general intelligence factor*. It is meant to represent how generally intelligent people are based on their performance on this type of intelligence test. This is often called the *psychometric theory* of intelligence. *Psycho* means psychological and *metric* means measured by a test.

b. s-factor

The individual scores on each of the individual subtests represent the s-factor. It represents a person's ability within one particular area. Put all the s-factors together, and someone get the g-factor. Commonly measured s-factors of intelligence include memory, attention and concentration, verbal comprehension, vocabulary, spatial skills, and abstract reasoning.

It can be concluded that intelligence in the psychometric theory is people score on an intelligence test. Each test is made up of a group of little tests or subtests. Typically, people who score high on one test also will do well on the other tests. In other words, there is a relationship between each of the individual abilities measured by the subtests represented by the general intelligence concept that underlies that relationship.

Spearman (1904: 201) describes a concept of general intelligence or the *g factor*. After using a technique known as factor analysis to examine a number of mental aptitude tests, Spearman concluded that scores on these tests were remarkably similar. People who performed well on one cognitive test tended to perform well on other tests, while those who scored badly on one test tended to score badly on others. He concluded that intelligence is general cognitive ability that could be measured and numerically expressed.

Boucher (2009: 58) describes that many intelligence tests are based on a broad distinction between genetically determined general reasoning ability, or possibly speed of thinking, reffered to as general intelligence ('g'), or, fluid intelligence; as opposed to acquired knowledge, reffered to as crystallised intelligence. Fluid intelligence is reflected in tasks that assess non-verbal abilities such as pattern perception and visual-spatial reasoning, whereas crystallised intelligence is reflected in tasks that assess verbal abilities and the kinds of knowledge acquired via language.

3. Intelligence Testing

According the Brophy (1990: 587), the assesment process of intelligence becomes formalized through the use of standardized test of intelligence and achievement, a movement that began with the work of Alfred Binet in the early 900s in France. Binet's test was very successful and were very quickly adopted in England and America, but the psychologist who adopted them did more than just translate them into English and use them to screen children First, they reffered to the test as "intelligence test" abandoning Binet's detailed fropiles of performance across a variety of measures in favor of a single index that came to be called "Intelligence Quotient". Then, they elaborated the notion of intelligence testing and the concept of IQ with the following ideas about the test and what they measure:

a. The tests are more mere indicators of school success; they measure

fundamental intellectual abilities.

b. Underlying this abilities is generalized factor (usually called "g"). This factor is general intelligence.

c. General intelligence is transmitted genetically and thus is fixed at conception. Repeated measures may produce different scores because of situational factors or measurements errors, but theoretically measurement would yield precisely the same IQ every time for any individual.

d. Both individual and group differences are fixed and changeable. Difference in educational experience or opportunities might effect the degree to which the intelligence is expressed but will not affect the intelligence itself.

e. Intelligence is more than simply a statistical predictor of academic achievement. It is a cause, usually by far the most important cause. So when the students do not achieve as highly as their measured IQs lead as to expect, they are underachievers who are not working up to their abilities.

Long, Wood, Littleton, Passenger, Sheehy (2011: 69-70) write about some aspects of intelligence testing namely:

a. General verbal abilities (verbal intelligence)

Although general ability is assessed by combining scores on a number of different sub-tests, the current trend in intelligence testing discourages the use of the full-scale score and strongly urges

the user to use the index scores to identify specific processing strenghs and weaknesses. The vocabulary sub-test has the greatest single effect on overal IQ and involves both receptive language (hearing and comprehension) and expressive language (when giving the answer). Verbal reasoning test series includes the test of vocabulary, logical verbal reasoning, relationships between words, symbol manipulation using letters and numbers, and the use of words in sentences.

b. General Non- verbal abilities (non-verbal intelligence)

Most tests of general intelligence include some form of assessment of non-verbal ability. The sub-tests here aim to give a reliable indication of how easily a pupil may acquire new concepts in a wide range of subjects including match, science, design, and technology. Since non-verbal abilities appear to be less dependent on culture and experience than verbal ones are, it can be argued that they are more representative of general underlying intelligence. This is often assumed to be innate and referred to as 'fluid intelligence' (Catell, 1983). Fluid intelligence can be contrasted with more verbally based test which emphasize acquired knowledge, referred to by Catell as 'crystallised intelligence'.

Slavin (1997: 132) states that IQ test is a test to measure a broad range of skills and performances but produce a single score that for people of average intelligence should be near 100.

From the theories above, it can be concluded that intelligence is a very general mental capability that involves the ability to reason, plan, solve problems, think abstractly, understand abstract meaning, comprehend complex ideas, learn quickly, learn from experience, and deal effectivelly with the environment. Intelligence test held in SD Negeri Ajibarang Kulon by LPSD Pelita Harapan Bangsa consists of some aspects to be measured; those are verbal ability, non verbal ability, and general intelligence.

D. Review of Relevant Studies

There are some researchers conducted a study in the implementation of PWIM to teach particular skills/competences. Swartzendruber (2007) conducted a research entitled "The Picture Word Inductive Model and Vocabulary Acquisition". The main purpose of this quasi-experimental study was to determine if students' vocabulary acquisition is enhanced with the PWIM, a research based method of vocabulary instruction. Additionally, this research sought to identify if performance on vocabulary measures are related to performances on comprehension measures. Further, the study examined if the use of the PWIM impacts vocabulary and/or comprehension scores. Finally, this research focused on the possibility of the influence of language status on vocabulary and comprehension skills. The experimental group of 14 second graders participated in the 4-week intervention, while the control group, consisting of 21 students from the other second grade classes received typical classroom instruction without the intervention. Nine of the

experimental group participants and 16 of the control group participants speak English as a second language. To assess students' vocabulary knowledge, a researcher-generated assessment was administered prior to intervention (pretest) and immediately following intervention (post test). This assessment targeted some of the vocabulary expected to be suggested by students in the course of the project. Also, the Scolastic Reading Inventory was used to test comprehension. The PWIM intervention was analyzed through parametric statistics by examining the vocabulary gains that participants made from the pre-assessment to the post-assessment. The results of her research are that (1) the PWIM intervention positively affects the students' vocabulary acquisition; (2) Vocabulary is related to comprehension; (3) The relationship between vocabulary and comprehension still exists but is weaker after controlling for language proficiency; and (4) the PWIM intervention influenced vocabulary and comprehension scores for students in the experimental group.

Feng (2011) conducted a research entitled "The Cooperative classroom: Scaffolding EFL Elementary Learners' English Literacies through the Picture Word Inductive Model – the Journey of Three Teachers in Taiwan". The focus of this study was to discover the participating teachers' and students' perspectives toward this new teaching approach and to understand the difficulties they encounter during the process of initiating and implementing an educational change. This eleven-month qualitative study involved three elementary English teachers and their 71 students from grades 4, 5 and 6 as participants. The data were collected through field notes from

onsite classroom observations, teachers' weekly reflective journals, in-class video recordings, and transcripts of teachers' monthly meetings and personal interviews with the participants. Although one teacher and her students had to withdraw from the study because of intense pressure from school authorities and parents, the results of this study indicate that the remaining teachers and students highly recommended implementing this alternative approach in English classes and believed that this new way of teaching not only helped students become more autonomous and responsible for their own learning, but also provided them with more opportunities to interact with their peers. In his research, the two teachers who were the subjects of his observation reported that their students' English vocabulary had increased and they were able to compose meaningful English paragraphs as a result of this non-traditional strategy. The students also revealed that their motivation toward learning vocabulary had improved.

Li (2011) conducted a research entitled "The Picture Word Inductive Model and English Vocabulary Acquisition – A Study in a Swedish Primary School". His study aims to assess the efficacy of the Picture Word Inductive Model (PWIM) in the acquisition of new English vocabulary for Swedish grade-4 pupils of a primary school in southern Sweden. In this study, two aspects of vocabulary acquisition were concerned, namely, the recognition of vocabulary forms (spelling and pronunciation) and general understanding of word meaning in the short term. The pupils were divided into two groups and the methods were tests; questionnaires and the data were analyzed both

qualitatively and quantitatively. After teaching lessons with the PWIM for one group and with using the word-list for the other close-level group, the results show that the group taught by the PWIM gained relatively higher test scores and performed more actively and found the lesson more enjoyable in the classroom. Teaching by the PWIM is found to be effective in learning the new English vocabulary of SLA (Second Language Acquisition). Although this efficacy is not prominent, a larger sample size and longer length of the cycles for the teaching of the PWIM would increase precision and will probably provide a different result for the efficacy of the PWIM in further studies.

Syamsul Rizal (2010) conducted a research entitled "Improving the Writing Skill of the Second Graders of MTs Nahdlatul Wathan 2 Rensing Lombok through the Picture Word Inductive Model Strategy". The research aimed at improving the ability of the second graders of MTs Nahdlatul Wathan 2 Rensing Lombok in writing descriptive paragraphs using the PWIM Strategy. For the purpose, it employed Collaborative Action Research in which both the researcher and his collaborator worked together in planning, implementing, observing the action, and reflecting on the data collected from the teaching and learning process and the students' writing products. The subjects of this research were 26 students of the second graders of MTs Nahdlatul Wathan 2 Rensing Lombok in the academic year 2009/2010. The study was conducted in two cycles and each cycle was carried out in four meetings. The instruments used were the writing tasks, observation checklist,

field notes, and a set of questionnaires. The reflection was based on the findings of teaching learning processes during the observation and the students' final products and the comparison with the criteria of success including: (1) the writing tasks, the students' writing achievement improved (≥75% students of the class achieved the scores greater than or equal to 60 of the range that lies from 0-100), and (2) an observation checklist and field notes, the students were actively involved in the ten writing activities. The result of the reflection was used to determine the planning of the next cycle. The findings indicated that using the PWIM Strategy could improve the students' ability in writing descriptive paragraphs. After the researcher conducted the first and the second cycles, the result showed that the students' scores in the first and second cycles improved. In the first cycle, there were 8 (31%) students out of 26 students who got scores under the target score 60, meanwhile in the second cycle, only 2 out of 26 students (8%) who still received scores under the target score 60.

Amir Hamzah (2010) conducted a research entitled "Improving Beginning Reading of the Fourth Grade Students of SDN Gunong Sekar 1 Sampang through Picture- Word Inductive Model (PWIM)". The research is aimed to improve the students' ability in beginning reading through Picture-Word Inductive Model (PWIM) on the planning stage, action stage, and evaluation. This study used a classroom action research design. The research is implemented in a colaboration beetwen the teacher (practitioner) and the researher. Every action cycle is conducted based on the action plot consisting

of planning, action, observation, and reflection. The data of the research are the information about the process of action (the observation result of the planning and the implementation) and the students' reading result. The studens' result before the action is as the basic of improvement in the sub sequent cycles, if the mastery level is lower than the target (70%). The subject of the research is teacher (the practitioner) and the students in the fourth grade of Gunong Sekar 1 elementary school of Sampang, particularly 38 students. The result of the research of improving the beginning reading ability in Gunong Sekar 1 of Sampang is the aplication of the picture-word inductive model (PWIM) consisting of pre-reading stage, reading stage, and post reading stage. Every stage is done in one meeting and the whole stages are conducted in tree cycles. At the pre-reading stage, a lesson plan is designed. The lesson plan includes the specific objectives, the materials, the learning activities, method, media, source, and evaluation. The lesson materials are based on 2006 curriculum (KTSP), which includes reading important "events" experienced by the students. At the reading stage, the learning process is taking place which is indicated by the interaction between the teacher and the students in dialogues, questions and answers, brainstorming in order to guide students to remember. The interesting events they have experienced. In the reading process the students are instructed to interperet what they see (pesceptual aspect), make inferences from the material (thinking aspect) and, recognize the connections between symbols and sounds, between words and what they represent (association aspect). At

the post-reading stage, the interaction and class discussion are carried out in order to rehearse the students to improve identification ability, make inferences and build association between reading texts and what they represent. The result of his research showed that the students' ability in beginning reading is improved. The improvement is signified by the increasing of the average level of competence in which in cycle I, it is low (52, 77%); cycle II (57, 08%); and in cycle III, it is quite high (70, 27%). It exceeds the target level (70%).

Tracy; Nicole; and Lisa (2001) conducted a research entitled "Three Inquiries into the Picture Word Inductive Model". Three Canadian teachers (an English language first grade teacher, a French immersion first grade teacher, and a grade four/five teacher of students with special needs) used an action research framework and a multidimensional model of teaching to study and expand their literacy strategies and watch the effects on their students. The model they used, the PWIM, was designed as a major component of language arts curricula for primary level beginning readers and older beginning or early-stage readers. Based on several lines of research on instructional strategies and promoting growth in reading and writing, the model contains various tools to help teachers study students' progress as they come into literacy. The model structures cycles of inquiry by students, generally 2-6 weeks long, with the pace and specific lesson content determined by the teacher's daily diagnosis of student performance. The

result of their research showed that students made subtantial gains in vocabulary, reading skills, and reading comprehension.

E. Rationale

1. The difference between PWIM and Direct Instruction to teach vocabulary;

   PWIM is an inductive teaching strategy (inquiry teaching/discovery teaching) which is based on the claim that knowledge is build primarily from a learners' experiences and interactions with phenomena. It begins with what the learners already know and respects their ability to think. The teacher begins by exposing students to a concrete instance of a concept then students are encouraged to observe patterns, raise questions, and make generalizations from their observations. A central assumstion of PWIM is that learners need to become inquirers into language, seeking to build their sight vocabularies and studying characteristics of those words, trying to build generalizations about phonetic and structural characteristics that can help them to master the conventions of language. PWIM is effective for teaching vocabulary due to some reasons. They are as follows: (1) PWIM is motivating because it uses a picture. However, picture has many effective functions in teaching. Picture can attract students' attention, picture can introduce new ideas which are not known yet, picture can strengthen the students' memory, and picture can help students understand the meaning of words; (2) PWIM activates and promotes students responsibility in learning. PWIM is not teacher-centered because

it is an inductive teaching. Students learn the words by observing and analizing the characteristics of those words, then trying to build generalizations about those words; (3) PWIM is not a rote learning because it develops understanding to the word meaning; (4) PWIM uses various activities such as repetition and retrieval. In repetition, students can meet the words several times during reading activities. In retrieval, students can use the words in writing activity; (5) PWIM can change students passive vocabulary into active vocabulary through writing activity. Therefore, PWIM can store students new vocabulary in long-term memory. Students have a very good chance to remember vocabulary for a long time and help students to be able to recall it again in the future.

On the other hand, Direct Instruction is more teacher-centered. The teacher maintains a central role during instruction. There is a high degree of teacher direction and control. The teacher's direction and control occur when (1) he direcly selects and gives a word-list as a target vocabulary to learn. He do not activate the students to discover their new vocabulary. It will makes the students forget the word easily; 2) he directly explains and gives the word meaning by immediatedly translated it or defined it in the first language. He do not activate the students to figure out the meaning themselves. Students will soon realize the pattern of their teacher's explanation and learn that they don't have to concentrate on working out the meaning because the translation is predictable given afterwards; (3) he provides the examples of the use of

the new words in a contextual full sentences. The students do not construct their own examples or sentences. It makes the students depend much on their teachers' presentation in classroom learning; (4) he does not provide many opportunities and many different ways for the students to demonstrate their knowledge of new words such as in word games, board games, and puzzles because in Direct Instruction the use of games and puzzles is deemphasized or even discouraged. Based on the explanation above, it can be assumed that PWIM is more effective than Direct Instruction to teach vocabulary.

2. The difference between students with high intelligence and students with low intelligence in vocabulary mastery;

The students with high intelligence have a good capacity to acquire, learn, understand, and apply knowledge. They learn faster than other students. The students with high intelligence understand the material that the teacher is teaching. In other words, the bright students are the students that "get it". In doing the tests, they use this understanding to determine the correct answers on the tests. They are also the ones who are most likely to get an "A" in the class.

On the other hand, The students with low intelligence will often have difficulty understanding what the teacher is teaching. When the teacher explains something, the students with low intelligence might be able to memorize the exact words the teacher uses. However, they will not be able to describe the concept using different words, or apply it to a

new situation such as on a test. In short, despite being given the same explanation, they are less able to understand it. They will really strugle to understand the material in the course. Even though they are working just as hard as the "A" students, they need to put all of this work in just to get a "C". Therefore, it can be assumed that the students who have high intelligence have better vocabulary mastery than the students who have low intelligence.

3. Interaction between teaching methods and students' intelligence to teach vocabulary.

PWIM is an inductive teaching strategy (inquiry teaching/ discovery teaching). A central assumstion of PWIM is that learners need to become inquirers into language, seeking to build their sight vocabularies and studying characteristics of those words, trying to build generalizations about phonetic and structural characteristics that can help them to master the conventions of language. PWIM involves the activation of some aspects of intelligence such as visual-spatial and verbal intelligences. Both the visual and verbal intelligences are used to identify the picture as in the second move of the method. The students also need to activate their prior knowledge, their intent, and life experiences to interpret the picture into the form of words. Furthermore, PWIM requires higher-order thinking skills, problem-solving, and inductive reasoning abilities which encourage the students to classify the words and to establish their own rules, which they can then implement to

decode and to intuit the meaning of new and unfamiliar words. The students who have high intelligence will get easy way using PWIM. They have good visual and verbal ability which are important for them to identify the picture. They have good ability to learn from experience which is important for them to interpret the picture. They also have good ability to reason, to think abstractly, to solve problems, and to make generalizations which are important for them to classify and to build generalizations about the characteristics of words. They are likely to learn and to know. They are active, creative, and having good participation in learning. Therefore, PWIM is supposed more effective for the students who have high intelligence.

On the other hand, Direct Instruction is active teaching/mastery teaching. The basic idea of Direct Instruction is to get students to learn the academic content such as vocabulary as many as possible in less time. Direct Instruction is more teacher-centered. The teacher maintains a central role during instruction. There is a high degree of teacher direction and control. In this method, the students do not engage in many activities that activate their mental work because the teacher has explained directly and clearly a word, its meaning and its example of sentences in which the word can be applied. The students are merely expected to get more benefit from the teacher's direct explanation. The students who have low intelligence will not get difficulty in how they use Direct Instruction since Direct Instruction does

not require a great amount of mental work and higher-order thinking skill. The students who have low linguistic intelligence do not have good ability to reason, plan, solve problems, think abstractly, understand abstract meaning, comprehend complex ideas, and learn from experience. So, it is assumed that for the students who have low intelligence using Direct Instruction is more suitable.

Based on the explanation, it can be assumed that PWIM is suitable for the students who have high intelligence and Direct Instruction is suitable for the students who have low intelligence. Therefore, there is an interaction between teaching methods and students' intelligence in teaching vocabulary.

F. Hypothesis of the Research

This research formulates the hypotheses as follows:

1. PWIM is more effective than Direct Instruction to teach vocabulary to the fifth grade students of SD Negeri Ajibarang Kulon.
2. The fifth grade students of SD Negeri Ajibarang Kulon who have high intelligence have better vocabulary mastery than the students with low intelligence.
3. There is an interaction between teaching methods and students' intelligence to teach vocabulary to the fifth grade students of SD Negeri Ajibarang Kulon.

CHAPTER III

RESEARCH METHODOLOGY

This chapter is devoted to discuss (1) Research Method; (2) Place and Time of the Study; (3) Population, Sample, and Sampling; (4) Techniques of Collecting the Data; and (5) Techniques of Analyzing the Data.

A. Research Method

The method applied in this research was an experimental method. Experimental research is a research in which the researcher manipulates the independent variable. As stated by Johnson and Christensen (2000: 23), the purpose of experimental research is to determine cause-and-effect relationships. The experimental research method enables us to identify causal relationships because it allows us to observe, under controlled conditions, the effect of systematically hanging one or more variables. In line with the above elaboration, Nazir (2005: 63) states that an experimental study is a study that is conducted by manipulating the research object. The purpose of an experimental study is to investigate the effectiveness between a certain treatments to experimental class and to control class as the comparison. Thus, the independent variable in experimental research is commonly called as experimental variable or treatment variable. Meanwhile, the dependent variable is known as the outcome variable.

Referring to this research, the writer chose the experimental research method because this research was related to the effectiveness of teaching model used as the independent variables and intelligence as the attribute

variable in teaching vocabulary for the fifth grades of SD Negeri Ajibarang Kulon. This research involved three kinds of variables namely independent variable, dependent variable, and control variable. The independent variable of this research was the teaching model. The teaching models were the factors of this study which were manipulated, measured, and selected to know the effect and the relationship to the phenomenon investigated. The teaching models used in this study were PWIM and direct instruction model. These two different models were related differently for the groups of students. In this way, group of students taught by PWIM function as experimental group and group of students taught by direct instruction function as control group. Furthermore, the dependent variable of this research was students' vocabulary mastery for the fifth grade students of SD Negeri Ajibarang Kulon in the academic year of 2011/2012. The control variable of this study was students' intelligence. This variable was also assumed as the secondary independent variable to the phenomenon investigated. In this study, the writer is interested to investigate the effect of independent variable (X) or teaching models on dependent variable (Y) or vocabulary mastery, in which the relationship between X and Y is influenced by the attribute variable (Z) or students' intelligence.

B. The Place and Time of Research

This research was held at SD Negeri Ajibarang Wetan in the academic year of 2011/2012. It is located on Jl. Pramuka. This research was held from January 2012 to October 2012. The following is the time schedule of

consulting the proposal, conducting the research, and submitting the result of the research/document:

a. Preparation

1) January 2012 : Title Consultation

2) February 2012 : Proposal Draft Consultation

3) March 2012 : Proposal Draft Seminar

4) April 2012 : Instrument Consultation

b. Implementation

1) May 2012 : Research Permision

2) May – June 2012 : Data Collection

c. Analysis of Data and Research Report

July – October 2012: Data Analysis and Research Report

C. Population, Sample, and Sampling

1. Population

Population refers to all the events, things or individuals to be represented (Christensen, 2007: 57). The population of this research was the fifth grade students of SD Negeri Ajibarang Kulon in the academic year of 2011-2012. There are 2 classes all together. The number of the students is 44 students.

2. Sample

A sample is a set of elements taken from a larger population (Christensen, 2000: 158). Hadi (2000: 182) defines sample as a part of the population. The sample of this research was class VA and VB SD Negeri

Ajibarang Kulon in the 2011/2012 academic year, each of which consists of 22 students. This research needed two classes. One class was used as the experimental group and the other one as the control group.

3. Sampling

According to Fraenkel and Wallen (1993: 79) sampling is the process of selecting the sample or individuals who will participate as a part of the study. Thus, it can be concluded that sampling is a technique which is conducted to get sample from a population.

In this research, the researcher used total sampling to get sample from the population because all the population became the sample of this research and the population was less than 100 students. Noko (2009: 2) states that *total sampling atau sampling jenuh adalah teknik penentuan sample dengan mengambil seluruh anggota populasi sebagai responden atau sample. Hal tersebut dilakukan bila jumlah populasi relative kecil*. The researcher determined which one of the two classes will be the experimental group and which one will be the control group by applying lottery.

D. Technique of Collecting Data

The technique of collecting data was documentary and test technique. The first was used to collect the data of students' intelligence scores. The second was used to know the students' vocabulary mastery.

The researcher got the documents of the intelligence scores from the school. The intelligence test has been conducted by Pelita Harapan Bangsa.

Based on the result of the Intelligence test, the students from both experimental and control group were classified into students with high intelligence and low intelligence. The scores of intelligence test can be seen in appendix 6.

The vocabulary test was in the form of objective test, oral test, and essay test. The instruments of vocabulary test must be valid and reliable. Therefore, the vocabulary test was tried out to know the validity and reliability. It was done before treatment. The try out was done to the other class (fifth grade students of SD Negeri Ajibarang Wetan) which didn't belong to the experimental and the control one. At the end, the valid and reliable items were used to get the data. The vocabulary test was conducted after treatment. The formulas of them are as follows:

1. Validity of vocabulary test items

$$r_{pbis} = \frac{\overline{X}_i - \overline{X}_t}{s_t}\sqrt{\frac{p_i}{q_i}}$$

where

1) $\overline{X}_t = \frac{\sum X}{n}$

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

3) $\sum x^2 = \sum X^2 - \frac{(\sum X)^2}{n}$

r : Biserial point correlation validity

S_t : standard deviation

p : the proportion of test takers that can answer correctly

q : 1 – p

$\overline{X_t}$: the average of total score for all test takers

$\overline{X_i}$: the average of test takers score for the correct answer

Arikunto (2002: 252)

The test items are valid if r *obtained* is higher than r *table* or $\mathbf{r_o} > \mathbf{r_t}$ and invalid if *r obtained is lower than r table* or $\mathbf{r_o} < \mathbf{r_t}$.

The tryout of the vocabulary test consists of 80 items. The result of the tryout showed that there were 61 valid items and 19 invalid items. The researcher used 50 valid items for testing the students' vocabulary mastery.

2. Reliability of vocabulary test items

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

where

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

r_{kk} = Kuder –Richardson formula 20 reliability coefficient

k = the number of valid items

p = the proportion of test takers who pass the items

q = the proportion of test takers who fail the items

s_t^2 = the variance of the total test scores

The instrument is reliable if r *obtained* or r_{kk} is higher than r *table* or $\mathbf{r_o} > \mathbf{r_t}$. The analysis of the reliability of the vocabulary test showed that r is 0.9531. Because r_o (0.9531) is higher than r_t (0.423), it can be concluded that the instrument is reliable. (see appendix 3).

E. Technique of Analyzing the Data

The researcher used a descriptive analysis and inferential analysis in this research. Descriptive analysis was used to know the mean, median, mode, and standard deviation of the score of vocabulary test. The normality and homogeneity test are used to know the normality and homogeneity of the data. It was done before testing the hypothesis. The last was the use of multifactor analysis of variance 2X2 (ANOVA). Making clear, the researcher presents the formula as follows:

Table 3.1 Factorial design 2x2

Teaching Method / Intelligence	PWIM (A_1)	Direct Instruction (B_1)	
High (B_1)	A_1B_1	A_2B_1	B_1
Low (B_2)	A_1B_2	A_2B_2	B_2
	A_1	A_2	

Note:

A_1 : the mean score of vocabulary test of experimental class which is taught by using PWIM

A_2 : the mean score of vocabulary test of control class which is taught by using direct instruction

B_1 : the mean score of vocabulary test of students having high intelligence.

B_2 : the mean score of vocabulary test of student having low intelligence.

A_1B_1 : the mean score of vocabulry test of students having high intelligence who are taught by using PWIM.

A_2B_1 : the mean score of vocabulary test of students having high intelligence who are taught by using direct instruction.

A_1B_2 : the mean score of vocabulary test of students having low intelligence who are taught by using PWIM.

A_2B_2 : the mean score of vocabulary test of students having low intelligence who are taught by using direct instruction.

The data were analyzed using the following formula:

1. The total sum of squares:

$$\sum x_t^2 = \sum X_t^2 - \frac{\left(\sum X_t\right)^2}{N}$$

2. The sum of squares between groups:

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

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:

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

5. The between-rows sum of squares:

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

6. The sum of squares interaction:

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

7. The number of degrees of freedom associated with each source of variation:

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-groups sum of squares	$= \sum(n-1)$
df for total sum of squares	= N-1

Note:

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 group

8. To know whether the result of data analysis is significant, it will be consulted to the F_{table} the significance level $\alpha = 0.05$. If the $F_{computation}$ is higher than F_{table}, the null hyphotesis is rejected and the result of the research is significant. If the result of the analysis is significant, then the degree of effectiveness is analyzed.

After that, to know there is an interaction of each group, the data were analyzed using TUKEY test as follows:

a. PWIM compared with Direct Instruction (between columns)

$$q = \frac{\overline{X}_{c1} - \overline{X}_{c2}}{\sqrt{Error\ variane / n}}$$

b. Student having high intelligence compared with the students having low intelligence (between rows)

$$q = \frac{\overline{X}_{r1} - \overline{X}_{r2}}{Error\ variance / n}$$

c. Between $A_1B_1 - A_2B_1$ (experimental group compared with control group for students having high intelligence

$$q = \frac{\overline{X}_{c1r1} - \overline{X}_{c2r1}}{Error\ variance / n}$$

d. Between $A_1B_2 - A_2B_2$ (experimental group compared with control group for students having low intelligence)

$$q = \frac{\overline{X}_{c1r2} - \overline{X}_{c2r2}}{Error\ variance / n}$$

The analysis of the result of the computation or q_o was compared with q_t, if $q_o > q_t$, the difference is significant. To know which one is better, the means are compared.

F. Statistical Hypothesis

The researcher formulated the statistical hypothesis that consisted of null hypothesis (H_o) and alternative hypothesis ($H\alpha$). The statistical hypotheses are as follows:

1. The difference in vocabulary mastery between students who are taught by using PWIM and students who are taught by using direct instruction method.

a. $H_o : \mu A_1 = \mu A_2$, it means that there is no significant difference in vocabulary mastery between the students who are taught by using PWIM and students who are taught by using direct instruction method.

b. $H\alpha : \mu A_1 > \mu A_2$, it means that the students who are taught by using PWIM have better vocabulary mastery than the students who are taught by using direct instruction method.

2. The difference in vocabulary mastery between the students who have high intelligence and the students who have low intelligence.

a. $H_o : \mu B1 = \mu B2$, it means that there is no significant difference in vocabulary mastery between the students who have high intelligence and the students who have low intelligence .

b. $H\alpha : \mu B1 > \mu B2$, it means that the students who have high intelligence have better vocabulary mastery than the students who have low intelligence.

3. The interaction between teaching methods and students' intelligence in teaching vocabulary.

a. $H_o : \mu A \times \mu B = 0$, it means that there is no interaction effect between teaching methods and students' intelligence on students' vocabulary mastery.

b. $H\alpha : \mu A \times \mu B \neq 0$, it means that there is an interaction effect between teaching methods and students' intelligence on students' vocabulary mastery.

CHAPTER IV

THE RESULT OF THE STUDY

This chapter discusses the result of the study. The result is divided into four discussions as follows: the description of the data, normality and homogeneity test, hypothesis test, and the discussion of the result of the study.

A. The Description of the Data

The data presented are the result of the vocabulary test. It includes the mean, mode, median, standard deviation, and frequency distribution then followed by histogram and polygon. The descriptions of the data are based on the groups analyzed which are divided into eight groups:

1. The data of vocabulary test of the students or the group who are taught by using PWIM (A_1)
2. The data of vocabulary test of the students or the group who are taught by using Direct Instruction (A_2)
3. The data of vocabulary test of the students who have high intelligence (B_1)
4. The data of vocabulary test of the students who have low intelligence (B_2)
5. The data of vocabulary test of the students or the group having high intelligence who are taught by using PWIM (A_1B_1)
6. The data of vocabulary test of the students or the group having low intelligence who are taught by using PWIM (A_1B_2)
7. The data of vocabulary test of the students or the group having high intelligence who are taught by using Direct Instruction (A_2B_1)

8. The data of vocabulary test of the students or the group having low intelligence who are taught by using Direct Instruction (A_2B_2)

The data of each group are described as follows:

1. The data of vocabulary test of the students or the group who are taught by using PWIM (A_1)

Descriptive analysis of the data of A_1 shows that the score is 64 up to 100. The mean is 80.95, the mode is 74.16, the median is 79.5, and the standard deviation is 10.59. Histogram and polygon are presented below.

Table 4.1 Frequency Distribution of A_1

Class Limits	Class Boundaries	Midpoint	Tally	Frequency	Percentage
64 - 71	63.5 – 71.5	67.5	IIIII	5	22.73
72 - 79	71.5 – 79.5	75.5	IIIII I	6	27.27
80 - 87	79.5 – 87.5	83.5	IIII	4	18.18
88 - 89	87.5 – 95.5	91.5	IIIII	5	22.73
96 - 103	95.5 – 103.5	99.5	II	2	9.09
				22	100.00

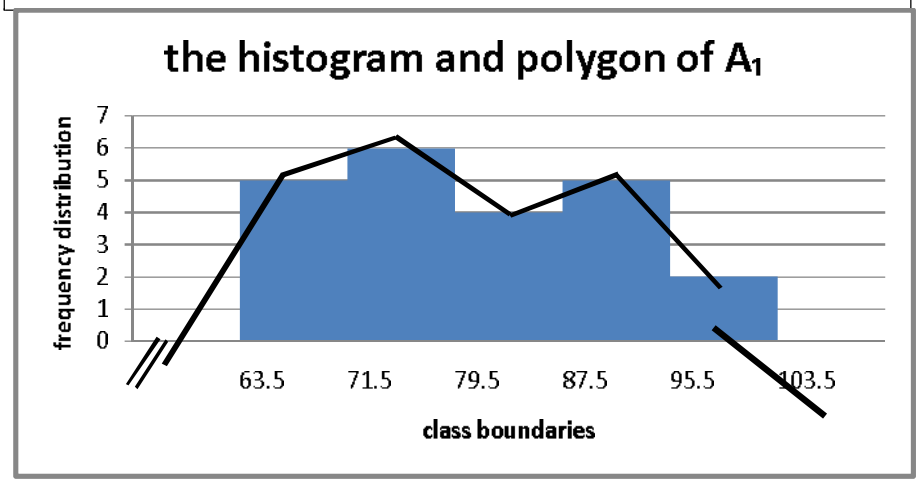

Figure 4.1. The histogram and polygon of the students taught by using PWIM (A_1)

2. The data of vocabulary test of the students or the group who are taught by using Direct Instruction (A_2)

Descriptive analysis of the data of A_2 shows that the score is 68 up to 90. The mean is 77.27, the mode is 79, the median is 77.5, and the standard deviation is 6.12. Histogram and polygon are presented below.

Table 4.2 Frequency Distribution of A_2

Class Limits	Class Boundaries	Midpoint	Tally	Frequency	Percentage
68 - 72	67.5 – 72.5	70	IIIII I	6	27.27
73 - 77	72.5 – 77.5	75	IIIII	5	22.73
78 - 82	77.5 – 82.5	80	IIIII III	8	36.36
83 - 87	82.5 – 87.5	85	I	1	4.55
88 - 89	87.5 – 92.5	90	II	2	9.09
				22	100.00

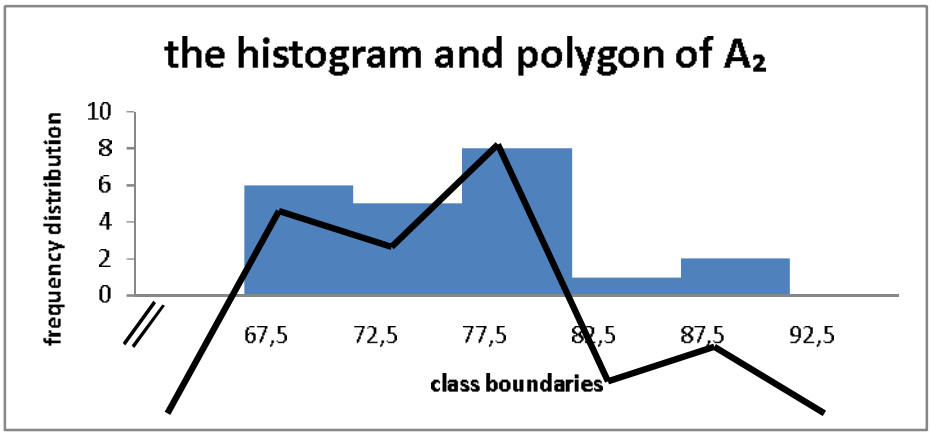

Figure 4.2. The histogram and polygon of the students taught by using Direct Instruction (A_2)

3. The data of vocabulary test of the students who have high intelligence (B_1)

Descriptive analysis of the data of B_1 shows that the score is 70 up to 100. The mean is 85.23, the mode is 83.5, the median is 84.75, and the standard deviation is 7.90. Histogram and polygon are presented below.

Table 4.3 Frequency Distribution of B_1

Class Limits	Class Boundaries	Midpoint	Tally	Frequency	Percentage
66 - 72	65.5 - 72.5	69	I	1	4,55
73 - 79	72.5 - 79.5	76	IIII	4	18,18
80 - 86	79.5 - 86.5	83	IIII III	8	36,36
87 - 93	86.5 - 93.5	90	IIII	5	22,73
94 -100	93.5-100.5	97	IIII	4	18,18
				22	100.00

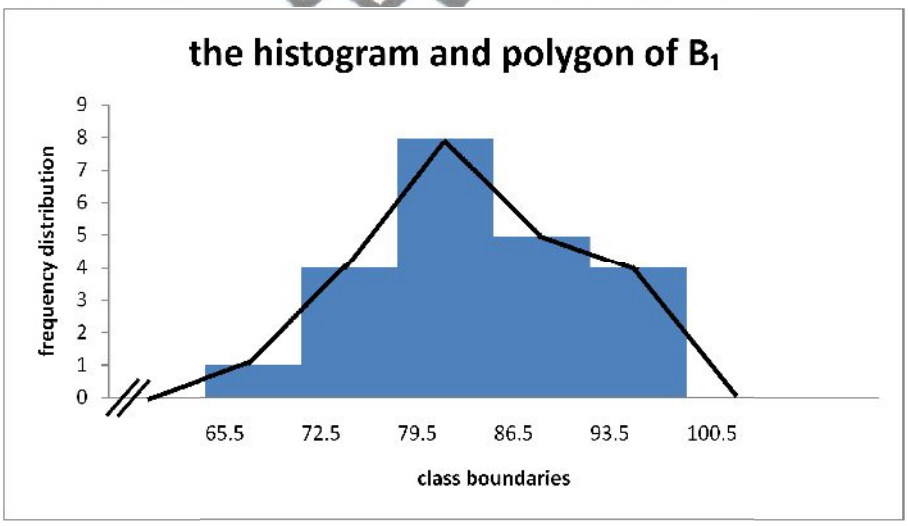

Figure 4.3. The histogram and polygon of the students having high intelligence (B_1)

4. The data of vocabulary test of the students who have low intelligence (B_2)

Descriptive analysis of the data of B_2 shows that the score is 64 up to 80. The mean is 73.4, the mode is 71.5, the median is 73.5, and the standard deviation is 4.70. Histogram and polygon are presented below.

Table 4.4 Frequency Distribution of B_2

Class Limits	Class Boundaries	Midpoint	Tally	Frequency	Percentage
64 - 67	63.5 – 67.5	65.5	II	2	9.09
68 - 71	67.5 – 71.5	69.5	IIIII I	6	27.27
72 - 75	71.5 – 75.5	73.5	IIIII I	6	27.27
76 - 79	75.5 – 79.5	77.5	IIIII I	6	27.27
80 - 84	79.5 – 84.5	82	II	2	9.09
				22	100.00

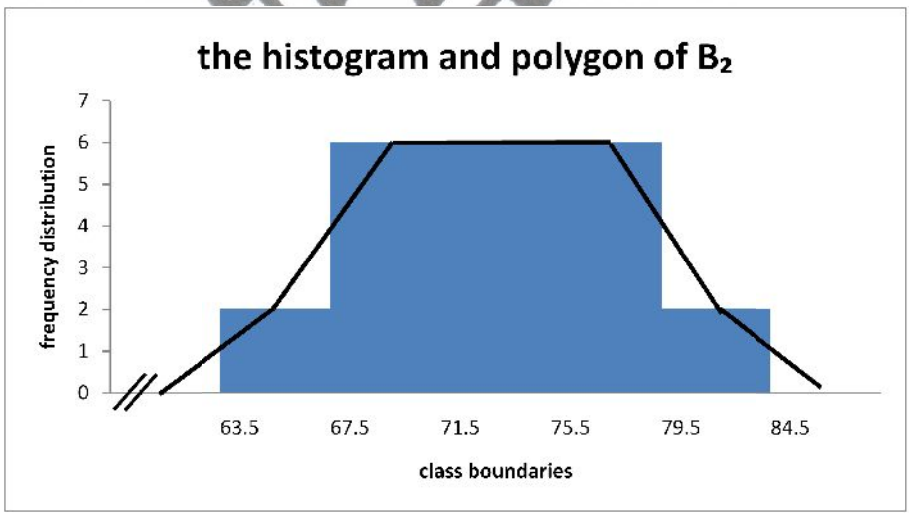

Figure 4.4. The histogram and polygon of the students having low intelligence (B_2)

5. The data of vocabulary test of the students or the group having high intelligence who are taught by using PWIM (A_1B_1)

Descriptive analysis of the data of A_1B_1 shows that the score is 80 up to 100. The mean is 89.86, the mode is 90.9, the median is 90.3, and the standard deviation is 5.43. Histogram and polygon are presented below.

Table 4.5 Frequency Distribution of A_1B_1

Class Limit	Class Boundaries	Midpoint	Tally	Frequency	Percentage
77 - 82	76.5 - 82.5	79,5	I	1	9,09
83 - 88	82.5 - 88.5	85,5	III	3	27,27
89 - 94	88.5 - 94.5	91,5	IIIII	5	45,45
95-100	94.5-100.5	97,5	II	2	18,18
				11	100,00

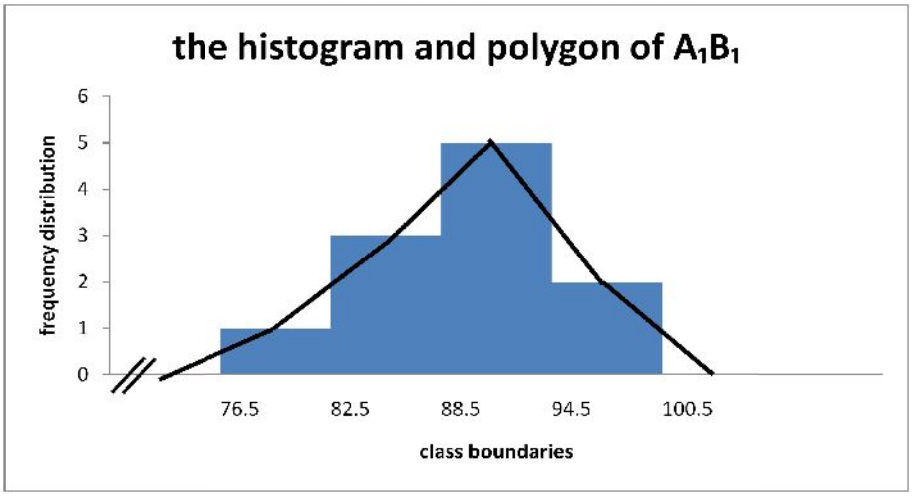

Figure 4.5. The histogram and polygon of the students having high intelligence who are taught by using PWIM (A_1B_1)

6. The data of vocabulary test of the students or the group having low intelligence who are taught by using PWIM (A_1B_2)

Descriptive analysis of the data of A_1B_2 shows that the score is 64 up to 78. The mean is 72.04, the mode is 71.5, the median is 75.66, and the standard deviation is 4.48. Histogram and polygon are presented below.

Table 4.6 Frequency Distribution of A_1B_2

Class Limits	Class Boundaries	Midpoint	Tally	Frequency	Percentage
64 - 67	63.5 – 67.5	65.5	II	2	18.18
68 - 71	67.5 – 71.5	69.5	III	3	27.27
72 - 75	71.5 – 75.5	73.5	III	3	27.27
76 - 79	75.5 – 79.5	77.5	III	3	27.27
				11	100.00

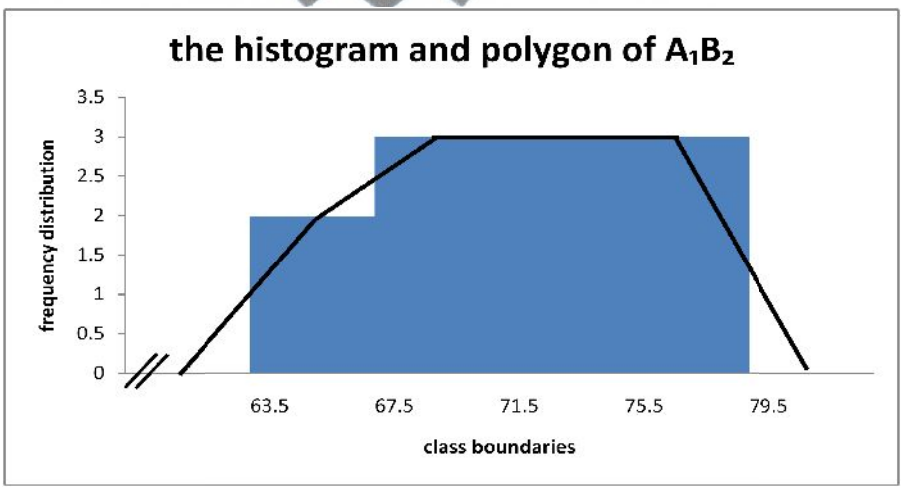

Figure 4.6. The histogram and polygon of the students having low intelligence who are taught by using PWIM (A_1B_2)

7. The data of vocabulary test of the students or the group having high intelligence who are taught by using Direct Instruction (A_2B_1)

Descriptive analysis of the data of A_2B_1 shows that the score is 70 up to 90. The mean is 80.68, the mode is 77, the median is 79.7, and the standard deviation is 6.16. Histogram and polygon are presented below.

Table 4.7 Frequency Distribution of A_2B_1

Class Limit	Class Boundaries	Midpoint	Tally	Frequency	Percentage
70 - 75	69.5 - 75.5	72,5	II	2	18,18
76 - 81	75.5 - 81.5	78,5	IIIII	5	45,45
82 - 87	81.5 - 87.5	84,5	II	2	18,18
88 - 93	87.5 - 93.5	90,5	II	2	18,18
				11	100,00

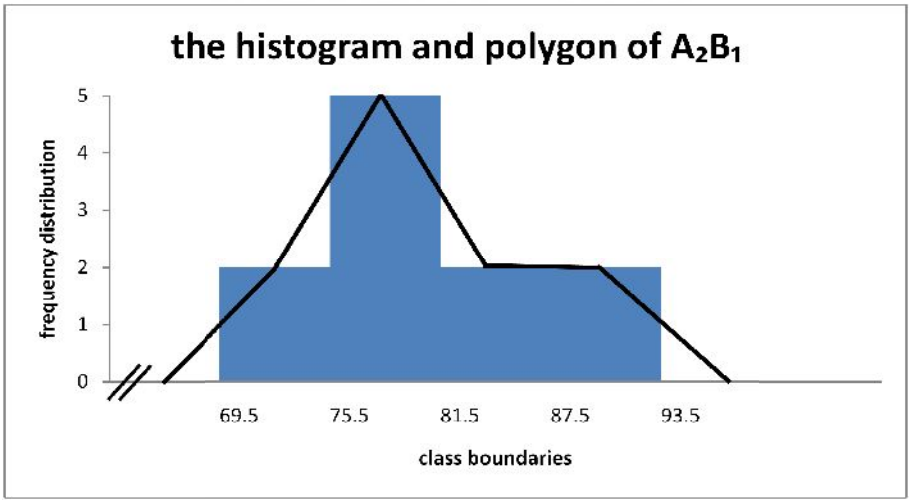

Figure 4.7. The histogram and polygon of the students having high intelligence who are taught by using Direct Instruction (A_2B_1)

8. The data of vocabulary test of the students or the group having low intelligence who are taught by Direct Instruction (A_2B_2)

Descriptive analysis of the data ofA_2B_2 shows that the score is 68 up to 80. The mean is 74.95, the mode is 75, the median is 78.83, and the standard deviation is 4.48. Histogram and polygon are presented below.

Table 4.8 Frequency Distribution of A_2B_2

Class Limit	Class Boundaries	Midpoint	Tally	Frequency	Percentage
68 - 71	67.5 - 71.5	69,5	III	3	27,27
72 - 75	71.5 -75.5	73,5	II	3	27,27
76 - 79	75.5 - 79.5	77,5	III	3	27,27
80 - 83	79.5 - 83.5	81,5	I	2	18,18
				11	100,00

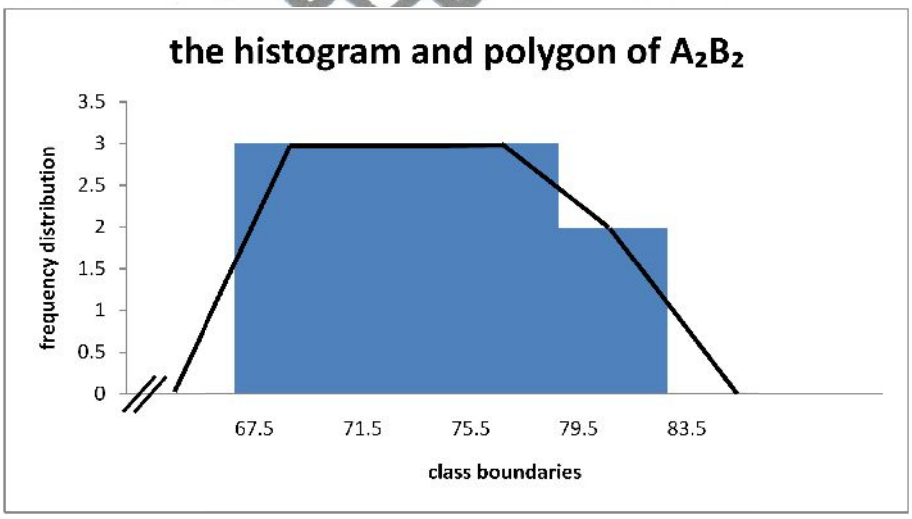

Figure 4.8. The histogram and polygon of the students having low intelligence who are taught by using Direct Instruction (A_2B_2)

B. Normality and Homogeneity Test

Before analyzing the data using inferential analysis, 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 homogeneous. 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) at the level of significance (α) = 0.05. L stands for Lilliefors.

Table 4.9 Normality Test

No	Data	The number of Sample	L obtained (L_o)	L Table (L_t)	Alfa (α)	Distribution of Population
1	A_1	22	0.1064	0.190	0.05	Normal
2	A_2	22	0.1338	0.190	0.05	Normal
3	B_1	22	0.0893	0.190	0.05	Normal
4	B_2	22	0.1153	0.190	0.05	Normal
5	A_1B_1	11	0.1370	0.249	0.05	Normal
6	A_1B_2	11	0.1200	0.249	0.05	Normal
7	A_2B_1	11	0.1484	0.249	0.05	Normal
8	A_2B_2	11	0.1317	0.249	0.05	Normal

Because L_o of each group is lower than L_t at the level of significance (α) = 0.05, it can be concluded that the sample is in normal distribution.

2. Homogeneity Test

Homogeneity test is done to know that the data are homogenous. If χ_o^2 is lower than $\chi_t^2{}_{(0,05)}$, it can be concluded that the data are homogenous.

Table 4.10 Homogeneity Test

Sample	df	1/df	s_i^2	log s_i^2	(df) log s_i^2
1	10	0.1	34.25	1.534661	15.34661
2	10	0.1	24.65	1.391817	13.91817
3	10	0.1	36.36	1.560624	15.60624
4	10	0.1	19.2	1.283301	12.83301
∑	40	0.4			57.70403

χ^2 = (*In*10){B – ∑(r_ - 1)logS_²}

= (2.3026)(58.264 – 57.70403)

= 1.2894

Based on the result of calculation above, it can be seen that the χ^2 (1.2894) is lower than χ_t^2 at the level of significance (α) 5% = 7.81. So $\chi^2 < \chi_t^2$ (1.2894 < 7.81) and the data are homogenous.

C. Hypothesis Test

Hypothesis test can be done after the result of normality and homogeneity test are fulfilled. The data analysis is done by using multifactor analysis of variance 2 x 2. H_0 is rejected if $F_o > F_t$ meaning that there is a significant difference and an interaction. If H_0 is rejected, the analysis is continued to know the difference between the two groups (group A and group B) and cells using Tukey test. Furthermore, to know which group is better, the mean scores are compared. The multifactor analysis of variance 2 x 2 and

Tukey test are described below:

1. Summary of a 2 x 2 Multifactor Analysis of Variance

Table 4.11 Summary of a 2 x 2 Multifactor Analysis of Variance

Source of Variance	SS	df	MS	F_0	$F_{t\ 0,05}$
Between columns	168.09	1	168.09	5.873525	4.08
Between rows	1706.27	1	1706.27	59.62174	4.08
Columns by rows (interaction)	432.82	1	432.82	15.12392	4.08
Between groups	2307.18	3	769.06	-	-
Within groups	1144.73	40	**28.618**	-	-
Total	5759.09	43	-	-	-

Based on the table above, it can be concluded that:

a. Because F_0 between columns (5.873) is higher than F_t at the level of significance (α) = 0.05 (4.08), the difference between columns is significant. F_0 is higher than F_t, it means that the null hypothesis which states that there is no significant difference in vocabulary mastery between the students who are taught by using PWIM and students who are taught by using Direct Instruction is rejected. It can be concluded that teaching vocabulary using PWIM to the fifth grade students of SD Negeri Ajibarang Kulon is significantly different from the one using Direct Instruction. The mean score of students taught by using PWIM (81.00) is higher than that of those taught using Direct Instruction (77.09). It means that teaching vocabulary using PWIM to the fifth grade students of SD Negeri Ajibarang Kulon is more effective than the one using Direct Instruction.

b. Because F_0 between rows (59.622) is higher than F_t at the level of significance (α) = 0.05 (4.08), the difference between rows is significant. F_0 is higher than F_t, it means that the null hypothesis which states that there is no significant difference in vocabulary mastery between the students who have low intelligence and students who have high intelligence is rejected. It can be concluded that students having high intelligence demonstrate a significantly different result in their learning from the ones having low intelligence. The mean score of students having high intelligence (85.27) is higher than that of those having low intelligence (72.82). It means that the vocabulary mastery of the students having high intelligence is better than the one of the students having low intelligence.

c. Because F_0 columns by rows (15.124) is higher than F_t at the level of significance (α) = 0.05 (4.08), there is an interaction effect between the two variables, the teaching methods and students' intelligence on the students' vocabulary mastery. F_0 is higher than F_t, it means that the null hypothesis which states that there is no interaction between teaching methods and students' intelligence in teaching vocabulary is rejected. It can be concluded that there is an interaction between teaching methods and students' intelligence in teaching vocabulary to the fifth grade students of SD Negeri Ajibarang Kulon. The effect of teaching method on vocabulary mastery depends on the students' intelligence.

2. Summary of Tukey Test

The finding of q is found by dividing the difference between the means by the square root of the ratio of the within group variation and the sample size.

Table 4.12 Summary of Tukey Test

Between group	q_o	q_t (0.05)	Category	Meaning
$A_1 - A_2$	3.43	2.95	Significant	$A_1 > A_2$
$B_1 - B_2$	10.92	2.95	Significant	$B_1 > B_2$
$A_1B_1 - A_2B_1$	6.32	3.11	Significant	$A_1B_1 > A_2B_1$
$A_1B_2 - A_2B_2$	1.46	3.11	Not Significant	$A_1B_2 < A_2B_2$

Table 4.13 Table of the Mean Scores

	A_1	A_2	
B_1	90.36	80.18	85.27
B_2	71.64	74	72.82
	81	77.09	

a. Because q_o between columns (3.43) is higher than q_t at the level of significance (α) = 0.05 (2.95), PWIM differs significantly from Direct Instruction for teaching vocabulary. Because the mean of A_1 (81.00) is higher than A_2 (77.09), it can be concluded that PWIM is more effective than Direct Instruction.

b. Because q_o between rows (10.92) is higher than q_t at the level of significance (α) = 0.05 (2.95), the difference between rows is significant. Because the mean of B_1 (85.27) is higher than B_2 (72.82), it

can be concluded that the students having high intelligence have better vocabulary mastery than those having low intelligence.

c. Because q_o between A_1B_1 and A_2B_1 (6.33) is higher than q_t at the level of significance (α) = 0.05 (3.11), using PWIM differs significantly to teach vocabulary from Direct Instruction for students who have high intelligence. Because the mean of A_1B_1 (90.36) is higher than A_2B_1 (80.18), it can be concluded that PWIM is more effective than Direct Instruction to teach vocabulary for students who have high intelligence.

d. Because q_o between cells A_1B_2 and A_2B_2 (1.46) is lower than q_t at the level of significance (α) = 0.05 (3.11), using PWIM does not differ significantly from Direct Instruction for students who have low intelligence. It can be concluded that students with low intelligence will end up with "almost" the same result when they taught using both methods.

D. Discussion of the Result of the Study

This research is one of the efforts to generate some improvement in teaching vocabulary to elementary students. The discussions of the finding are as follows:

1. PWIM is more effective than Direct Instruction to teach vocabulary.

   The Picture Word Inductive Model is a teacher-facilitated process. The teacher facilitates cognitive environment that engage students to be active in the classroom. The students are active in a fun and productive way. The

instructional sequence of the PWIM cycles and recycles through the following activities. The teacher gives a large picture set on the blackboard related to the theme will be studied. Students are encouraged to study the picture and then name the objects, actions or emotions suggested in the picture. Each word generated from the picture is written on the outer edges of the picture. A line is drawn from the item to the word. Students watch and hear the teacher spells, writes, and pronounces aloud the word. The students repeat spelling and pronouncing the word after the teacher. After all words are generated, students review the word chart, spell, and pronounce the words together with the class. The words are placed on cards along with the meaning which the students manipulate on their desks and categorize according to their properties or attributes (the words with the same initial letter, the words with the same phonics patterns, the words with the same number of syllables, the words with the same word family). Sentences are generated from the words. When constructing the sentences, teacher models the correct sentence form. The students learn from the teacher's modeling and use that experience to create their own sentences. Calhoun (1999: 21) states that PWIM is an inquiry-oriented language arts strategy that uses pictures containing familiar objects and actions to elicit words from children's listening and speaking vocabularies. Teachers use the PWIM with classes, small groups, and individuals to lead them into inquiring about words, adding words to their sight reading and writing vocabularies, discovering phonetic and structural principles, and using observation and analysis in

their study of reading and writing. It is supported by Joyce, et al. (2009:60) who state that a major principle of PWIM is to build on children's growing storehouse of words and syntactic forms and to accelerate the transition to written forms.

PWIM is effective for teaching vocabulary due to some reasons. First, PWIM is effective because it uses a picture. However, picture has many effective functions in teaching. Natawidjaya (1997: 23) summarizes some functions of pictures in teaching. They are: (1) to attract the students' interest; (2) to stimulate and motivate children to learn; (3) to introduce new ideas which are not known yet; and (4) to strengthen the students' memory of a stimulus. In addition, Webber (1978: 54) argues that pairing L2 words with pictures is better than pairing them with their L1 equivalents in Indonesian. Related to the use of picture in teaching, Pavio (in Feng, 2011: 41) posits his "dual coding theory" and indicates that visual and verbal information are processed and decoded separately in different areas of brain. When the same information is presented in two different forms (verbal and visual), not only does the left hemisphere of the brain become active to decode the linguistic labels, but the right hemisphere also starts to interpret the visual representation. This dual coding process then will improve learning performance because the visual and linguistic information do not compete with each other. Second, PWIM is effective because it activates and promotes students responsibility in learning. PWIM is an inductive teaching strategy (inquiry teaching/discovery teaching) which is based on the claim that knowledge

is build primarily from a learners' experiences and interactions with phenomena. It begins with what the learners already know and respects their ability to think. Calhoun (1999: 25) states that a central assumstion of PWIM is that learners need to become inquirers into language, seeking to build their sight vocabularies and studying characteristics of those words, trying to build generalizations about phonetic and structural characteristics that can help them to master the conventions of language. Related to the effectiveness of inductive teaching, Feng (2011: 45) states that inductive reasoning is a way to discover regularities through the two processes of comparison: identification of similarities and differences. By examining similarities and differences, learners are going through a cognitive process which helps children attend to a concept, understand the concept and develop their knowledge. If students are taught regularly to think inductively, they will be able to use many sources of data and examine the information from all different aspects. Further, Feng (2011: 2006) states that training children to think inductively can help them discover the essence of concepts by themselves, thus promoting their intellectual growth. The inductive approach not only fosters children's attention to logical thinking but also raises their awareness of the nature of language and knowledge. It is supported by Joyce, Hrycauk, and Calhoun (2001: 43) who believe that with experience, practice, and modeling, learners can develop a better understanding of the principles of English as they classify the words according to common letter patterns and begin to internalize phonetic and structural principles. Therefore,

PWIM induces learners to classify their new words, building the concepts that will enable them to "make sense" of words they have not seen before. Calhoun (1999: 26) explains that most children want to make sense of the language around them and they eagerly engage in unlocking its mysteries.

On the other hand, Direct Instruction is less effective to teach vocabulary due to some reasons. First, there is a high degree of teacher direction and control. Direct Instruction is teacher-centered. The teacher maintains a central role during instruction. The teacher's direction and control occur when (1) he direcly selects and gives a word-list as a target vocabulary to learn. He do not activate the students to discover their new vocabulary. It will makes the students forget the word easily; (2) he directly explains and gives the word meaning by immediatedly translating it or defining it in the first language. He does not activate the students to figure out the meaning themselves. Students will soon realize the pattern of their teacher's explanation and learn that they don't have to concentrate on working out the meaning because the translation is predictable given afterwards. Joyce, Weil, and Calhoun (2000: 339) state that Direct Instruction is a pattern of teaching that consists of the teacher's explanation of a new concept or skill to a large group of students, having them test their understading by practicing under teacher direction (that is, controlled practice), and encourage them to continue to practice under teacher guidance (guided practice). Second, Direct Instruction is limited in its ability to help students to fully develop their

abilities to think critically and to work well in a group setting. Retention of how to solve the problems is low, because the students have not struggled with the problem themselves. Duran and Carnine (2003: 3) state that Direct Instruction includes the teacher signaling, modeling, and following a lesson which is scripted and is designed to have the student respond chorally as the teacher signals the small group or an entire group of students. The pace of a lesson being presented by the teacher is brisk so that the students will respond to what is being presented and will not be distracted. Therefore, PWIM is more effective than Direct Instruction to teach vocabulary.

2. The students having high intelligence have better vocabulary mastery than those having low intelligence. Students with high IQ tend to have better achievement concerning with all educational activities. The students who have high level of intelligence have positive attitude toward learning. They are active, creative, and enthusiastic in the classroom. They are able to learn, easy to understand, know what to do, can solve the problem and have good self-confidence. Garlick (2010: 5) states that intelligence is a very general mental capability that, among other things. involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience. The students in this level also have good motivation to achieve the learning success. Aiken (1977: 169) states that children with high IQ have several characteristics, some of them are: inquisitive, creative, and strong willed.

On the other hand, the students who have low level of intelligence face problem with most of the academic processes. They have unstable motivation in joining the learning process in the classroom. They are less able to understand the material, cannot solve the problem, do the task slowly, easy to give up, and do not have good self-confidence. Jordan (2006: 219) states that students with low IQ usually have learning disabilities which refer to a number of disorders that may affect the acquisition, organization, retention, understanding and use of verbal or nonverbal information.

There is a substantial correlation between intelligence and vocabulary mastery. Jordan (2006: 217) states that IQ is related to academic achievement; students with high IQs generally do well in school and those with low IQ scores tend to do poorly. Therefore, the students having high intelligence have better vocabulary mastery than those having low intelligence.

3. There is an interaction between teaching methods and students' intelligence. PWIM involves the activation of some aspects of intelligence such as visual-spatial intelligences. Both the visual and spatial intelligences are used to identify the picture as in the second move of the method. The students also need to activate their prior knowledge, their intent, and life experiences to interpret the picture into the form of words. Furthermore, PWIM requires higher-order thinking skills, problem-solving, and inductive reasoning abilities which encourage the students to classify the words and to establish their own rules, which they

can then implement to decode and to intuit the meaning of new and unfamiliar words. Calhoun (1999: 21) states that PWIM is an inquiry-oriented language arts strategy that uses pictures containing familiar objects and actions to elicit words from children's listening and speaking vocabularies. It is designed to capitalize on children's ability to think inductively. The PWIM enables the students to build generalizations that form the basis of structural and phonetic analysis. And it respects their ability to think.

The high intelligence students of the experimental group, to whom the PWIM is applied, were active and enthusiastic in joining the activities. They could identify the picture which has been taken in various situations and with various cultural backgrounds easily and quickly. They could identify objects, actions and any other stuff/abstract feeling from the picture, they actively interpret what they see in the picture into the form of words/phrases. Then with a word card, they classify words according properties they can identify. The students who have high intelligence enjoy using PWIM. They have good visual and spatial ability which are important for them to identify the picture. Gardner in Slavin (1997: 132) states that spatial intelligence is capacities to perceive the visual-spatial world accurately and to perform transformation on one's initial perception. Further, Gardner (1999: 41) states that individuals' strength in this area depends on visual thinking and is very imaginative. People with this kind of intelligence, tend to learn most readily from visual presentations such as movies, pictures, videos, and demonstration. The

high intelligence students of the experimental group also have good ability to learn from experience which is important for them to interpret the picture. They have good ability to reason, to think abstractly, to solve problems, and to make generalizations which are important for them to classify and to build generalizations about the characteristics of words. They are likely to learn and to know. Garlick (2010: 5) states that Intelligence is a very general mental capability that, among other things. involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience. That is why PWIM is more effective to teach vocabulary to the students having high intelligence.

On the other hand, for the students having low intelligence, both PWIM and Direct Instruction are not effective methods for them because students with low intelligence will end up with "almost" the same result when they taught using both methods. The students who have low level of intelligence face problem with most of the academic processes. They have unstable motivation in joining the learning process in the classroom. They are less able to understand the material, cannot solve the problem, do the task slowly, easy to give up, and do not have good self confidence. Jordan (2006: 219) states that students with low IQ usually have learning disabilities which refer to a number of disorders that may affect the acquisition, organization, retention, understanding and use of verbal or nonverbal information. Garlick (2010: 10) states that when the teacher

explains something, the students with low intelligence might be able to memorize the exact words the teacher uses. However, they will not be able to describe the concept using different words, or apply it to a new situation. In short, despite being given the same explanation, they are less able to understand it. Guilford (1996: 428) states that intelligence is a systematic collection of abilities or functions for processing different kinds of information in various ways. From those theories, it can be concluded that whatever methods used by the teachers are less effective for the students having low intelligence.

CHAPTER V

CONCLUSION, IMPLICATION, AND SUGGESTION

The discussion of the findings has been presented in the previous chapter. This chapter presents the conclusion, implication of the research, and suggestion for teachers, students, and other researchers based on the finding of the research discussed on the previous chapter.

A. Conclusion

Based on the descriptions of the data analysis, the writer can come to the findings as follows:

1. PWIM is more effective than Direct instruction to teach vocabulary to the fifth grade students of SD Negeri Ajibarang Kulon in the academic year of 2011/2012.
2. The vocabulary mastery of the fifth grade students of SD Negeri Ajibarang Kulon in the academic year of 2011/2012 having high intelligence is better than that of those having low intelligence.
3. There is an interaction between teaching methods and students' intelligence in teaching vocabulary to the fifth grade students of SD Negeri Ajibarang Kulon in the academic year of 2011/2012.

Based on the research findings, it can be concluded that PWIM is a very effective method to teach vocabulary to the fifth grade students of SD Negeri Ajibarang Kulon in the academic year of 2011/2012.

B. Implication

The research findings imply that PWIM can affect the students' vocabulary mastery. It is proved from the research findings that PWIM is more effective than Direct Instruction in teaching vocabulary. The PWIM is used with a whole class, small groups, pairs, or individually to lead students into inquiring about words and adding them to their vocabularies, discovering phonetic and structural principles present in those words. The model is design . PWIM induces students to classify their new words, building the concepts that will enable them to "make sense" of words they have not seen before. In using the PWIM, teacher engages students in using all aspects of the language system and their prior knowledge. Teacher integrates their knowledge and uses it to expedite their language learning. Teacher anchor *hat* to a picture of a hat and connect the pronunciation to the word and to the spelling, with special attention to the order of the letters and to the formation of the letters. And teacher facilitates repetitions of these connections until mastery is attained. The use of PWIM is recommended to elementary students, especially to the fifth grade students of SD Negeri Ajibarang Kulon in academic year of 2011/2012.

C. Suggestion

Some suggestions for teachers, students, and future researchers can be listed as follows:

1. For teachers

The more effective methods of vocabulary instruction require more active involvement by the teacher in planning and delivering instruction, involve students in deeper processing (thinking of similar material, of similar classes of words, analogies, associations), and provide multiple exposures to the words. The cognitive work of learning vocabulary can be fun. Language learning can be fun. And, instruction in vocabulary needs to engage students and needs to be productive work for both students and teachers. That is why, it is recommended for the teacher to enjoy using the PWIM because it provides multiple exposures to the words. Moreover, it is fun and productive.

2. For Students

The students should be active and involved thoroughly in the teaching and learning process in order to improve their vocabulary mastery. The students who have low intelligence should develop their vocabulary through various ways such as through extensive reading and systematic instruction.

3. For Other Researchers

A number of factors need to be considered before a quantitative study is conducted. For example, teachers need to be well-trained and given enough time to practice using this approach in order to become routine or higher users before the research takes place in a real classroom setting. The classroom setting should enhance students' interaction with their peers and facilitate group work on a team project.