Effect of Learning Method and Cycnitive Style on Learning Results in Classical V Learners at SDN Central 01 Morning East Jakarta

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Abstract

The purpose of this study was to study the effect learning methods, and cognitive style, to the learning outcomes of science in SDN Central 01 Pagi East Jakarta . This research uses experimental method with treatment design by level 2 x 2. The sample of research is Va class as many as 20 people and class Vb as many as 20 people so that the total of all students of class V in Middle East 01 01 Pagi East Jakarta is 40 people. The results of this study can be concluded that: 1) Learning outcomes of learners who learn by PBL learning method is higher than that of learning with learning method CL 2) T erdapat differential effect of cognitive style on learning outcomes IPA, students who have the cognitive style field IPA independent education outcomes are higher than those who have a dependent cognitive style field. 3) T erdapat interaction effects between the learning method and the cognitive style of the science learning outcomes 4) H acyl learn science for students who have the cognitive style field of independent study using PBL method is higher than the CL teaching methods. 5) H acyl learn science for students who have the cognitive style of field-dependent learning by using CL higher than the PBL teaching methods. 6) H acyl learn science for students who have the cognitive style field of independent higher than the learners which has a field dependent cognitive style using PBL learning methods. 7) The study of science for students who have cognitive style field independent is lower than students who have cognitive style field dependent using CL learning method .

Keywords: Learning methods and cognitive style of learning outcomes of science .

1. Introduction

One of the fundamental ability to be possessed learners are problem-solving abilities acquired through learning. This is in accordance with Kurt Lewis field theory which assumes that learning is the process of solving problems (Sanjaya, h122 , 2013). The ability to solve this problem is given through the provision of subject matter, one of which is Natural Science (IPA). Science Education in Primary School aims to learners to master knowledge, facts, concepts, principles, discovery process and have a scientific attitude, which will benefit learners in learning themselves and the natural surroundings. Science education emphasizes the provision of direct experience to find out and do so as to explore and understand the natural surroundings scientifically. In practice, the provision of materials in science subjects in elementary schools often faces constraints. These obstacles occur because the learning of science is still done by lecture method and often more learners only record the subject matter only. This makes learning less interesting and tedious and indirectly has an impact on the low average learning outcomes of learners.

From the results of preliminary study of researchers at SDN central one morning it was found that most learners' scores were almost always below the KKM . If this is allowed to continue it will have a wider impact. Learners who have low grades will feel inferior and more lazy in following the lesson. Therefore need to find the right solution to overcome the problem of it . One way is to use appropriate learning method for learning in school success factors, among others, determined by the skills of teachers in selecting and applying appropriate methods. Among the learning methods are *Problem Based Learning* (PBL) and *Cooperative Learning* (CL) methods . Through these two methods of learning is expected to grow the ability to think high-level learners so that learners can think and work scientifically in solving the problem through the project assigned or develop the problem becomes a new problem in science subjects.

Problem Based Learning (PBL) method is an innovation in learning because in PBL the thinking ability of learners is really optimized through group work or systematic team so that learners can empower, sharpen, test and develop their thinking ability continuously (Ruman, p. , 2012) . The learning process is directed so that learners are able to solve problems systematically and logically so that learners are trained to think tingakat high. The PBL method is a teaching that challenges learners to " learn to learn ", working together in a group to find solutions to real problems in the world (Siregar, p.121, 2011) . In addition to the PBL method, the learning

method that can be applied in science learning is Cooperative Learning (CL) method .

Cooperative learning implies a common attitude or behavior in working or helping among fellow in structure organized cooperation in groups of two or more more, where the success of work is strongly influenced by involvement of each member of the group itself (Etin and Raharjo, p.4, 2008). The learning process with this cooperative model is capable stimulate and inspire the potential of learners in an optimal way learning atmosphere in small groups consisting of 2 up to 6 students . At the time learners learn in groups will developing an open learning atmosphere in the dimensions of the welfare, because at that time there will be a collaborative learning process within personal relationships that need each other. At that time also learners who learn in small groups will grow and develop patterns learn peer tutors (peer group) and learn cooperatively (cooperative) .The other most important thing in teaching the concept of science is to know the thinking process of learners. By knowing the process of thinking learners then the teacher can design an efficient learning method and allows learners to understand the concept so that the essence of the goal of education can be achieved. Teaching methods conducted by teachers will be very effective if adapted to the cognitive style of the learners. According to Winkel, the cognitive style is the typical way one observes and performs mental activity in the cognitive field (Winkel, p.164, 2012) . Cognitive style has great potential when used in an effort to improve the effectiveness of teaching and learning process. Based on the above description, the authors are interested in conducting research on "The Effect of Learning Methods and Cognitive Styles on the Results of Science Learning in Central Elementary School 01 Pagi East Jakarta".

2. Problem Based Learning Method

PBL is a learning that confronts learners on practical issues as a foothold in learning or in other words learners learn through the problems (Wena, h.91, 2012). Problem-based learning (PBL) is developed from the philosophy of constructivism where knowledge is not a collection of facts of a fact being studied, but as a person's cognitive construct of the object, experience and environment. Therefore learners must actively engage in activities, actively think, conceptualize and give meaning about things learned. Teachers can take the initiative to organize environments that provide optimal opportunities for learning. But the essence of learning control is entirely in the learners. The paradigm of construstivism views learners as individuals who already have the initial ability before learning something. This initial ability will be the basis for constructing new knowledge. Therefore, although the initial ability is still very simple or not in accordance with the opinion of teachers, should be accepted and used as the basis of learning and mentoring. (Budiningsih, pp. 56-59, 2005),

2.1. Cooperative Learning Method
Cooperative learning method in the learning process used a method that can create an effective and efficient learning situation. Cooperative learning is a successful learning strategy in small teams, the use of a variety and learning activities to improve the understanding of the subject. Each team member is not only responsible for the learning that has been taught but also helps the college learn as a team, thus creating a condition of achievement. *Cooperative* learning is the students working together to learn and be responsible for the progress of learning their friends. On learning *cooperative learning* create good cooperation among team members there is a dependency with each other requires a positive (instilling a sense of togetherness), the responsibility of each member (each member has contributed and learned), skills relationships between *persons* (communication, success, leadership, make decisions, and conflict resolution), face-to-face raises interaction and data processing. Trianto (2011: 57).

2.2. Cognitive Style

Cognitive style is a consistent way that a student learns to capture stimulus or information, how to remember, think and solve problems. (Nasution, p.95, 2006). Cognitive style is an important variable that affects the choices of learners in academics, the continuation of academic development, how learners learn as well as how learners and teachers interact in the classroom.

2.3. Learning Outcomes of Science
The learning outcomes of IPA are a well-directed scientific skill (both cognitive, affective and psychomotor) that can be used to discover a concept or principle or theory to develop a pre-existing concept or to denial about an invention. This learning result is called process skill. According to Wahyana, process skill is a skill gained from basic mental, physical and social skills training as a driver of higher abilities. Funk split into two tiers process

skills   are   skills   the   basic   level *(basic science prosess)* and   integrated   process   skills*(integrated science process)* (Triyanto, h.144, 2013).

3. Research Methods

The method used in this research is experimental research method. This method is used to find the effect of a treatment (Sugiono, h.107, 2010). The purpose of the experimental study was to investigate the possibility of causal interconnection by imposing on one or more experimental groups, one or more treatment conditions and comparing the results with one or more control groups not subject to treatment conditions (Hermawan, p.50, 2007). In this study the authors divide the study groups into two groups: VA class samples by giving treatment using PBL learning method and class VB by giving treatment using CL learning method. The research design uses *two factorial design* draft *design or treatment by level design 2 x 2.* In the design of the independent variable is formed into two sides, the first side is a variable treatment of learning with learning methods *Problem Based Learning* (PBL) and teaching methods *Cooperative Leaning* (CL) with the code A and the second is an attribute-free variable that is cognitive style that is classified into two that is high and low with code B. In accordance with the research design above, the constellation of research variables can be seen in the design below.

Table 1 . Table Design Treatment By Level Relationship Design Between Variables

Cognitive Style (B)	Learning methods	
	PBL (A_1)	CL (A_2)
Independent Field (B_1)	$A_1 B_1$	$A_2 B_1$
Field Dedependent (B_2)	$A_1 B_2$	$A_2 B_2$

The population in this research is all students of Class V in Middle SDN 01 East Jakarta 2015/2016 lesson year as many as 71 people. take sample using *simple random sampling* technique. with the details of the VA class learners as experimental class by using *project* learning learning method (PBL) and VB class as control class by using *Cooperative learning* (CL) method . The number of samples can be seen in the following bell :

Table 2 . Number of Students Based on Design Research

Cognitive Style (B)	Learning Method (A)		
	PBL (A_1)	CL (A_2)	amount
Independent Field (B_1)	10	10	20
Field Dependent (B_2)	10	10	20
amount	20	20	40

The instrument used in this research is the test instrument in the form of objective test and questionnaire. Objective test is used to measure student learning outcomes in the form of multiple choice questions as much as 50 items. Aspects that are measured are the cognitiveand psychomotor aspects of learners in the form of students' understanding of the concept of science with magnetic force material. Assessment of IPA learning outcomes is obtained through the following lattice tests:

Table 3 . Grid Instruments Test Results Learning Science Cognitive Sphere

Learning Outcomes	Sub Themes	Indicator	Shape Problem	Problem Number Item
Cognitive	The Kingdom of Islam in Indonesia	Describes magnetic features	Multiple choice	2,3,4,8,20 21,24
		Distinguish objects that contain magnets		27.28, 38
		Classify magnetic and non-magnetic objects		14.15,
Cognitive	2. Relics of the Kingdom of Islam in Indonesia	Explains how to make a magnet and a simple electric bell circuit	Multiple choice	5,6,12,18, 23,25,26,29,39
		Distinguish objects that use magnets		10,32,36,40
		Classify objects that work with magnetic force		9,22,37
Cognitive	3. Preserving the Heritage of Islamic Kingdoms in Indonesia	Explain how magnets work on objects that use magnets	Multiple choice	11,17,31,35
		Distinguish the magnetic pull force		16,30,34
		Classify objects that the magnet can draw		1.7,33

Table 4 . Grid Instruments Test Results Science Results Psychomotor Psychology

Learning Outcomes	Sub Themes	Indicator	Shape Problem	Problem Number Item
Psychomotor	The Kingdom of Islam in Indonesia	Creating an artificial magnet	Performance Test	4, 7,9,10
Psychomotor	2. Relics of the Kingdom of Islam in Indonesia	Apply the use of magnets in everyday life		2,3,5
Psychomotor	3. Preserving the Heritage of Islamic Kingdoms in Indonesia	Mimics how magnetic tensile forces work		1, 6.8

The instruments used in measuring the learning outcomes of IPA are the test of learning outcomes in the form of multiple choice and performance tests. The test in the multiple choice form is given with 4 choices, namely A, B, C, and D, in which there is only one correct or the right answer (Sudjana, p.48, 2009) Scoring or scoring of the correct answers in this multiple-choice test using the formula:

$$S_k = B - \frac{b}{0-1}$$

Instrumentation of the instrument was tested and the results showed that from 50 test items tested and after tested the test validity test obtained 15 questions that did not meet the requirements consist of 10 multiple choice questions and 5 esay questions, then declared *drop* (*drop*) because r_{count} smaller from r_{table} . As for the 10 questions of multiple choice is a matter of numbers 4, 10, 11, 14, 15, 17, 24, 33, 34, and 36. For the essays dropped in numbers 43, 45, 47, 49, and 50. the remaining 35 valid questions consist of 30 multiple choices and 5 essays. From result of calculation of instrument reliability of learning result of IPA obtained reliability value equal to 0,811. Thus it can be concluded that the science learning outcomes that have been tested have a very high reliability.So that the instrument can be used in research. The instrument used to measure cognitive style in this study is non-test instrument using *attitudes scales* . The method used to collect data in the form of a set of questions in the form of a questionnaire (questionnaire) using Gutman scale in the form of three or four statements that each must be answered "yes" or "no". Instruments are prepared by arranging with the following grid

Table 5 . Cognitive Style Grille

No	Aspect	No. Item Problem	Total Problem
1	Receive Information	5, 12, 15 23.24	5
2	Remembering	9, 10, 11, 21,22	5
3	Thinking	1, 2,13,14,25	5
4	Problem solving ability	7, 8,16, 17,18	5
5	The ability to receive stimuli from the environment	3, 4.6, 19.20	5
			25

Instrumentation of the instrument is tested and the results show that from 25 items tested test statement and after done the test of validity of the grains obtained 5 items statement that does not meet the requirement then declared (*drop*) because r_{count} is smaller than r_{table} . As for the 5 points of the statement are the items of statements numbered 1, 3, 6, 15, and 25. While the remaining 20 items of valid statements and the results of calculations reliability of cognitive-style instruments obtained reliability value of 0.897. Thus it can be concluded that cognitive style instruments that have been tested have a very high reliability. So that the instrument can be used in research. Data analysis used in this research is two way varians analysis (ANAVA) with 2 x 2 factorial design design or called factorial design. In order to test the hypothesis can be implemented it is necessary to test the requirements analysis of the normality test and homogeneity test.

4. Research Result And Discussion

The research data can be described as follows: 1). Score of Learning Outcome of IPA Learners with PBL Learning Method (A $_1$); Based on the data collected from the respondents as many as 20 people learners, it is known that the scores of learning outcomes of the students IPA with PBL learning method obtained the highest

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score 43; lowest score 25; average score of 34.80; median value of 35.5; value of mode 38; variance 30,48; standard deviation 5.52., 2). Score of Learning Results Science Students with Learning Method CL (A_2); Based on the data collected from the respondents as many as 20 people learners, it is known that the scores of learning outcomes of IPA learners with CL learning method got the highest score of 38; lowest score 25; average score of 32.80; median value 33.0;value of mode 33; variance 12,69; standard deviation 3.56., 3). Score of Science Results Learning Learners Who Have Cognitive Styles *Field Independent* (B_1)Based on the data collected from the respondents as many as 20 people learners, it is known that the score of learning outcomes of IPA learners who have an *independent field* cognitive style obtained the highest score 43; lowest score 25; average score of 35.15; median value 35.5; value of mode 38; variance 28,98; standard deviation 5.38., 4). Score of Science Results Learning Learners Who Have Cognitive Style *Field Dependent* (B_2); Based on the data collected from the respondents as many as 20 people learners, it is known that the score of learning outcomes of IPA learners who have cognitive style *field dependent* got the highest score 38; lowest score 25; average score of 32.45;median value 33.0; value of mode 33; variance 12,470; standard deviation 3.53., 5). Score of Science Learning Results Students with *Independent* Cognitive *Field Stage* with PBL Learning Method ($A_1 B_1$); Based on the data collected from the respondents as many as 10 people learners, it is known that the score of learning outcomes IPA learners who have an *independent field* cognitive style with PBL learning method obtained the highest score 43; lowest score of 36; average score of 39.50; median value 39.0; value of mode 38; variance 6,94; standard deviation 2.64., 6). Score of Learning Outcomes of Science Students with *Independent* Cognitive *Field Stage* with CL ($A_2 B_1$) Learning Method; Based on the data collected from the respondents as many as 10 students, it is known that the score of learning outcomes of IPA learners who have an *independent field* cognitive style with CL learning method got the highest score 35; lowest score 25;average score of 30.80; median value 32,0; value of mode 34; variance 12,18; standard deviation 3.49., 7). Score of Science Learning Results Learners Who Have Cognitive Style *Dependent Field* with PBL Learning Method ($A_1 B_2$); Based on the data collected from the respondents as many as 10 students, it is known that the scores of students' learning outcomes that have cognitive style *field dependent* with PBL learning method obtained the highest score of 34; lowest score 25; average score of 30.10; median value of 30.5; value of mode 31; variance 8.32; standard deviation 2.88., 8). Score of Learning Outcomes of IPA Learners Who Have Cognitive Style *Dependent Field* with CL Learning Method ($A_2 B_2$); Based on the data collected from the respondents as many as 10 students, it is known that the scores of students' learning outcomes that have cognitive style *field dependent* with CL learning method get the highest score of 38; lowest score 31; average score of 34.80; median value 34.5; value of mode 33; variance 5,73; standard deviation 2.39.

Requirement of data analysis to be tested in this research is normality test and homogeneity test. The normality test is performed by knowing whether the sample is from the same distributed population or the best non-biased linear predictor of an abnormally distributed population. It is expected that a sample of 40 students should be normally distributed. Recapitulation of normality test results are listed in the following table:

Table 6 . Summary of Normality Test Results

Group	L_{count}	L_{table}	Information
A_1	0.1049	0.190	Normal Distribution
A_2	0.1239	0.190	Normal Distribution
B_1	0.1082	0.190	Normal Distribution
B_2	0.1136	0.190	Normal Distribution
$A_1 B_1$	0.2157	0.258	Normal Distribution
$A_2 B_1$	0.1881	0.258	Normal Distribution
$A_1 B_2$	0.0885	0.258	Normal Distribution
$A_2 B_2$	0.1734	0.258	Normal Distribution

In addition to the normality test, one of the requirements that need to be done before testing the research hypothesis is by homogeneity test. Homogeneity test for treatment group (A) and attribute group (B) using F test. While the test for 4 experimental design cell groups use Bartlett test at α = 0,05. Homogeneity test is conducted to find out whether the population variance is homogeneous or not. The test criteria is received H_0 if $\chi^2_{count} < \chi^2_{tables}$ dal am real level α = 0.05. Based on the calculation obtained value $\chi^2_{count} = 1.33$ while χ^2_{tables} for significance level (α) 0.05 with the number of groups 4 - 1 = 3 is 7.82 means $\chi^2_{count} (4.37) < \chi^2_{table}$

$_{(0.05;3)}$ (7.82) means that the variance of the four groups is homogeneous.

Table 7 . Summary of Homogeneity Test Results

Group	Variance	Combined Variance	χ^2_{count}	χ^2_{tables}	Conclusion
$A_1 B_1$	6.94				
$A_2 B_1$	12.18	8.29	1.33	7.82	Homogeneous
$A_1 B_2$	8.32				
$A_2 B_2$	5.73				

Hypothesis testing in this research is done by using variance analysis and continued with tukey test, if there is interaction in test. Analysis of variance was used to test two-lane two main influence *(main effect)* and interaction *(interaction effect)* anta ra methods of learning and cognitive style on learning outcomes score IPA learners. By using anava table obtained the results of analysis as in the following table .

Table 8 . Results of Covariance Analysis

Source Varians	JK	dk	RJK	F $_{count}$	F $_{table}$ α = 0.05	F $_{table}$ α = 0.01
Between Columns	40.00	1	40.00	4.83 *	4.11	7.40
Between Rows	72.90	1	72.90	8.79 **	4.11	7.40
Interaction	448.90	1	448.90	54,15 **	4.11	7.40
In Group	298.60	36	8.29			
Total Reduced	860.40	39				

Requirement of data analysis to be tested in this research is normality test and homogeneity test The general purpose of this study is to obtain a more complete picture of the influence of learning methods and cognitive styles on scores of students' learning outcomes. Based on the result of analysis of two way variance on the line of Inter Columnfound that F $_{arithmetic}$ is bigger than F $_{table}$ (F $_{arithmetic}$ = 4,83> F $_{table (0,05; 1;36)}$ = 4,11). This shows that the score of students' learning outcomes of IPA there is a significant difference between PBL learning method and CL learning method. This difference is indicated by the average score of learning outcomes of IPA learners with learning methods PBL of 34.80 and the average score of learning outcomes of students IPA with CL learning method of 32.80. This means that there are differences in scores of students' learning outcomes of IPA with PBL learning methods and science learning outcomes scores of learners with CL learning method. The result of analysis of two way variance on Line Antar Baris found that F $_{count}$ is bigger than F $_{table}$ (F $_{arithmetic}$ = 8,79> F $_{table (0,01; 1;36)}$ = 7,40). This shows that the score of learning outcomes of students IPA there is a very significant difference between the cognitive style of *field independent* with cognitive style *field dependent* . This difference is indicated by the average score of learning outcomes of IPA learners who have an *independent field* cognitive style of 35.15 and the average score of learning outcomes IPA learners who have cognitive style *field dependent* of 32.45. This means that there are differences in scores of students 'learning outcomes that have an *independent field* cognitive style and scores of students' IPA learning outcomes that have cognitive style of *field dependent* .

The result of the analysis of two way variance on the Interction line found that F interaction $_{count}$ is greater than F $_{table}$ (F $_{arithmetic}$ = 54,15> F $_{table (0,01; 1;36)}$ = 7,40). This means that there is a very significant interaction effect between learning method and cognitive style to science learning outcomes. Since there is a significant interaction effect, it is followed by a tukey test for all four experimental design cells. Learning method is the most important part in the learning process. The success of learning one of them is influenced by the suitability of teaching learning methods used in learning. This is because in the learning method will be designed the process of interaction of learning and teaching. The PBL method is designed so that learners can interact with the environment as a learning resource. Through PBL methods learners seek, conduct and discover for themselves the concepts of natural science through assigned projects. In the method of learning for the discovery of the teacher does not

directly give generalizations, principles or rules to be learned, but the teacher involves learners in an inductive process to get it. Teachers organize learning situations in such a way that learners learn how to work with data to make conclusions.

In the CL method, the teacher presents the material that needs to be studied, provides answers, presents principles and elaborates the overall content to be learned. Teaching here is a deductive process, beginning with defining the concepts, principles that will be taught, explaining it and informing its implications. Learning by PBL method seems more useful for learners because learning occurs through the interaction of learners and teachers. In general, the cognitive style of learners also influences learning depending on the empowerment provided by the teacher. Learners who have a cognitive style of *field dependent* in providing answers depends on the many compliments given by the teacher. Through interaction with learners who have a field dependent learning style, teachers have many opportunities to influence (strongly) learn and learners' behavior. On the other hand, learners who have cognitive style of *field dependent are* more socially oriented, happy to relate to others, tend to choose to interact as often as possible with teachers, require motivation from teachers, need help and guidance in the learning process, also in solving problems.

For students with a cognitive style of filed independent, interaction with the environment has no great influence on the learning outcomes. They are quite capable of working independently, not requiring too much help or teacher direction in academics.They can respond better, independently, can set their own learning goals and have intrinsic motivation so that they are more likely to enjoy self-study. Result of tukey test on learner with cognitive *field independent* , $Q_{count} = 9{,}56$ bigger than $Q_{table\,(0,01;\,4:10)} = 5{,}77$. This means that there are differences in scores of students' learning outcomes with PBL learning methods and CL learning methods for groups of learners who have an *independent field* cognitive style . Thus it can be concluded that the score of learning outcomes IPA learners who have an *independent field* cognitive style , in groups with PBL learning method is higher than the group with CL learning method. Based on the characteristics of learners with an *independent field* cognitive style in which learners are able to receive teaching optimally and perform an analysis of tasks that are assigned tasks. In the use of learning methods, learners with independent field cognitive style is more suitable to use the PBL method. They are more reflexive to the possibilities of choice classification and visual analysis of the given material. If there are things that are not understood, learners will directly ask the teachers of the field of study. They can also receive criticism well. So if errors are found in the results obtained in the project activities they can easily accept and make improvements.

CL learning method that is conducted in discussion through question and answer activities is very unfavorable for learners with an *independent field* cognitive style that prioritizes internal motivation and strengthening strengthening from within itself. Whereas actually in teaching and learning activities with the CL method, learning is done through discussion groups that provide more opportunities to provide opportunities to interact with the environment through teacher guidance and direction. Stimulus derived from the environment when learning will not have much effect on the learning outcomes of the students IPA with *independent field* cognitive style.Result of tukey test on score of learning result of IPA of student having cognitive style of *field dependent* got value of $Q_{count} = 5{,}16$ bigger than $Q_{table\,(0,05;\,4:10)} = 4{,}33$. This means that there are differences in scores of students' learning outcomes of IPA with PBL learning methods and with CL learning methods for groups of learners who have cognitive style *field dependent* . Thus it can be concluded that the score of learning outcomes IPA learners who have cognitive style *field dependent* , in groups with learning methods CL higher than the group with PBL learning method.

Indicator of the success of learners after doing the learning activities is learners are said to succeed in learning if the value obtained shows a high value or in accordance with targets that have been formulated in the purpose of teaching (KKM). Although the value obtained at the end of the lesson is not the main goal of learning but the value can be an indicator of teacher success in delivering learning materials. The most important thing of teaching and learning activities is that learners understand the learning materials through the process of teaching and learning activities so that becoming a permanent knowledge and ultimately a positive impact for optimal learning outcomes. Learners with cognitive style *field dependent* is someone with a low level of independence in observing something of a stimulus and is heavily dependent on outside sources of information.Learning using CL learning methods of learners grouped in study groups consisting of 4-5 learners which is a mixture of different academic abilities, so that each group there are high achievers, moderate and low achievers. In the learning process CL learning process emphasizes the activities and interactions among learners to mutually motivate and help each other in mastering the learning materials to achieve maximum performance. At Work teams learners have the responsibility to ensure that their teammates have learned the material, no one can stop learning until all teammates master the lesson.

Applies vice versa, learners with *field dependent* cognitive style will have difficulty if learning with PBL learning method. PBL learning methods emphasize learning by finding and discovering themselves a concept of knowledge through project activities independently. In PBL methods learners are required to perform analysis and synthesis of information received. This can not be done by learners with a *field dependent* cognitive style . They tend to accept the information as it is and are less able to develop structures. Result of tukey test on learners with learning method PBL , value of Q_{count} = 10,33 bigger than $Q_{table (0,01; 4:10)}$ = 5,77. This means that there are differences in scores of students' learning outcomes that have an *independent field* cognitive style and learners who have cognitive style *field dependent* for groups of learners with PBL learning methods . Thus it can be concluded that the score of learning outcomes of IPA learners with PBL learning methods , in groups that have an *independent* cognitive style *field* is better than the group which has a *field dependent* cognitive style . Based on the characteristics of learners who have an *independent field* cognitive style where they can solve problems without instruction and explicit guidance in learning does not require complex activities such as exploring and planning self-learning activities. They do not need a project to solve the problems they encounter in learning. Generally they can solve the problems themselves they encounter in learning without guidance from the surrounding environment. They need help in solving problems related to social problems. In the PBL learning method, learners carry out the teaching and learning activities independently from start to plan the project, arrange the activity schedule until the implementation and reporting the results of the activity. Teachers only act as facilitators who oversee the course of the project to the assessment process. All learning activities are done independently by the learners. Learners with an *independent field* cognitive style can learn without instruction and explicit guidance from the environment. In doing the task, they are more task-oriented than social relations. They are also capable of independently analyzing to separate objects from their environment and at the same time grouping them. This is very necessary in learning by using PBL method. Applies vice versa, learners with cognitive style *field dependent* less interested if the learning is done by PBL meode. The characteristics of those who need external guidance and reinforcement from the environment especially teachers and group friends will make them have difficulty when following teaching and learning activities. The tendency of those who are very dependent on outside motivation and their lack of ability to analyze the information they receive will have a negative impact on the achievement of their learning outcomes.

Result of tukey test on learners with learning method CL , value of Q_{count} = 4,40 bigger than $Q_{table (0,05; 4:10)}$ = 4,33. This means that there are differences in scores of students' IPA learning outcomes that have *independent field* cognitive style and learners who have cognitive style of *field dependent* for groups of learners with CL learning method . Thus it can be concluded that the score of learning outcomes IPA learners with learning methods CL , in groups that have cognitive style *field dependent* better than the group which has an *independent field* cognitive style. Learners who have an *independent field* cognitive style are not affected by criticism. This is because learners who have cognitive style *independent field* free to construct questions without feeling shy or afraid if the question they catapult will cause criticism from the environment. However this is less advantageous when learners learn by using *Cooperative learning* learning method (CL). Their individualistic and egocentric tendencies will prevent them from receiving input from others. They need guidance on how to use context to understand social information. In contrast to learners who have cognitive style *field dependent* . They are deeply affected by the criticism of the environment so that they are embarrassed and afraid to ask questions of material they do not yet understand. They are more silent and do not do much activity in learning activities. For that they need praise and guidance from teachers to construct questions. This causes learners with *field dependent* cognitive style to better follow the learning by *cooperative* learning method (CL).

5. Conclusions And Recommendations

Based on the results of the analysis of the variables characteristics of learning methods, cognitive styles, and learning outcomes can be summarized as follows: 1). Learners who learn by PBL learning method is higher than science learning outcomes for learners who learn by learning method of CL. This means that learners who learn with PBL method well will be higher when compared with learners who learn by CL method., 2). There can be differences in the effect of cognitive style on the learning outcomes of the IPA, learners who have independent field cognitive style have better or higher IPA learning outcomes than learners who have cognitive field dependent style . This means that learners who have good cognitive style will be higher than students who have cognitive style field dependent. 3). There can be an interaction effect between learning method and cognitive style on science learning outcomes., 4). The study of science for students who have an independent field cognitive style that learn by using PBL method is higher than learners who learn by using learning method CL. This means that learners who learn to use PBL method well will be higher when compared

with learners using learning CL., 5). The study of science for students who have cognitive style field dependent learning by using the CL method is higher than learners who learn by using PBL learning methods. This means that if learners who have cognitive style field dependent with CL method will be higher the results with learners who use PBL, 6). The learning of science for students who have an independent field cognitive style is higher than that of students who have cognitive style field dependent by using PBL learning method., 7). The learning of science for students who have cognitive style of field independent is lower than students who have cognitive style field dependent using CL learning method . This means that learners with a bad cognitive field independent style will be lower than the learners who have cognitive style field dependent.

Based on the results of the study, the researcher suggests the following matters: (1) Principal as the highest policy-making institution in the Technical Control Unit of the school level education office, should be sensitive and care about curriculum development, learning strategy and evaluation system. The principal must continue to improve the quality of education. This is emphasized because it relates to policies in the procurement of infrastructure and learning facilities; (2) The principal should synchronize the rapidly progressing development with respect to the level of human resource (HR) who manage learning techniques. The principal should provide the widest possible opportunity for teachers to improve the quality of their human resources by conducting follow-up studies, following academic activities and so on, such as seminars. lok akarya, workshops and so on ; (3) Teachers should be more active in teaching and learning activities should not only act as a facilitator who oversees the course of the project up to the assessment process, all learning activities are conducted independently by learners and (4) Need further research to conduct research by combining various types of learning models with a structured assessment of the task, which is current in the science lesson in elementary school.

References

Budiningsih, Asri. (2005). *Learning and Learning* . Jakarta: Rineka Cipta

Etin Solihatin and Raharjo. (2008). *Cooperative Learning Analysis of IPS Learning Model* . Jakarta: Earth Literacy.

Hermawan, Budi (2007) Research Methodology A Practical Approach to Applications in the Field of Business. Cianjur: LCLM-YCLI.

Nasution. (2006). *Various Approaches d natural Teaching and Learning Process* . Jakarta: Earth Literacy

Rusman. (2012). *Learning Models; Develop Teacher Professionalism* . Jakarta: PT Raja Grafindo Perkasa

Sanjaya, Vienna (2006) *Strategy of Learning-Oriented Standards Process Education* Jakarta: Kencana Prenadamedia Group

Siregar Eveline and Hartini Nara. (2011). *Learning and Learning Theory.* Bogor: Ghalia Indonesia

Sudjana, Nana. (2009). *Assessment of Teaching and Learning Outcomes.* Bandung: PT Remaja Rosdakarya

Sugiyono. (2010) *Educational Research Methods (Quantitative Approach, Qualitative and R & D),* Bandung: Alfabeta

Trianto. (2011). *Designing a Progressive Innovative Learning Model* . Jakarta: Kencana Prenada Media Group

Trianto. (2013). *Integrated Learning Model* . Jakarta: PT Bumi Aksara

Wena, Made. (2012). *Contemporary Innovative Learning Strategies* . Jakarta: Earth Literacy

Winkel. (2012). *Teaching Psychology* . Yogyakarta: The Eternal Media