CHAPTER II
LITERATURE REVIEW

2.1 THEORETICAL FRAMEWORK

2.1.1 Understanding Learning

Learning is a process or an attempt to do every individual to get behavior change, either in the form of knowledge, skills, attitudes and values as a positive experience from a variety of materials that have been studied.

According to T. Hakim (2005), declares that "learning is a process of change in human personality, and such a change is placed in the form of an increase in the quality and quantity of behaviour such as an increase in knowledge, attitudes, skills habits, understanding, skill, power thinks, and other capabilities. "

According to M. SobrySutikno (2009), learning is a process of work done by someone to get a new changes as a result of his own experience in interaction with the environment. In this case, change is something done consciously (intentional) and aims to obtain a better than ever.

According to Djamarah (in JohariMarjan, 2014:3) is a series of learning activities of the soul in order to obtain a change in behavior as a result of the experience of individuals interact with their environment involving cognitive, affective and psychomotor.

So some of the opinions of the experts above it can be concluded that learning is a process which is done by the individual to be something better than before.

2.1.2 Scientific Process Skills

a. Understanding The Science Process Skills

Science is a process of assimilation of skills from a variety of intellectual skills can be applied to the learning process in schools. Science process skills is not intuksional actions that are beyond the ability of the

students of the science process skills, but instead used to develop capabilities owned by students.

According to Nana Diana (2018:37) the science process Skills is the learning process that is designed in such a way so as to find out the facts, developing concepts, and theories with a scientific attitude and intellectual skills of the students. Science process skills in learning physics emphasizes the formation of skills to obtain results, knowledge and developing the scientific attitudes and ability of thinking students.

According to Tawil, Muh and Liliasari (in Khaerunnisa, 2016: 342) Science process skills are assimilation of various intellectual skills that can be applied to the learning process. The skills of the science process are not instructional actions that are beyond the ability of students. Science process skills are actually intended to develop the abilities possessed by students. Students can experience scientific stimulation and can better understand facts and concepts of science

According to Jennifer Goulden (in a. Rusmiyati and a. Yulianto, 2009:75) claimed that "process is the process approach to Skills in teaching natural science based on observation of what is done by a scientist".

On the basis of some of the opinions above, it can be concluded that the science process skills are a set of skills that scientists used to do scientific inquiry, can be learned by students in a simpler form in accordance with the stage of development of the child.

b. Indicators of the Science Process Skills

According to Rustaman (Khaerunnisa, 2016: 342) reveals the ten aspects of components of process skills:

1. Observation

   Observing is the ability to use the senses must be owned by everyone. In the case of observing means, the choice of interpreting

the facts is important. With things that are observed then it will evolve the ability to search for similarities and differences.

2. Classification

   Skills in scientific work In everyday life we need to know the difference between objects and we are easy to learn it.

3. Interpretation

   The observations will not be useful, if not interpreted. Therefore, from the observed directly, and note any observations separately, then the links are the results of observation, certain patterns are found in the observations. The discovery of this pattern is the basis for the stated conclusions.

4. Prediction

   Skills include prediction or foretelling skills submits an estimate of something that has not happened upon a trend or pattern. Predict that tomorrow the Sun will rise at a certain time in the East is an example of a prediction.

5. Asking Questions

   By developing skills of thinking above, children are given a chance to use his mind. Then faced with issues that are around. The extent to which the child uses his mind to answer the question asked. The quality of the questions asked children showed low height thought of the boy.

6. Hypothesis

   The hypothesis is estimated to explain certain observations or events. Scientists make a hypothesis that is tested through experimentation.

7. Planning Experiments

   After seeing a relationship of the observations made, the necessary conclusion while or hypotheses formulated were tested. For it takes the ability to experiment and tools and materials were used in the experiment.

8. Using Material Tools

   Experiment in science requires tools and materials. Successfully or whether the experiment depends on the ability to select and use tools appropriately and effectively. Experience using tools and materials is a concrete experience required students to accept new ideas.

9. Applying the concept

   Making every effort to implement the concepts that have been learned in new situations to explain what is happening, is the goal of science lessons that are important.

10. Communicate

    Each expert is required to be able to convey the results of discovery to others. In this case the students also learned to convey the results of the discovery of what was found after the experiment or practical.

According to Semiawan(Khaerunnisa, 2016:342) indicators of process skills:

Table 2.1. Indicator of Process Skills

Science Process Skills	Indicator
Observe (observation)	1. Use as many senses 2. Collecting or using the relevant facts
Group (Classification)	1. Note any observations separately 2. Looking for differences and similarities 3. Contrast the characteristics 4. Compare 5. Looking for basic grouping or classification 6. Linking the results of his observations
Interpreting (Interpretation)	1. Linking the results of his observations 2. Find a pattern in a series of observations 3. Concluded
Forecasting (Prediction)	1. Using the patterns the observations 2. Express what might happen to a situation that has not been observed
Ask a question	1. Ask what, how, and why 2. Asked to explain 3. Ask questions that set the hypothesis
Hypothesize	1. Knowing that there is more than one possible explanation of the single instance 2.Realize that an explanation needs to be tested for its truth in obtaining the evidence more or

Science Process Skills	Indicator
	do a problem-solving way
Planning The Experiment/Research	1.• Determine the tools/materials/resources will be used 2.Specifies variables or the deciding factor. 3.• Determine what will be measured, observed, noting 4.• Determine what will be implemented in the form of working steps
Use the tools/materials	1.Wearing tools and materials 2.Know the reasons why use of tools/materials 3.Find out how to use the tools and materials
Implementing the concept	1.Using concepts that have been learned in the new situation 2.Use the concept in a new experience to explain what is going on
Communicate	1.Describe/illustrate the empirical data or observations experiment results with a graph or a table or diagram 2.prepare and submit reports systematically 3.describe the results of an experiment or research 4.Read the graph or table diagram 5.Discuss the results of the activities of an issue or an event 6. Change the presentation
Carry out experiments / experimentation	1. Conduct an Experiment

According to Barba (Rina, Suciati, 2012:52 and Widha) basic science process skills indicators such as on Tabel1 and integrated science process skills in table 2.2, as follows:

Table 2.2. Indicators of Basic Science Process Skills

Science Process Skills	Indicator
Observation (observing)	Able to use all of the senses (sight, taste, hearing, smell, and sensing) to observe, identify, and named properties of objects and events carefully from the observations.
Classification (Classifying)	Able to determine differences, contrasting traits, looking for similarities, compare and determine the basic categorization against an

Science Process Skills	Indicator
	object.
Measuring (measuring)	Being able to choose and use equipment to determine quantitatively and qualitatively the size of an object correctly for length, area, volume, time, weight and more. And being able to change demonstrate a unit of measurement to another unit of measurement.
Communicate (communicating)	Able to read and compile the information in a graph or diagram, draw such data with graphs, tables or diagrams, explain the results of the experiment, prepare and submit the report systematically and clearly.
Drawing conclusions (inferring)	Being able to make a conclusion about an object or phenomenon after collecting, interpreting data and information.
Predict	Predict can be interpreted as anticipating or make predictions about everything that will occur in the future, based on an estimate on a particular trend or pattern, or the relationship between the facts, concepts, and principles in the sciences knowledge.

Table 2.3 Indicator Integrated Science Process Skills

Science Process Skills	Indicator
Formulate a hypothesis (formulating Hypotheses)	Being able to declare a relationship between two variables, causes an estimated filing case by revealing how to do troubleshooting
Name the variable (Naming Variables)	Able to define all variables if used in an experiment
Control variables (Variables Controlling)	Able to identify the variables that influence the outcome of the experiment, keep constancy while manipulating the free variables
Making operational definitions (making operational definition)	Capable of stating how to measure all factors/variables in an experiment
Experiment (experimenting)	Capable of performing the activity, asking questions as appropriate,

Science Process Skills	Indicator
	stating a hypothesis, identify and control variables, defined in operational variables, designing an experiment that honest, interpret results experiment
Interpretation (Interpreting)	Able to sought the observations against the object to draw conclusions, finding a pattern or regularity of written (e.g. in tables) of a natural phenomenon
Designing investigations (Investigating)	Being able to specify the tools and materials needed in an investigation, determine the control variables, variable, determining what will be observed, measured and written work, and determine the steps that lead to the achievement of scientific truth
Application concept (ApplingConcepts)	Able to explain recent events by using the concept that had been owned and being able to apply the concepts that have been learned in the new situation

2.1.3 Understanding Learning Models

Learning models are conceptual and operational frameworks of learning that have names, characteristics, logical sequences, settings, and culture. This is in accordance with Minister of Education and Culture No.103 of 2014 concerning Learning in Primary and Secondary Education, Article 2.

In general, the learning model is a systematic way or presentation technique that is used by the teacher in organizing the experience of the learning process to achieve the objectives of the learning. Another short definition is an approach used in learning activities.

According to SyaifulSagala (2009), the learning model is a conceptual framework that describes a systematic procedure in organizing the learning experiences of students to achieve certain learning goals and serves as a guide in planning and implementing teaching and learning activities.

According to Syafaruddin, IrwanNasution (2005), the learning model is a description of the learning environment that moves from curriculum planning,

subjects, parts of the lesson to plan subject matter, workbooks, programs, and competency assistance for learning programs. In other words, the learning model is a tool that facilitates students in learning. So, the existence of a learning model serves to help students obtain information, ideas, skills, values, ways of thinking and understanding expressed.

So the learning model can also be interpreted as a whole series of material presentations covering all aspects before, while and after the learning done by the teacher and all related facilities that are used directly or indirectly in the teaching and learning process. Learning models themselves have broader meanings than strategies, methods or just learning procedures.

2.1.4.1 Inquiry Learning Model

Inquiry in English inquiry, means statement, or examination / investigation. Inquiry as a general process by humans to find or understand information. According to Kuhlthau (in Dwi Pertiwi Hapsari, SuciatiSudarisman, Marjono 2012: 18) states that, "Inquiry is a learning approach where students seek and use various sources of information and ideas to increase their understanding of problems, topics, or issues.

Gulo in Trianto (2010) states that inquiry strategy means a series of learning activities that involve maximally all students' abilities to search and investigate systematically, critically, logically, analytically, so that they can formulate their own findings confidently. The main objectives of learning activities are:

1) Maximum involvement of students in the learning process;
2) The direction of activities is logically and systematically in the learning objectives;
3) Developing confidence in students about what is found in the process of inquiry.

General conditions which are conditions for the emergence of inquiry activities for students are:

1. The social aspects of the class and the open atmosphere that contains students discussing;
2. Inquiry focuses on the hypothesis;
3. Use of facts as evidence (information, facts)

To create such conditions, the role of the teacher is as follows:

1. Motivator, giving stimulation so students are active and passionate in thinking.
2. The facilitator, shows the way out if students experience difficulties.
3. Questioners, make students aware of the mistakes they make.
4. Administrators, responsible for all class activities
5. Director, leads the activities of students to achieve the expected goals.
6. Managers, manage learning resources, time, and class organization.
7. Rewarder, gives awards to the achievements of students.

2.1.4.2 Guided Inquiry Learning Model

Guided inquiry learning model is a learning model that aims at more active students in the learning process which has been conditioned to be able to apply thinking in an effort to explore all concepts to take initiative in solving problems, making decisions, and training students' critical thinking in physics problems. In this lesson the teacher acts as an organizer and facilitator, teachers do not tell concepts but guide students to discover these concepts through learning activities. So that the concepts obtained based on activities and learning experiences will always be remembered by students in a long time.

The guided inquiry learning model is student-centered learning. Piaget (in Sri Wulanningsih, BaskoroAdiPrayitno, and Riezky Maya Probosar 2012: 34) suggests that a guided inquiry model is a model that prepares students in situations to conduct extensive experiments themselves to see what is happening.

According to Sagala (in Tangkas 2012: 4) suggesting inquiry is a learning approach that can be applied to all levels of education. Learning with this approach is very integrated including the application of science processes to the processes of logical thinking and critical thinking. Inquiry is an approach to

gaining knowledge and understanding by asking questions, observing, investigating, analyzing, and evaluating.

2.1.4.3 Stages of Guided Inquiry Learning Models

According to Memes (in Jauhari, 2011), there are six steps that must be considered in the guided inquiry learning model, namely;

1. Formulate a problem
2. Make a hypothesis
3. Design activities
4. Carry out activities
5. Collect data
6. Take conclusions

In more detail, the implementation phase of guided inquiry according to Kuhlthau (2012), consists of eight stages, namely;

1. *Open* (Introduction)

Introduction is the beginning of the investigation process. Open is a different phase and sets the direction of investigation. The teacher prepares students to learn, motivates creativity, and creates interest in prior knowledge. Express the learning objectives and success criteria, focus students to deal with important issues and find the level of mastery expected.

2. *Immerse* (Orientation)

Immerse is guiding students to connect with concepts and find interesting ideas to explore them further. Orientation activities are intended to introduce students to problems related to teaching material. In this phase the teacher guides students to instill the initial knowledge that students know beforehand.

3. *Explore* (Investigate)

Phase Explore, students carry out various surveys from various sources and read then reflect on questions that will form student investigations. At the observation stage students have the opportunity to make observations, design experiments, gather, test and analyze data both based on learning resources and through investigative activities.

4. *Identify*

The Identify phase, to build questions of interesting ideas and emphasize problems.

5. *Gather* (Gathering)

Gather's phase students personally choose meaningful and interesting questions for investigation from sources of information from those they find.

6. *Create* (Generate / Generate)

After students gather enough information to construct students' understanding then arrange learning for presentations.

7. *Share* (Giving / Sharing)

Share is the peak phase in the investigation process when students share the product they have created to show what they have learned with other students in their investigation group.

8. *Evaluate*

Each learning activity ends with an evaluation of the results they get, a reflection of what they have learned and evaluating their appearance. Regular evaluations are obtained by reporting the results to friends or teachers to get their opinions on the content and quality of the results.

2.1.4.4 Strengths of Guided Inquiry Learning Models

a. Learning strategy that emphasizes the development of balanced cognitive, affective, and psychomotor aspects.
b. Strategy that is considered in accordance with the development of modern learning psychology which considers learning is a process of changing behavior thanks to experience.
c. Provide space for students to learn according to their learning style.
d. Can serve the needs of students who have abilities above average.

2.1.4.5 The Weakness of Guided Inquiry Learning Model

a. Inquiry learning requires high student intelligence, if students are less intelligent learning outcomes are less effective.

b. Teachers are required to change their teaching habits generally as information givers as facilitators, motivators, and student guides in learning.
c. Requires changes in habits of learning ways students who receive information from the teacher as is.
d. It takes a long time and the results are less effective if learning is applied to less supportive classroom situations.
e. The way students learn in this method requires better teacher guidance.

2.1.5 Conventional learning

Conventional learning is traditional learning which is often referred to as the lecture method, where the teacher delivers the material verbally to a group of students with the intention that students can master the subject matter optimally. Learning in conventional methods, students listen more to the teacher's explanation in front of the class and carry out the task if the teacher provides training questions to students. Frequently used in conventional learning include lecture methods, question and answer method, discussion method, assignment method.

According to Djamarah, Aswan (2010: 97): The weaknesses of conventional learning are as follows:

a. Easy to become verbalism (understanding words)
b. The visual loses, the big auditive (hears) receives it
c. When always used and too long, it will be boring
d. The teacher concludes that students understand and are interested in the lecture, this is very difficult
e. Causes students to be passive

The advantages of learning with conventional methods are as follows:

a. The teacher easily masters the class
b. Easy to organize seating / class
c. Can be followed by a large number of students
d. Easily prepare and implement

e. The teacher easily explains the lesson well

2.2 RELEVANT RESEARCH

As a reference in this study, there are several related studies and all of them get positive and successful results, the following are some of the results of the research that have been done first using a guided inquiry learning model.

I. Sahhyar and FebrianiHastini (2017)in journl entitled “The Effect of Scientific Inquiry Learning Model Based on Conceptual Change on Physics Cognitive Competence and Science Process Skill (SPS) of Students at Senior High School” the mean of science process skill of students in experimental class was 79.66 and 63.97 in control class, based on the hypothesis testing obtained that students’ science process skill (SPS) using scientific inquiry learning model based on conceptual change was better than using conventional learning.

II. Rahmani, Abdul Halim and ZulkarnainJalil (2016) in a journal entitled "The Influence of Guided Inquiry Learning Models to Enhance Science Process Skills of Primary School Students". The guided inquiry learning results experienced an increase of 67.55% or in the medium category.

III. LutfiEkoWahyudi, Z.A. Imam Supardi (2013) in a journal entitled "Application of Guided Inquiry Learning Models in the Subject of Heat to Train Science Process Skills for Learning Outcomes in Sumenep 1 Public High School". In this study KPS students with guided inquiry learning are in a fairly good category with an average score of 72.5. Learning outcomes by applying a guided inquiry learning model by practicing science process skills improves learning outcomes from the pretest value of 29.35 to the posttest of 89.19.

IV. Ali Abdi (2014) in a journal entitled "The Effect of Inquiry-based Learning Method on Students' Academic Achievement in Science

Course". The results showed the posttest of student learning outcomes with Inquiry-based Learning 7.30 and those not treated were 6.35.

V. Njoroge (2014) in a journal entitled "The Effect of Inquiry-based Teaching Approach on Secondary School Student " Achievement and Motivation in Physics in Nyeri County, Kenya". The results showed that learning with Inquiry-based Teaching produced significant differences compared to those who did not use Inquiry-based Teaching.

VI. Rizal, M (2014) in a journal entitled "The Effect of Guided Inquiry Learning with Multi Representation on Science Process Skills and Mastery of Middle School Students' Science Concepts". In this study, the results of the analysis of the average value of science process skills in the experimental class is 78.94 and the average value of science process skills in the experimental class is 75.00 and states that guided inquiry learning affects students' science process skills.

Based on several studies that have been conducted on the effect of guided inquiry learning models on student process skills, it can be concluded that all this time learning and measuring the results of physics learning in schools only pay attention to cognitive aspects. The teacher lacks training in the skills students have to find their own knowledge. In general, physics learning in schools emphasizes product aspects while the process aspects are ignored, consequently the knowledge is only memorized. Yet to find concepts, facts or principles of a science requires a process skill. This is in accordance with the results of several studies above which show that using a guided inquiry learning model can improve student learning outcomes through science process skills.

2.3 CONCEPTUAL FRAMEWORK

At this time school teachers in general still use conventional learning models that still focus on learning to the teacher (teacher center) which results in active teachers while students become passive. This also happens in physics subjects which basically cannot be explained only by conventional learning, but

physics learning must use proof or actual theory to find the concepts, facts or principles needed in a process skill.

One learning model that can be used to develop students' science process skills is a learning model that helps students learn to acquire knowledge by finding themselves through guided activities from the teacher. In this learning model the material presented is not given just like that, but requires students to get various experiences in order to "find themselves" concepts according to the learning objectives designed by the teacher, while the teacher facilitates and guides students in the investigation activities they do to prevent misunderstandings regarding the findings of the practicum carried out.

In guided inquiry there are scientific activities, namely identifying problems, making hypotheses, designing experiments, carrying out experiments, managing experimental data, making conclusions to communicating the results of experiments. Through these scientific activities, students are faced with concrete experiences to find a concept through practicum so that students actively learn to think and learn constructively so that the knowledge gained by students will be more embedded in the minds of students, not rote.

To find out the influence of guided inquiry learning model on science process skills students, first researchers will do a pretest in both sample classes to see how students' initial abilities to the material to be taught, where the initial ability of students in both classes is not much different. Testing the pretest data using the two-party t test. After that, the researcher will determine the experiment class and the control class. Then the researcher will provide a treatment model of guided inquiry learning in the experimental class and conventional learning in the control class. During the learning process, observations of the activities of science process skills are carried out. After the material has been given, the researcher will give a posttest to find out the students' final knowledge after being given different treatment in one of the different classes. The posttest results were tested using the one-party t test. If the results of the experimental class posttest are higher than the control class, it is said that there is an influence of the guided inquiry learning model on students' science process skills.

2.4 RESEARCH HIPOTHESIS

The hypothesis acts as a temporary answer that needs to be verified from the question being examined. The hypothesis in this study is the influence of guided inquiry learning model on science process skills of students in the measurement material in class XI Islamic Boarding School MAWARIDUSSALAM. Before testing the research hypothesis it is necessary to first formulate the following statistical hypothesis:

"There is a significant effect on the guided inquiry learning model on science process skills of students in the topicElasticity in MAWARIDUSSALAM Islamic Boarding School class XI in the experimental class compared to the control class."