LEARNING MODEL AND INTELEGENCI INFLUENCE ON LEARNING ACHIEVEMENTS OF PHYSICS STUDENTS OF JUNIOR HIGH SCHOOL IN THE CITY OF MANADO

Anneke Tienneke Rondonuwu*

Lecturer of Fuculty of Mathematics and Sciences Manado State University, Indonesia.

*Corresponding Author
Anneke Tienneke
Rondonuwu
Lecturer of Fuculty of
Mathematics and Sciences
Manado State University,
Indonesia.

ABSTRACT

The purpose of this study to investigate the effect of general learning model and the intelligence of the student learning achievement physics. Operationally this research purposes to examine the differences in the use of models inquiry guided, models problem based learning, models expository and intelligence of the student learning achievement physics. Treatment of junior high school students of class VII. The design of this study design by level 3x2. Instrument used intelligence test and student learning achievement. The results showed that students learning achievements using models inquiry guided higher learning models problem based learning and models expository. There is the influence of the interaction between the learning model and the intelligence of the student learning achievement. Conclusion of junior high school students learn subjects taught physics show students inquiry guided learning model is higher than on learning achievement for students taught physics models and problem based learning and expository. Terdapat interaction effects using models of learning with intelligence junior high school students to the learning achievement physics.

KEYWORDS: Inquiri guided learning, problem based learning, expositor!, intelligence, Learning achievement.

INTRODUCTION

Physics as one of the branches of natural science Knowledge (IPA) are more concerned with activities such as collecting data, measuring, calculating, analyzing, searching for relationships, linking concepts, are all aimed at one settlement of the problem. Therefore, the studied physics with high achievement, should not just memorize the theory, definitions and the like, but requires truly understanding. Theoretical physics is not just simply read for learning Physics not only to remember but to be understood to be implemented in everyday life, so expect students to explain and solve the problems There are. Mundilarto (2002:5) says that the subjects of physics aims so that students are able to master the concepts, principles or laws of Physics then expected students to compose their own returns in accordance with the level of maturity and his intellectual development. Learning Physics is based with the scientific attitude to solve problems that it faces, making it more aware of the Majesty of God Almighty. Physics must be understood in a way such that opprtunities for use in break right issue.

Learn Physics demands high itelectuality so most students have difficulty studying it. This situation is even more aggravated because the use of the model and the selection of the learning media does not correspond to the needs of the learning material. Teacher teaching tends to be transferring information so teaching physics to become less effective because students gain knowledge is limited to what the teachers understood. As a result students are not able to solve the problem, especially in linking the concept of one with the other.

To change that, learning the physics of elusive became something fun then necessity of learning process guided by norms of scientific/scientific approach. Attempt application of Pen-dekatan scientific/scholarly in the learning process is certainly interesting to learn and further elaboration. Among other scientific approach to learning based on issues, inquiry, and discovery learning. Because of the many experts who believe that through scientific/scholarly approach, besides being able to make students more active in constructing knowledge and skills, it can also encourage students to do the investigation in order to find the facts of a phenomenon or event. That is, in the process of learning, students lectured and conditioned to find the scientific truth, not invited to let alone slander opined in seeing a phenomenon. They are trained to be able to think logically, runut and systematically, using higher-order thinking capacity. The application of scientific approaches in learning demands a change of setting and shape separate with different learning learning centered on the teacher.

Success in learning when students get the results of the study in accordance with the objectives to be achieved, while Smith and Ragan cited by Rusmono (2012:6) suggested that learning activity is the delivery of information in help students reach the learning objectives. In this activity teachers may conduct supervision and direct the students to have the knowledge and learning experiences for students.

The model of learning is a conceptual framework that describes a systematic procedures in organizing the learning experience to achieve specific learning objectives, and serves as a guide for learning designers in planning the process of teaching and learning. Richard i. Arends (2007:57). States that: the essence of learning based on actual issues of problematic situation which serves a variety of authentic and meaningful to students, which can serve as a guide for the conduct of the process and the investigation. Understand the material students learn through the real world. In the implementation of learning activities beginning with the authentic problems.

A learning model based on the issue of a model of learning which is done with the awarding of stimulus in the form of problem-solving is done then. This learning activity using the real world as the context so that the students become accustomed to learning critical thinking and creative in finding a concept. The learning process based on the time students trained for independent study to find knowledge, through real experiences students will be difficult to forget the experience that he experienced.

Inquiry learning model emphasized on the intellectual development of social interactions. The goal is the ability to process and results-oriented learning. Inquiry learning the pem strategies emphasize the cognitive aspect to the development of affective, psychomotor, and in a balanced way.

According to Uno (2012:58) Intelligence is the power or ability to do something. The community knows the intelligence is intelligence. Cleverness, or the ability to solve problems encountered while making sense of the laity as cleverness. The next person was considered a high intelligence when respons is the response to the stimulus that he received. So, the individual is said to be intelegeci if the response given that it corresponds to the stimulus that he received. The level of intelligence of students will help teachers determine whether students are able to follow the learning given, although the sheer achievement of students ' intellectual ability is not determined by observing the above problems will be held research

on the influence of intelligence and learning model reputable results studied physics On JUNIOR HIGH SCHOOL students.

Formulation of the Problem

Formulation problem in Research is as follows:

1. Was there a difference results studied physics students who are taught using model inquiry social interactions with students who use the a learning model based on problem?

2. Whether there is a difference of the results studied physics students who are taught using model inquiry social interactions with students who use the model learning expository?

3. Whether there is a difference of the results studied physics students who are taught using a learning model based on problems with the model of learning expository?

4. Whether there is influence of the interaction between the learning model with intelligence against the results of the study of physics?

5. Students of high intelligence, whether there is a difference in the results of learning Physics for students who are taught using a model of learning inquiry social interactions with students using a learning model a learning model based on problem?

6. is there a difference results studied physics for students of a high berinteligensi that are taught using the inquiry model of social interactions with students who are taught using instructional model expository?

7. If there is a difference in student learning outcomes berinteligensi high, which is taught using the learning model based on the model of learning problem using expository?

8. Whether there is a difference in student learning outcomes berinteligensi low, using the model of learning inquiry social interactions with students who are taught by using model based learning problems?

9. If there is a difference in the results of low-berinteligensi Students studied physics, which uses the inquiry model of social interactions with students who are taught using model expository?

10. Whether there is a difference in student learning outcomes berinteligensi low, for the students who use the model learning based on a problem with students who are taught using instructional model expository?

RESEARCH OBJECTIVES

In detail, this research aims to examine:

1. The difference in the results of the study of physics students who are taught using a model of learning inquiry social interactions with students using a learning model based on the problem.

2. The difference in the results of the study of physics students who are taught using a model of learning inquiry social interactions with students using a learning model expository.

3. The difference in the results of the study of physics students who are taught using a learning model based on problems with students using a learning model expository.

4. Influence of the interaction between students using a learning model with intelligence against the results of student learning.

5. The difference in the results of the study of physics students of a high berinteligensi special, which is taught using a model of learning inquiry social interactions with students using a learning model based on the problem.

6. The difference in the results of the special berinteligensi students studied physics of higher learning using model inquiry dajar social interactions with students who use the model expository.

7. The difference in the results of the study of physics students special high berinteligensi students who are taught using a learning model based on problems with the students using the expository model.

8. The difference the results of special students studied physics berinteligensi low, taught by using a model of learning inquiry social interactions with students using a learning model based on the problem.

9. The difference in the results of special students studied physics berinteligensi low, taught by using a model of learning inquiry social interactions with students using a learning model expository.

10. The difference in the results of a study of Physics for students of low have inteligency special, which is taught using a learning model based on problems with the students using the expository model.

1. The results of the Learning results of learning is a change in the ability of the kompetnsi owned by the students after receiving a material study. The results of the study is the ultimate goal of learning activities in school performance. Next student assessment according to Dimyati and Mudjiono (2012:200) is the process of determining the value of student learning

through assessment and measurement of the results of the study. Based on the understanding of student assessment the main purpose is to know the level of success achieved by the students after following a learning activity, then where the success rate is then marked with a scale in the form of letters or words or symbols. If the main purpose of the activities of the student assessment is already realised, then the result can be disabled for various purposes.

Dengeng (2005:81) explains that the cognitive realm who paid attention to the development of intellectual capabilities and skills. The realm of attitude with regard to the development of feelings, attitudes and emotions. Psychomotor domain-related activities manipulative or motor skills. According to Widoyoko (2015:25) learning outcomes are: the learning process involves two subject i.e. teachers and students will result in a change in the student as a result of learning activities. Changes to the student learning activities as a result of physical and non-physical such as a change in attitude, knowledge or skills. The various changes that happen to students as a result of the learning process.

The role of the teacher in the learning activities largely determine whether successful teaching and learning. Snelbeker cited by Rusmono (2012:6) says that the changes and the new capabilities acquired students after doing learning is the result of learning, because learning is basically how someone's behavior changed as a result of the experience.

According to Suparman (2012:38) view of learning is a system is not new. Components in pembe-lajaran intertwined with one another. It is likened to a machine on a vehicle each component has the function, to achieve the goal. The components of the learning system is comprised of the learners (leaner), the process of learning, graduates with the expected competencies, faculty, curriculum, and learning materials.

Based on a few of the results of the study are the changes achieved in each individual through the learning process, so a change of behaviour. The results of the study is the ultimate goal of learning activities in school performance.

2. The concept of Learning Physics

Physics is the study of natural phenomena that are always associated with the investigation and experimentation. Physics is a branch of Science that studies the structure of matter and its interaction to understand natural systems and artificial systems or technology (Sutrisno, Kartono and Kresnadi). Physics is not difficult to learn because all proved it can easily be

reunited with real events. This learning will be meaningless if the finding of knowledge will be done by the students through real experiences. Physics science that seeks to understand the rules of nature that is so beautiful and clean. The knowledge of physics is composed of concepts and principles is very abstract. Physics subjects that demands a relatively high intellect so many students who have difficulty learning.

The nature of SCIENCE as well as the nature of physics, because the Physics part and parcel with the science. Physics is a branch of science, and the science is born and develops through the steps of observation, the formulation of the problem, hypothesis formulation, testing the hypothesis through experimentation, in conclusion, withdrawal and invention theory and concept. It was concluded that the concept of learning physics is the science that studies the symptoms through a series of processes that are known by the scientific process that is built on the basis of scientific attitude and the results realized as scientific products composed of three important components in the form of concepts, principles, and theories that apply universally.

3. The results of Learning Physics

The results of the Study of physics is change that reached every individual through the learning process, so a change of behaviour. Change of student's capability of receiving material learning. The results of the study is the ultimate goal.

Learning Physics emphasizes on granting of direct experience to develop competence in order for students to explore and understand the natural surroundings scientifically. The approach applied in the present study the physics was the IPA combining experience and understanding of the IPA process products and technologies IPA in the form of direct experience that have an impact on the attitudes of students who learn IPA. IPA learning Physics in school overall study outlines, explains the laws and natural events to the image according to human thought. Brockhous elaborated the IPA-Physics is a collection of knowledge that is obtained using methods based on observation, investigation and experimentation.

4. The Model of learning Inquiry social interactions

Inquiry learning model places emphasis on the aspect of cognitive, psychomotor and affective in a balanced way. This model is considered to be in accordance with the development of modern psychology which considers learning is the process of changing

behaviour thanks to experience. Inquiry learning model as a public process that is done to find or understand information. Inquiry consists of two parts inquiry and inquiry social interactions are not social interactions. Inquiry social interactions in the process of teaching and learning students acquire the necessary instructions from teachers. Instructions were generally a questions that are guiding the students. Inquiry type is used primarily on students who have not yet experienced learning with a model inquiry. Inquiry social interactions is the instructional approach provides the framework, planning and implementation of the thinking by developing the skills of students and to access information sources effectively builds knowledge.

Inquiry according to Titian, (2003:12) is a model used in physics learning and refers to a way of questioning, seeking knowledge, information or learn a symptom. Some opinions say that the learning of physics should emphasize inquiry. Through the inquiry model expected educational interaction will occur between teachers and students. Since learning of physics related to learning about nature, and related measurements. Then creativity will menumbuh develop the condition studied physics. The purpose of the learning ikuiri according to Weil, (2000) "the bottom line is to help students develop thinking skills and intellectual skills such as asking questions and finding answers were derived from annual keingin. To achieve the learning objectives of the role of a teacher. The task of the teacher is not merely a transfer of knowledge but how to create an atmosphere conducive learning. Early stage activities inquiry according to Sanjaya, (2006:196) provide more guidance and then gradually reduced guidance. Learning strategies inquiry is a series of learning activities that emphasize the process of thinking critically and analytically to seek and find their own answers to a problem that is questionable. The thought process is usually done through a question and answer between teachers and students. Learning strategies is often called a heuristic strategy originating language of Greece, namely heuriskein means I find. Trianto, (2009:114) reveals that inquiry is a core part of contextual-based learning activities. The acquired knowledge and skills students are expected not a result given a set of facts, but the result of finding it yourself. Teachers should always design the activities refer to activities of any finds, material being taught. Learning inquiry learning process social interactions include the activity of the teachers and students. Steps of learning inquiry social interactions model consists of several stages, namely introduction (opening), questioning (questions), planning (planning), implementing (implementation), concluding (a false assertion), and reporting (reporting).

Inquiry-learning-oriented social interactions on the issue although the learning is centered on the students but the teacher's role from the very helpful to students in discovering problems, investigate, to draw conclusions. This makes the model student critical thinking, active and creative.

5. Learning Model based on Problem

Learning based on the problem is a learning solutions designed to enhance learning by way of carrying, delivering, the requirement that students learn the content of learning material when resolving issues as opinion (Jonassen 2011:154) that's "Problem Based Learning is instructional strategy. That is, it is an instructional solution designed to improve learning by requiring students to learn content while solving while solving problems "Januszewsky (2008:35) stated that the Problem Based Learning is the first principle of learning and learning.

Rasmussen and Moffit, (2001:5) teachers and students integrate concepts and skills from one or more disciplines while investigating a problem. LBC often engages students in the development of a highly long-term project. The explanation of this point is, in problem-based learning, teacher and student involvement in investigating the problem of integrating the concepts and skills of one or more disciplines in investigating the issue. Air-based learning problems also often involve students in the development of a relatively long-term projects.

Levin (2001:25) says the goal of using learning based on the issue is to help students acquire knowledge, skilled in problem solving involved in professional development.

Through an approach based on problem students mempersentasikan the idea, trained students reflect on its perception, mengargumentasikan and communicate so that teachers understand the thought processes of the students, and teachers can guide and the effect new ideas in the form of concepts and principles. Lie (2014:27) assume that each student is unique with all the habits, abilities, interests, and talents are quite different. Each student needs to get attention and special opportunities to develop its potential as fully as possible.

According to Tan Seng Oon dkk (2009:15) reveals a Problem based learning effective instructional method used and there's innovation. Learning model based on issues, is a process that brings the real world in the classroom is a learning context for students to learn critical, independent and problem-solving skills, as well as to gain knowledge and the

concept of the essence of the subjects. A learning model based on the marked problems: students work in pairs or in small groups to identify the real-life issues are confusing.

Learning based on issues believed to be menumbuhkembangkan the ability of creativity of students, either individually or in groups because almost every step demands active students. According to Savin Agency and Mayor (2004:8) of learning based on the problem is a learning approach that is affected by the environment and pedagogies which he developed. But the success of a learning model based on the issue depends on the availability of learning resources for students, the tools to test answers or guesses. Equipment demands practical, requires sufficient time much less data has to be retrieved from the field, as well as the ability of a teacher in lifting and formulating the problem.

A learning model based on the teacher's problem right ¬ more acted as facilitators, mentors and motivators. The teacher submits a problem outentik to the students on the real problems that facilitate/Guide (scaffolding) in the inquiry process, facilitating dialogue between students, providing learning materials students as well as providing support in the effort boost findings and development of intektual students.

Maggi and Claire (2004:8) says that to present a problem so that it can attract the interest of students and the learning process is not monotone include:
1. Start with giving a problem that suits the student's basic knowledge.
2. Presents problems that are able to multiply the curiosity of students such as those related to the real life of the everyday from students.
3. The issue was a puzzle to be solved.
4. Ensure the delivery problem the interest of students.

A learning model based on an issue that became a center of learning resources is the students. Learning is based on authentic problems, then proceed with the inquiry process to draw conclusions. It makes students more independent, creative and innovating in discovering knowledge. This is because given the opportunity in students along with teachers evaluate, and students are given the opportunity to present his work.

Learning Models Expository

Model expository is the same as direct learning model can be shaped lectures, demonstrations, training or practice and group work. Direct instruction is used to convey the

lessons that transformed directly by the teacher to the students. Both models makes the teacher as information giver (lessons). Reigeluth (2009:37) mengata-kan that the teacher can also demonstrate to the students how to create a skills and followed by students by doing the same thing this is one hallmark of the model expository what does a teacher can be followed by students. So learning model expository there is also called it a learning model lang ¬ sung is closely associated with the use of methods lectures. Methods lectures according to Vardhana (2010:45) until recently still used often against teacher learners. This method is cheap and easy without having to require elaborate preparation. The presentation of the material can be arranged depending on the desires of the lesson core emphasis and learning objectives.

The learning model directly or expository according to Slavin (2010:276) is used to describe the pem-belajaran where the teacher to move information directly to students, by setting the time lessons to achieve some purpose that is specified with the clear and efficient as possible. According to Silver (2012:35) which makes the pem ¬ belajaran is likely to be effective are: (1) modeling of effective, (2) appear in a standalone way up, (3) learning by asking questions, and (4) continuous examination. The main steps of the learning strategies expository is (1) disclosure of information, this activity shaped the symbolic through the explanation, (2) administering the test, to know to how far acceptance rate, and (3) the grant of an exercise to students to apply general principles in the form of examples, then given a test to test it, and (4) the giving of an opportunity to apply the information learned at the situation and different problems. Memorize certain formulas or law in the field of the study of physics, chemistry and mathematics is an example of a simple declarative knowledge or factual information.

Eggen, Kaucak (2012:382) suggests that the direct teaching or expository give this model a lot to increase the motivation of students. Then could produce more good time learning this model used. The method expository is a way of delivering lessons from a teacher to the students in the classroom by way of talking at the beginning of the learning activities, describe material and examples of reserved accompanied faqs. The teacher can check a job individually, students explain to students when perceived many students haven't learned about the material. Students not only hear and record, but students also complete a practice reserved and asked when is not yet understood. According to Smaldino Sharon e. Lowther Deborah L, Russell James (2008:50) strategy centered on teachers is the key for designing

learning. In a strategy that centered on the teacher, is her focus and Act directs learning in accordance with the purpose of learning.

Intelligence

Intelligence according is an active interaction between ability carried since birth with experience gained from the environment produces the ability of individuals to acquire, remember and use the knowledge, understanding the meaning of the concept of abstract concepts and kongkrit, understand the relationship that exists between the objects, events, ideas and the inability to solve the problem in applying.

UNO (2012:59) stated that the behavior traits have high intelligence, among others, (1) the existence of the ability to understand and solve mental problems quickly, (2) the ability of remembering, (3) high creativity and imagination thrive. Otherwise sluggish behavior, not quickly understand, less able to accelerate the completion of a simple mental problems. While Goleman (2007:113) says social intelligence elements include two large categories: social consciousness, what we feel about other people and social facilities, and then what do we do with that realization.

One of the theories developed by Binet stating the nature of the nature of intelligence is:

a. The tendency to establish and maintain a particular purpose. The more intelligent a person is, the more ably will he make his own goal, got its own initiative are not waiting for a command. The more intelligent a person is, so he'll keep on makin that goal, not young is influenced by other people.

b. The ability hold adjustments with a view to achieving that goal. So the more intelligent a person he will adjust faster ways of facing something properly, can be critical.

c. The ability to otokritik, i.e. the ability to criticize yourself, the ability to learn from the mistakes that have been made. The more intelligent a person is the more he can learn from his mistakes, faults are not easily repeated.

d. Major Intelligence influence learning progress is taking action against. In the same situation, students have a high level of intelligence, will be more successful than have low intelligence. However, students who have a high intelligence level has not yet been definitely succeed in learning because of the many factors that affected it. These factors, among others, interest, motivation and learning environment. Indicators which provided the reference test done intelligentsia.

The success of a person rather than just the one specified on the intelligence, but is a combination of the eight intelligences. Knowing the extent of intelligence or the ablyan person, experts use intelligence tests. A very famous intelligence tests that is created by Alfret Binet and Simon aides, they were the first to create a test, because it is called test Binet-Simon then undergoes revision and adaptation of the customized usage in the well-known American revision Terman of Stanford University called the Stanford-Binet Intelligence Test Santrock (2009:12).

Research Hypotheses

Research hypothesis as follows

1. The results of the study of physics students in learning using the inquiry model of social interactions is higher than the results of the study of physics was taught using problem based learning.

2. The results of the study of physics students in learning using the inquiry model of social interactions is higher than on the results of the learning of students who are taught using instructional model expository.

3. The results of the study of physics students at the learning model based on the problem is higher than on the results of the learning of students who are taught using instructional model expository.

4. There is the influence of the interaction of the learning model with the use of intelligence against the results of the study of physics.

5. Special students of high intelligence, the results of the study of physics students at the learning inquiry model using social interactions is higher than students who learning using model based learning problems.

6. Special students of higher intelligence, the results of the study of physics students use learning inquiry social interactions is higher than students taught using instructional model expository.

7. Special students of high intelligence, the results of the study of physics students at the learning model based on the issue of higher learning results of students taught using instructional model expository.

8. Special low intelligence among students, the results of the study of physics students at the pem-belajaran model inquiry social interactions is higher than on the results of the learning of students who are taught using problem based learning model.

9. Students who are of low intelligence, the results of the study of physics students at the learning model inquiry social interactions is higher than students taught using instructional model expository.

10. Students who are low intelligence, the results of the study of physics students at the learning model based on the problem is lower than on the students who are taught using instructional model expository.

RESEARCH METHODOLOGY

A. Research on place and time

The research activities conducted at the 2014/2015 school year during the semester even in January-June 2015 in SMP Negeri 4 SMP Negeri 7 and SMP Negeri 8 in the city of Manado.

B. Research Methods

The methods used in this research is a method of experimentation. In this study of the variable or variables are given free treatment learning: (1) using the model of learning inquiry social interactions, (2) learning model based on problems, (3) expository learning models, and (4) intelligence, while for variables are bound is a result of learning physics.

Research design using design treatmen by level (2x3). A learning model of treatment (A), A1 = inquiry learning model of social interactions, A2 = learning model based on problems, and A3 = expository learning model. The second factor (level) is the intelligence (B), B1 = B2 = high intelligence and low intelligence. As for the design in question can be described in the form of a matrix in table 1:

Table 1: Design *Experimen Treatmen* By Level 3X2.

Intelligence (B)	Learning Model (A)		
	inquiry learning model (A_1)	learning model based on problems (A_2)	Expository (A_3)
High (B_1)	$(X,Y)_{11}$ $k = 1,2 \ldots n_{11}$ $(A_1 B_1)$	$(X,Y)_{21}$ $k = 1,2 \ldots n_{21}$ $(A_2 B_1)$	$(X,Y)_{31}$ $k = 1,2 \ldots n_{31}$ $(A_3 B_1)$
low (B_2)	$(X,Y)_{12}$ $k = 1,2 \ldots n_{1,2}$ $(A_1 B_2)$	$(X,Y)_{21}$ $k = 1,2 \ldots n_{22}$ $(A_2 B_2)$	$(X,Y)_{31}$ $k = 1,2 \ldots n_{32}$ $(A_3 B_1)$

The method of withdrawal of samples:

1. Sample

The target population in this study are all students of SMP Negeri Class VII in Manado city listed school year 2014/2015. Sampling in this research, according to Sugiyono (2010:65) using cluster random sampling technique was used to determine sample if the object will be examined or the data source is very large. Sampling set out gradually. After being elected the smallest sample, then the sample is randomly selected.

Sample assignment are as follows: (1) determine the schools against 14 JUNIOR HIGH SCHOOL in the city of Manado. Next by way of raffle set school's treatment is a JUNIOR HIGH SCHOOL SMP Negeri 4, 7 and SMP Negeri 8. (2) determine the subject by way of a lottery to assign each SMP Negeri 7 as much as 31 students learning social interactions, inquiry SMP Negeri 8 30 students learning model based on a problem, and as many as 31 4 Country JUNIOR HIGH SCHOOL students to use expository learning model. (3) determine the way the lottery was elected JUNIOR class country set classes VII b, SMP Negeri 8 grade VII c, and SMP Negeri 7 VII b. (4) sets of samples by way of sorting the top group, 27% of students who have a high intelligence score and 27% under the Group of students who have low intelligence score. To further clear the Division as in table 2.

Table 2: The subject of each group Treatment.

Intelligence (B)	Learning Model (A)			Σ
	inquiry learning model (A_1)	learning model based on problems (A_2)	Expository (A_3)	
B_1	8	8	8	24
B_2	8	8	8	24
Σ	16	16	16	48

The research activities conducted at the 2014/2015 school year during the semester even in January-June 2015. Before the data analyzed conducted test prerequisites using the test of its homogeneity and normality test data. Test of normality test using Lilifors and its homogeneity test using the test of two variances and Fishert Barlet test three or more variance. On the next step done analysis inferensial Anava and continued difference test.

Statistical Hypothesis

Statistical hypothesis testing is as follows:

1. The first Hypothesis

$H_0: \mu_{A1} \leq \mu_{A2}$

$H_1: \mu_{A1} > \mu_{A2}$

2. The second Hypothesis

$H_0: \mu_{A1} \leq \mu_{A3}$

$H_1: \mu_{A1} > \mu_{A3}$

3. The third Hypothesis

$H_0: \mu_{A2} \leq \mu_{A3}$

$H_1: \mu_{A2} > \mu_{A3}$

4. The fourth Hypothesis

$H_0: A \times B = 0$

$H_1: A \times B \neq 0$

5. The fifth Hypothesis

$H_0: \mu_{A1B1} \leq \mu_{A2B1}$

$H_1: \mu_{A1B1} > \mu_{A2B1}$

6. Sixth

$H_0: \mu_{A1B1} \leq \mu_{A3B1}$

$H_1: \mu_{A1B1} > \mu_{A2B1}$

7. The seventh Hypothesis

$H_0: \mu_{A2B1} \leq \mu_{A3B1}$

$H_1: \mu_{A2B1} > \mu_{A3B1}$

8. The eighth Hypothesis

$H_0: \mu_{A1B2} \leq \mu_{A2B2}$

$H_1: \mu_{A1B2} > \mu_{A2B2}$

9. Ninth Hypothesis

$H_0: \mu_{A1B2} \leq \mu_{A3B2}$

$H_1: \mu_{A1B2} > \mu_{A3B2}$

10. Tenth Hypothesis

$H_0: \mu_{A2B2} \leq \mu_{A3B2}$

$H_1: \mu_{A2B2} < \mu_{A3B2}$

RESEARCH RESULTS

The calculation of is done against the results of the study of physics students as in table 3 on the following groups of students who were given the treatment model of learning inquiry social interactions (A1), learning based on masalan (A2) and (A3) expository. High

intelligence (B,) and low (B2). As for the recapitulation score results studied physics presented in the following table:

Table 3: Recapitulation Score of Physics Achievement.

Intelligence B	Statistic	Learning Model (A)		
		learning inquiry (A_1)	learning model based on problems (A_2)	Expository (A_3)
High (B_1)	Maks	97	89	80
	Min	78	74	55
	St. Dev	6.84	5.29	8.06
	Mean	89.25	81.00	69.13
	N	8	8	8
Low (B_2)	Maks	77	69	70
	Min	53	50	49
	St. Dev	7.69	7.71	6.09
	Mean	68.50	58.38	59.38
	N	8	8	8
Total	Maks	97	89	80
	Min	53	50	49
	St. Dev	12.82	13.32	8.54
	Mean	78.88	69.69	64.25
	N	16	16	16

The above data in the test by analysis of variance to test the influence between the columns, rows and the interaction between the columns and rows. The results of calculations of analysis of variance (ANAVA) two lines that describe the results of learning physics in groups the resulting data are presented in table 4 below:

Table 4: The Results of A Two-way Analysis of Variance.

Source	Sum of Squares	df	Mean Square	$F_{account}$	F_{table} ($\alpha=0.05$)
Between Groups A	1748.63	3-1=2	874.31	17.76	3.22
Between Groups B	3763.02	2-1 = 1	3763.02	76.42	4.07
Interaction (A x B)	387.04	1 x2=2	193.52	3.93	3.22
Error (D)	2068.13	4 - 6 =42	49.24		
Total	7966.81				

Based on table 4 was obtained $F_{account}$ = 17.76 while F_{table} = 3.22, meaning $F_{account} > F_{table}$, mean H_0 is rejected, then it can be inferred, there is difference in the average of the results of learning A1, A2 and A3. Inter B obtained $F_{account}$ = F_{table} = 4.05 while 76.42, meaning $F_{account} > F_{table}$, mean H_0 is rejected, then it can be inferred that there is a difference in average outcomes studied physics Interactions betwleeen B1 and B2 AB $F_{account}$ = 3.93 while F_{table} = 3.22. Based on this result is declared, $F_{account}$ = 3.93 > F_{table} = 3.22. Having regard to the

criteria of $F_{account} > F_{table}$, mean H_0 is rejected, then it can be concluded the average interaction exists between AB.

The first hypothesis put forward tested truth obtained, $t_{account} = t_{table} = 3.70$ and $2,018$. Means $t_{account} > t_{table}$ then H_0 is rejected so it can be concluded that there is a difference of the results studied physics students who are taught using a model of learning inquiry social interactions with students using a learning model based on the problem. Thus the proposed hypothesis, tested his righteousness that the results studied physics students who are taught using model learning inquiry social interactions is higher than the results of a study of physics students who are taught using model learning based on the problem. The second hypothesis is proposed, tested his righteousness retrieved $t_{account} = 5.89$ and $t_{table} = 2,018$. Means $t_{account} > t_{table}$ then H0 is rejected so it can be concluded that there is a difference of the results studied physics students who are taught by using a model of learning inquiry social interactions with students who use the model expository. Thus the proposed hypothesis tested the truth that the results studied physics students use learning inquiry social interactions is higher than the results of a study of physics students who are taught using instructional model expository. The third hypothesis. proposed, tested the truth $t_{account} = 2.19$ and $t_{table} = 2,018$. Means $t_{account} > t_{table}$ on $\alpha = 0.05$ significance level then H_0 is rejected so that discrepancies can be summed up the results of the study of physics students who are taught using a learning model based on problems with the students using the expository model. Thus the proposed hypothesis tested the truth that the results studied physics students use learning model based right problem is higher than the results of a study of physics students at the model learning expository. The fourth hypothesis is proposed, tested his righteousness. Retrieved $F_{account} = 3.93$ and $F_{table} = 3.22$ mean $F_{account} > F_{table}$ on $\alpha = 0.05$ significant level then H_0 denied this meant the hypothesis, which States that there is an influence of the interaction between the learning model with intelligence against the results of the study of physics is proved to be true.

The next test of the average results of the study group of high intelligence (B1), on the model of learning inquiry social interactions (A1 B1), learning on the basis of time (A2-B1) and model expository (A3, B1), can be seen in table 5:

Table 5: Summary of The Results of The Test of ANAVA One-way F Average Difference Results Studied Physics Students Use Learning Model B1.

Source	Sum of Squares	df	Mean Square	$F_{account}$	F_{table} ($\alpha = 0.05$)
Between Groups A	498.08	2	249.04	4.80	3.47
in	1089.75	21	51.89		
Total	1587.83				

The fifth proposed hypotheses obtained $t_{account} = 2.24 = t_{table}$ and 2,018 means $t_{account} > t_{table}$ then H_0 is rejected so it can be summed up the results of the high have the intelligence students studied physics, using the model of social interactions more A1B1 inquiry learning high yield learning with the use of the learning model based on problem A2B1. Sixth hypothesis put forward proved his righteousness, obtained $t_{account} = 5.90$ and $= 2,080$. $\alpha = 0.05$ significant level. It turns out $t_{table} > t_{account}$ summed up the results of the study of Physics of high berinteligensi students using inquiry learning model of social interactions A1B1 is higher than the expository model using A3B1. Seventh hypothesis, put forward proved his righteousness, obtained $t_{account} = 3.48$ ttable and significant degrees of 2,080 $= \alpha = 0.05$. It turns out $t_{table} >$ account summed up the results of the study of Physics of high berinteligensi students using a learning model based on problem A2B1, higher than that of using the model of learning expository A3B1.

The next test of anava one-way with a mean difference of F-test results of student's learning on a low-intelligence group (B2), on the model of inquiry learning social interactions (A1B2), learning based on problems issues (A2, B2) and model expository (A3, B2), can be seen in Table 6 below:

Table 6: Summary of the results of the test of ANAVA One-way F Average Difference Results studied physics students use Learning Model B2.

Source	Sum of Squares	df	Mean Square	$F_{account}$	F_{table} ($\alpha = 0.05$)
Between Groups A	498.08	2	249.04	4.80	3.47
in	1089.75	21	51.89		
Total	1587.83				

The next test for the difference. The eighth hypothesis put forward proved his righteousness, retrieved $t_{account} > t_{table}$ $\alpha = 0.05$ significant level. Mean value taccount turns rejected Ho $> t_{table}$. This means that the hypothesis posed was concluded there is a difference of the results studied physics berinteligensi low students taught by using a model of learning Inquiry social interactions with students using a learning model based on the problem. The proposed

hypotheses tested, results of righteousness studied physics students use learning Inquiry social interactions (A1B2) is higher than the results of a study of physics students using a learning model based on the problem. (A2B2). The hypothesis that ninth asked questions proved his righteousness, obtained $t_{account}$ = 2.53 and t_{table} = 2,080 on α = 0.05 significance level. Mean value taccount turns rejected Ho > t_{table}. Means there is a difference of the results using a model of physics learning learning Inquiry social interactions with students who use the model expository. Means the proposed hypothesis, tested the truth of his special students that have the intelligence low results studied physics students who are taught using a model of learning inquiry social interactions (A1B2) is higher than the results of a study of physics students use expository learning model (A3B2). The tenth proposed hypothesis proved his righteousness, obtained $t_{account}$ = 2.13 and t_{table} = 2,080 α = 0.05 significance level. H_O denied means $t_{account}$ > t_{table} concluded that there is a difference of the results studied physics student learners model using low have the intelligence based on problems with students using a learning model expository. Hypothesis, which means asked questions tested truth that special low-yield have the intelligence students learn physics students who are taught using problem based learning model (A2B2) lower results studied physics students use models learning expository (A3B2).

CONCLUSION

1. The results of the study of physics students on learning model of inquiry social interactions is higher than the results of the study of physics students using a learning model based on the problem.
2. The results of the study of physics students on learning model of inquiry social interactions is higher than the results of the study of physics students who are taught using instructional model expository.
3. The results of the study of physics students at the learning model based on the problem higher than the results of a study of physics students use learning model expository.
4. There are influences of interaction using the learning model with intelligence against the results of the study of physics.
5. Special high have the intelligence students, the results of the study of physics students at the pem-belajaran model inquiry social interactions is higher than the results of a study of physics students using a learning model based on the problem.

6. special students of a high have the intelligence the results of the study of physics students at the pem-belajaran model inquiry social interactions is higher than the results of a study of physics students use learning model expository.

7. Special high yield have the intelligence students learn Physics students on learning model based on the problem higher than the results of a study of physics students use learning model expository.

8. Special low have the intelligence student outcomes studied physics students on learning model of Inquiry social interactions is higher than the results of the study of physics students who are taught using a learning model based on the problem.

9. Special low have the intelligence student achievement studied physics students on learning model of Inquiry social interactions is higher than the results of the study of physics students who are taught using instructional model expository.

10. Special low have the intelligence student achievement studied physics students on learning model based on the issue are lower than results studied physics students use learning model expository.

REFERENCES

1. Arends, Richard I, *Learning to Teach*. New York: McGraw Hill Companies, Inc, 2008.

2. Dimyati. Mudjiono. *Belajar dan Pembelajaran*. Jakarta: Rineka Cipta, 2013.

3. Goleman, Daniel. *Social Intelligence*. Jakarta: PT Gramedia Pustaka Utama, 2007.

4. Hamalik, Oemar. *Proses Belajar Mengajar*. Jakarta: Bumi Aksara, 2013. Jakarta: Yayasan Penamas Murni, 2010.

5. Hamzah B. Uno. *Orientasi Baru Dalam Psikologi Pembelajaran*. Jakarta: Bumi Aksara, 2012.

6. Jean Piaget. *The Psychology of Intelligence*. London: Routledge, 2002.

7. Joyce, B, Weil, & C. *Model of Teaching*. New Jersey 6th Edition: Prentice-Hall Inc, 2000.

8. Jonassen D.A, *Learning to Solve Problems, A Handbook for Designing Problem-Solving Learning Environments*. Routledge, New York, 2011.

9. Jones Beau Fiy, Claudette M. Rasmussen, and Mary C. Moffitt. *Real-Life Problem Solving*, Wahsington, DC: Amerika Psychological Association, 2011.

10. Koes, Supriyono. *Strategi Pembelajaran Fisika*. Jakarta: IMSTEP, 2003.

11. Levin, Barbara B. *Energizing Teacher Education And Professional Development With Problem Based Learning*. Alexandria Virginia USA: ASCD, 2001.

12. Maggi Savin-Baden and Claire Howell Mayor, *Fondations Of Problem Based Learning*. New York: Society for Research into Higher Education & Open University Press, 2004.

13. Mundilarto. *Kapita Selekta Pendidikan Fisika.* Yogyakarta: Jurusan Pendidikan Fisika FMIPA, Universitas Negeri Yogya, 2002.

14. Richard. Arends, *Learning To Teach.* New York: McGraw-Hill Companies, Inc, 2007.

15. Rusmono. *Strategi Pembelajaran dengan Problem Based Learning Itu Perlu*. Jakarta: Ghalia Indonesia, 2012.

16. Sanjaya, Wina. *Strategi Pembelajaran Berohentasi Standar Proses Pendidikan.* Jakarta: Kencana, 2013.

17. Savin, Maggi, Baden and Claire, Howell, Mayor. *Foundations of Problem-Based Learning.* England: McGraw-Hill Education, 2004.

18. Silver, Harvey F, Richard W. Strong, dan Matthew J. Perini, *Stratrgi-Strategi Pengajaran*, terjemahan Ellys Tjo. Jakarta: P.T Indeks, 2012.

19. Slavin, Robert E, *Psikologi Pendidikan: Teori dan Praktek*, terjemahan Marianto Samosir Jakarta: Indeks, 2011.

20. Smaldino E Sharon, Lowther Deborah L. Russell D. James, *Instructional Technologi & Media For Learning.* Pearson Prentice Hall, 2008.

21. Suparman, Atwi. *Desain Instruksional Modern*. Jakarta: Penerbit Erlangga, 2012.

22. Supriyono Koes, *Strategi Pembelajaran Fisika*, Universitas Negeri Malang, Malang, 2003.

23. Tan Oon Seng. *Problem Based Learning And Creativity*. Cengage Learning. Singapore, 2009.

24. Trianto. *Mendesain Model Pembelajaran Inovatif Progresif.* Jakarta: Kencana Prenada Media, 2009.

25. Veloo Arsaythamby, Selvan Perumal, R Vikneswary. Inquiry - Based Instruction, Students Attitudes and Teachers Support Towards Science Achievement in Rural Primary Schools, *Journal Prosedia Sosial and Behavior Science*, ByElsevier, 93: 2013.