

# ***Increasing the Activities and Competencies of Learning Science through Problem Based Learning Model to Class VIII Junior High School 1 Telukdalam***

Murnihati Sarumaha<sup>1</sup>, Lufri<sup>2</sup>

<sup>1</sup>Graduate Student of Biology Education Program,  
FMIPA State University of Padang

<sup>2</sup>Lecturer of Biology Education Program,  
Universitas Negeri Padang



**Abstract** - The purpose of this study to improve the quality of learning so in this study applied model of learning *Problem Based Learning* to improve the activities and learning competencies of learners on learning science. The type of research used is Classroom Action Research (PTK). This study was conducted in two cycles, each cycle consisting of planning, implementation, observation, and reflection. The subjects of the study were students of class VIII<sub>a</sub> SMPN 1 Telukdalam which amounted to 34 people. This research data is obtained through observation sheet, and daily test. The data of this research are analyzed by using quantitative and qualitative data analysis. The results showed that the model of *Problem Based Learning* learning can improve the competence and learning activities of learners. Aspects of knowledge on prasiklus number of students who complete 23.53%. In the first cycle increased to reach 61.76%. In the second cycle also increased to reach 79.41%. For the average attitude competence on prasiklus reached 1.64 with less predicate, in the first cycle reached 2.17 with predicate enough, on the second cycle reached 2.97 with good predicate. For the average competence of students skill in prasiklus reached 2.05 with enough predicate, in the first cycle has increased to 2.71 with good predicate, in the second cycle also increased by 3.39 with good predicate. Then, for the percentage of learners activity on prasiklus reach 30,88% with criterion good enough, in cycle I reach 49,01% with good enough criterion, in cycle II reach 74,03% with good criterion. Based on the results of this study, it can be concluded that the model of learning *Problem Based Learning* can increase the activity and competence learners learn.

**Keywords** - Learning Competency; Learning Activity; Model *Problem Based Learning*.

## **I. INTRODUCTION**

The role of science education to human life, especially in socio-economic development of a country almost does not require an argument. Bello and Abimbola (2015) correctly noted that 'the socio-economic development of a country can not rise above the level of scientific and technological development; it is clear that science education is a powerful tool for state security (p.146). Awareness of science education has come to live in the school curriculum in almost every country around the world. The science curriculum in various countries of the world focuses not

only on developing an understanding of science concepts among learners, but also on an understanding of the nature of science (American Association for the Advancement of Science, 1990; National Research Council, 1996).

Science that has benefits in human life, has a problem in learning in school. This is also in accordance with the report of the *Kenya National Examination Council* (in Wekesa, et al., 2016) that teaching methods are a major cause of lack of understanding and poor performance of biology and other sciences. Furthermore, according to Aswita (2015: 64) the fundamental problem of education in Indonesia, especially

in science learning is the education system in Indonesia itself that makes learners as objects, so that humans generated from this system are people who are only ready to meet the needs of the times and instead of being critical of his day. Based on some of these problems then the need for teacher awareness to improve learning by creating an atmosphere of teaching and learning activities are fun and involve learners to build their own knowledge.

In order to create good learning, teachers need to be aware as a teacher that science is spread in nature can not be digested by learners, but it takes a teacher action to be a bridge of various knowledge for learners. The results of Sunaryo's (2009) study also revealed that in the implementation of learning, teachers are required to have various skills of using learning strategies, learning media optimization, learning creativity, and skills of packing learning materials so that the material in the learning becomes easier to be understood by learners. Lufri (2007: 2) also revealed that the basic principle of a learning is to develop the potential of learners. Furthermore, in the 2013 curriculum, in addition to demanding teachers to complete their role in the implementation and preparation of the implementation plan of learning, teachers are also required to be able to create and provide assessment to learners in accordance with the existing techniques and instruments in the curriculum 2013. Assessment of learning process is done teachers can see the results of learning achievement of learners (Hidayat, 2013). This is expected of teachers in science learning so as to be able to direct learners on mastery of science, attitude, and skills.

Some of the learning problems described above were also found during teaching at SMP Negeri 1 Telukdalam. The learning process has not been done as expected. The usual learning is initiated by the delivery of apperception, motivating the learners and passing on the delivery of learning objectives. Next, the teacher explains the material and interspersed with question and answer. This learning description is monotonous and less varied. This learning makes teachers as a source of information and who play an active role in learning. Learners are positioned only as listeners and act passively. Learners are just waiting for explanation from the teacher and instruction from the teacher doing the exercises.

Learning problems resulted in the completeness of learners who mostly still below the Minimum Criteria of Completeness (KKM) of 70, can be seen in Table 1.

Table 1. Competence Learning Class VIII students SMPN 1 Telukdalam FY 2016/2017 Even Semester

Class	Number of Students ( )	Average Result of Competency Exam Competency Knowledge	Result Exam Competence Skills
VIII <sub>a</sub>	35	Persons 65,56	68
VIII <sub>b</sub>	40	63,07	65
VIII <sub>c</sub>	43	62,74	62
VIII <sub>d</sub>	40	62,85	63
VIII <sub>e</sub>	38	63,36	64
VIII <sub>f</sub>	30	62,50	64

(Source: Administration of SMP Negeri 1 Telukdalam)

Table 1 shows that the average overall student score for each class is still low when compared to the KKM score.

Some of the learning problems experienced in learning during this time is due to the teacher's less varied teaching. Approach / strategy / model used less attractive and less contribute to the development of learners learn. Lessons are applied less involving learners in solving some real problems. Learning is dominated by teachers, learners are not directed to build their own knowledge. Teaching such as this results in the response of learners who quickly bored, difficult to concentrate and focus the mind to learn.

IPA learning that can easily be found in real life teaching material, can be the main capital for teachers to deliver understanding of learners by linking teaching materials to the problems in real life. Learners are involved to solve some phenomenal problems based on experience. Through the problems given, learners are directed to discover and construct their own knowledge. Learning conditions like this will not cause a point of saturation because learners get involved in every learning and know the benefits and goals learned about this material and what is the relationship in everyday life. It is in agreement with Lufri (2007: 18) that do not teach biology only by lecture method, complete with other approach / model / method or vary with material condition, condition of student, and time condition. Some problems of learning IPA is not good if left but needed a model of learning that can anticipate the learning problems experienced during this is the model of learning *Problem Based Learning* (PBL).

The model *PBL* is one of the learning models deemed appropriate to be applied in the 2013 curriculum based on

permendikbud no. 103 years 2014 on learning in primary and secondary education, which states that the learning approach can use several learning models, one of which is the model *PBL*. This problem-based learning model is a student-centered learning model, and uses the problems of daily life in a semi-structured form during the learning process (Lin et al., 2010), encouraging learners to learn (Lee & Bae, 2008). Furthermore, in the process of problem-based learning, learners work together and build their own knowledge by asking, searching and problem-solving activities. This problem-based learning model also relies on the principle of cooperative learning (Wang et al., 2008). Then, problem-based learning emphasizes self-study, because it requires learners to direct their own learning (Finch, 1999). Through this learning, learners to learn independently and construct their own knowledge to be learned.

Model *Problem Based Learning* is used as an alternative in improving the activity and competence of science learning because this learning model is basically centered on learners that involve learners at each stage of learning. This is in line with the literature results which show that *PBL*, as an educational model, has many important pedagogical benefits, including enhancing active learning, fostering a deeper approach to learning, improving self-study, enhancing interdisciplinary knowledge considerations, developing professional identity and developing responsibility answer.

Based on the description, so the researcher is interested to carry out research with the title: "Increasing Activities and Competence of Learning Science Through *Problem Based Learning* Model to Class VIII Students of SMP Negeri 1 Telukdalam".

## II. LITERATURE REVIEW

In curriculum 2013, the biology of learning becomes more meaningful because it leads to the application of the nature of science / science itself. Curriculum 2013 emphasizes on dimension modern pedagogic in learning, using a scientific approach. Scientific approach (*scientific approach*) in the learning as intended includes observing, asking, reasoning, trying, forming a network (Agency for Human Resource Development, 2013).

Biology is a branch of science (IPA) that has a very big role for life, because biology learn everything about living things. According to Rustaman (2003), learning science is an effort to recognize real life processes in the environment, or learn science from the empirical aspect (*purpose in*

*empirical evidence*). This directs the participants learners can recognize yourself as beings, or to learn science and aspects of evaluation (*purpose in human institution*) so it is useful to improved quality and human life of environment or aspect survive (*purpose in human life*). Learning biology more emphasis on the provision of experience, direct so that learners can find and solve problems on objects and events of nature with scientific procedures by reasonings facts resulted critical-logical-scientific fact.

Biological science has spesific as compared to the sciences others. Biologi is one of the science that learn creatures life and life from various aspects of the problem and level of organization. Biological science products form a collection of facts and concepts as a result of the process of biological science (Sudjoko, 2001: 2).

In addition to biological learning departing on real issues. In biology learning is expected involvement of learners. Learning in the classroom is not only limited to taking notes and listening to teaching materials from teachers only, but it is expected the involvement and activities of learners in building their own knowledge. The process of learning done in the classroom is an activity to transform knowledge, attitude, and skills (Martinis Yamin, 2007: 75). Furthermore, this learning activity is a principle or a very important principle in the interaction of teaching and learning (Sardiman, 2006: 96). Furthermore, Martinis Yamin (2007: 82) also asserts that learning is active as a human effort to build knowledge within itself. Therefore, in order to create a good learning atmosphere it is very necessary involvement or participation of learners at each stage of learning both in terms of knowledge, attitude and skills.

The dominant activity of learners in learning will affect the success of learners on biology learning. The success of the process will definitely affect the learning competence of learners. this learning competency contains knowledge competence, attitude competence and skill competence.

Biology learning planning that expects the involvement of learners in learning and presentation of learning materials departed on the real issue. A learning model is needed that will create a student-centered learning environment. Learning model in question is a model of learning *Problem Based Learning*.

According to Joyce & Weil (1980), the learning model is a plan or pattern that can be used to form a curriculum (long-term learning plan), designing learning materials, and

guiding classroom or other learning (Rusman, 2012: 133) . Furthermore, according to Muslimin I (in Boud and Felletti, 2000: 7), *PBL (Problem Based Learning)* is an approach to teaching learners to develop thinking skills and problem-solving skills, learning the role of authentic adults and becoming learners independent. Problem-based learning is not designed to assist teachers in providing as much information to learners, but problem-based learning is developed for intellectual skills, learning various roles of adults through their inclusion in real-life experiences and becoming self-directed learning.

Furthermore, Moffit (in Depdiknas, 2002: 12) suggests that problem-based learning is a learning approach that uses real-world problems as a context for learners to learn about critical thinking and problem-solving skills and to acquire knowledge and concepts that are essentially from the subject matter. According to Hartono. R (in Nurdin 2016: 221) that problem-based learning is a learning process that exposes learners to a problem before starting the learning process. Learners are confronted with a real problem that drives them to research, decipher and seek solutions.

Based some opinions of experts, it can be concluded that the model PBL is a study that exposes participants students in real-world situations by associate each material learning in everyday life as well as learning begins with experience oriented real by the learner itself. These statements are reinforced by the results of previous studies applying PBL indicating an increase in learning outcomes, conceptual understanding, critical thinking skills, motivation, interest, and learning activities on biology, physics, and mathematics subjects (Sudjana, 2002; Aisha , 2003, Lufri, 2003; Arnyana, 2004; Marpaung, 2005; and Paidi, 2008). Through application of learning model based on this problem will create an learning atmosphere active because this learning will trigger the curiosity know learners to the material which is learned because it is related in its own life.

### **III. RESEARCH METHODOLOGY**

This study is a classroom action research because it aims to improve the quality of learning that leads to increased activity and learning competence of learners. Classroom action research is a cycled research to solve a problem in learning and improve the quality of learning. This is in accordance with that expressed by Arikunto (2012: 3) that the PTK is a close attention to learning activities in the form of an action, which deliberately appear and occur in a class simultaneously. This research was conducted to the students

of class VIII<sub>a</sub> SMP Negeri 1 Telukdalam South Nias District even semester of academic year 2017/2018. The subjects of this study were students of class VIII<sub>aa</sub> with total of 34 people.

The design or research model used in this PTK is a research model according to Arikunto. The model developed by Arikunto is based on the fundamental concept that action research consists of four main components namely, planning, implementation, observation and reflection. Stages of research conducted by researchers on each cycle, including:

#### **a. Planning phase**

Activities undertaken by researchers at this stage are:

1. Making learning plans, worksheets of learners and other learning resources.
2. Preparing tools and other learning media.
3. Creating research instruments used include: attitude observation sheet, skills and activities of learners and knowledge competence tests.

#### **b. Implementation phase of action**

Activities undertaken at this stage is to apply all the planned activities by applying the model of *Problem Based Learning (PBL)* learning on science learning, especially on the material excretion and breathing systems in humans.

#### **c. Observation**

Stage At this stage do observasi on learning that is carried out primarily on the activities and involvement of learners in learning both in terms of attitude and skills. At this observation stage the researcher is assisted by observer.

#### **d. Reflection**

Stage At this stage, the researcher evaluates the action by analyzing all data obtained in each cycle. Based on the results of observations all the activities that have been done further done the analysis, meaning, explanation and inference data. The conclusions obtained are the effectiveness of the design of the learning implementation made and the list of problems and constraints faced in the field. These results are then used as the basis for planning in the next cycle.

The data in this research is data obtained from the evaluation and observation during the process of research implementation. Data collected in the following way: 1) Test. The test is performed at each end-of-cycle meeting using a multiple choice instrument; 2) Observation sheet.

Observation sheets were used during the study. This observation sheet is used to observe the competence of students' attitudes, skills and learning activities. Data collected in this study are then analyzed quantitatively and qualitatively, which includes: competency analysis and learning activities by comparing the competence and activities of learners in each cycle .

This research is said to succeed if the percentage of students' total knowledge competence reaches more than 75% who get the score above the KKM is 70. Then for the competence of attitudes, skills, and activities of learners achieve in good category.

#### IV. RESULTS AND DISCUSSION

##### A. Results

learning model *Problem Based Learning* is a learning model that is oriented to the real problems that create learning which are learner-centered and directed at solving the problem as an action to construct their own knowledge. Based on the results of research conducted in two cycles, each consisting of 3 meetings, it can be described as follows.

##### 1. Knowledge Competence

Through the application of model of learning *Problem Based Learning*, students' knowledge competence has increased, can be seen in Table 2.

Table 2. Comparison of Knowledge Competence Results During Research

.	Cycle	Average value	Completed		Not Completed	
				Number%		Number%
1	cycle I	69.65	21	61.77	13	38.23
2	Cycle II	76.12	27	79.41	7	20.59

Table 1 shows an increase in the competence of learners, especially in the realm of knowledge in terms of the number of learners who are thorough and incomplete based on the results of the test analysis at each end of the cycle. The number of completed learners has increased for each cycle. Improvement learners overall learning mastery from cycle I to cycle II reached 17,64%.

##### 2. Attitudinal Competence

Use of model of learning *Problem Based Learning*, students' attitude competence also increased. The attitude competence in cycle I reaches the predicate enough and in cycle II reaches on the good predicate. Increased competence attitude of learners can be seen in Table 3.

Table 3. Comparison of Stage Results During Research

CompetenceCo mpetence Attitude	Average Competency Attitude Each Cyclical			
	Cycle I	Cycle II	Increase	
			Raise	%
Responsibility	2,24	2,97	0,70	31,25
Cooperation	2.15	2.94	0.79	36.74
Discipline	2.12	2.99	0.87	41.04
average	2.17	2.97	0.80	36.87

Table 3 shows an increase in the mean attitude from the first cycle to cycle II. The average percentage increase in overall attitude attitudes from Cycle I to Cycle II was 36.87%.

##### 3. Skill Competence

Result of skill competency analysis of students from prasiklus until cycle II has increased. Skill competence of learners in cycle I reaches on good predicate and on cycle II reaches on good predicate. Enhancement of students' skill competence from cycle I up to cycle II can be seen in Table 4.

Table 4. Comparison of Skill Competence Results During Research

.	cycle	The average
2.	Cycle I	2,71
3.	Cycle II	3,39

Based on Table 4 shows that competence skills of students from the first cycle to the second cycle increased. Increased skill competence from cycle I to cycle II of 0.68. Improved major skills competencies are influenced by the contribution of the use of the model of learning *Problem Base Learning* that creates learning centered on the learner. Learners are involved in every stage of learning including in developing the skills of learners.

#### 4. Activity Participant Educate

Based on the observation of the activities of learners in biology learning through the use of learning model *Problem Based Learning* obtained information that the activities of learners have increased in each cycle, can be seen in Table 5.

Table 5. Comparison Average Percentage of Activities Learners

no.	Activities of Students	Average Percentage of Students Activities (%)		
		Cycle I	Cycle II	Increased
1	Noting the description of the material by the teacher	69.71	82.35	12.64
2	Ask a question to the teacher	47.06	73.53	26.47
3	Giving answers to the teacher	38.24	68.63	30.39
4	Interact with friends in a group discussion	45.10	70.59	25.49
5	Providing assistance to a friend	40.19	73.53	33.34
6	Noting the results of group discussions	53.92	75,55	21.63
Average Overall		49.04	74.03	24.99

Based on Table 5 shows the percentage increase in each aspect of the learners' activity on the Biology Science lesson from cycle I to cycle II. When viewed from the overall average, the increase in the activity of learners from cycle I to cycle II of 24.99%.

#### B. Discussion

Implementation of learning model *Problem Based Learning* (PBL) in science biology learning in the hope of improving the quality of learning and able to provide answers to the formulation of problems in the study. Through the application of learning models that contribute greatly to help learners in learning, especially on the competence of learning in which there is knowledge competence, attitude competence and skills competence.

Not only that, considering the model of learning creates an atmosphere of learning centered on the learner so as to open the space for students to be actively involved in learning so that the effect on the activities of learners in learning is increasing. In the following section will describe the positive changes to learners in learning through the application of learning model *Problem Based Learning*.

#### 1. Knowledge competence

Application of learning by using learning model *Problem Based Learning* is one of alternative solution of learning problem or learning difficulties experienced by students in class. The use of this model in this study is able to create a fun learning atmosphere and conducive to the learning development of learners. The success of the learning process affects the outcomes of learning. Proven through the use of learning models can improve the competence of learners' knowledge. At prasiklus the number of students who complete only 8 people or 23.53%. In the first cycle the number of students who complete as many as 21 people or 61.76%. In the second cycle, the number of students who completed 27 people or 79.41%. Thus the increase in the competence of learners knowledge ranging from prasiklus to cycle II.

learning model *Problem Based Learning* (PBL) has been able to change the learning paradigm from teacher-centered learning to the learning of learners. In the model *Problem Based Learning*, learners do not act as passive recipients of information, but are directed to find relevant information and design solutions to existing problems. (Wahyudi, 2015). It should be realized that the existence of learners in the learning is the subject or the actors of learning itself then required the need for involvement of learners in learning activities.

Not only that, in the 2013 curriculum recognized and recommended as one of the learning models that can improve the quality of learning in the classroom. Wardoyo (2015: 72) also stated "*Problem Based Learning* is a model where in the learning process based on the curriculum, learners are faced with the problem as a step to provide stimulation to happen learning activities". This model also requires full student activity in order to solve every problem faced by students independently by constructing their knowledge and understanding (Wardoyo, 2013). It is proven that some of the problems raised and contained in LKPD are related to the problems in everyday life to make it easier for learners to understand and construct their own knowledge based on the experience they have.

Some of the problems raised in this learning model are able to train students' way of thinking. Learners are trained to argue, communicate every thought or idea, find solutions to problems, generalize each different understanding, and value the opinions of others. In completing some of the problems contained in the LKPD, learners will produce more accurate hypotheses and get a more coherent explanation related to the problem they are trying to solve (Friesen & Scott, 2013), they will have a broad and flexible knowledge base, to solve effective problems and develop self-sustaining lifelong learning skills, to be an effective collaborator and to be intrinsically motivated to learn (Barrows & Kelson, 1995, in Hmelo-Silver, 2004). It is also recognized by KuoShu Huang (in Bungel, 2014: 47) PBL is a curriculum design that identifies learners not as passive recipients of knowledge but as problem solvers that can develop knowledge. Awareness to involve learners in problem-solving activities with model *Problem Based Learning*, proved able to improve teaching pattern of biology science. Learners are involved in solving some problems and are trained to build their own knowledge.

## **2. Attitudinal Competence**

In this study, in addition to enhanced knowledge competence, attitude competence is also considered through the application of model of learning *Problem Based Learning*. The competence of learners' attitudes during the research needs to be known to the researcher because it is related to how the interest and motivation of the learners during the learning of science through the application of PBL learning model. Model *Problem Based Learning* that oriented to real problems and pressed and directed to group learning able to train and develop the competence of learners attitude in learning.

The result of the analysis on the observation sheet of students' attitude competence during the implementation of the model *Problem Based Learning* in several cycles obtained information that the students' attitude competence on the biology science learning has increased. The average attitude competence of learners on prasiklus reached 1.64, with less predicate. The average competence attitude of learners in Cycle I reached 2.17, with a sufficient predicate. The average competency attitude of learners in cycle II reached 2.97, with good predicate. The average value of the attitude competencies of learners who experience improvement in each cycle.

The use of learning model problem-based oriented to real problems directs learning to recognize and bring up some of

the phenomenal problems solved by learners in study groups. This is done by way of teacher to give responsibility to learners in solving the problem. This will develop the attitude of the learner's responsibility. Learners are given the task and responsibility by the group leader. Learners are required to be actively involved in completing group tasks. Learners are given the responsibility to find the information needed. Learners are given the responsibility to direct other group members. All of these activities will train and develop students' attitude competencies in learning.

Through the problems posed in the learning group on the model *Problem Based Learning*, learners are required to work together and prioritize group interests rather than personal interests. Learners are directed to interact, share, and communicate with each other the ideas found to get the right solution to the problem. The cooperative attitude developed in this study trained high-ability learners to become tutors of other moderate or low-ability learners.

In this study, discipline is also a target to be trained and developed. Group assignments given to learners for each group, learners directed and required to complete the task of the group according to the allocated time. This trains the learner to manage time efficiently. Learners do not waste time on things that are not useful, focusing on listening to the direction of the teacher and completing the group task. In order to avoid lagging with other groups, demanding each group to share the group's work in several sub-fields, this is done so that group task completion can be done quickly and accurately according to the time specified.

The three aspects of attitudes that are considered in this study include the attitude of responsibility, cooperation and discipline get attention and experience improvement during the implementation of learning model *Problem Based Learning* (PBL). The PBL model that creates a student-centered learning demands every learner to become the actor of the learning itself. This model creates an environment where learners participate actively in the learning process, take responsibility for their own learning, and become better learners in terms of time management skills and ability to identify learning problems and to access resources (Karabulut, 2002, in Sungur & Tekkaya, 2006).

## **3. Skill Competence**

competence is one aspect of study competency that is considered in this research. The results of the analysis of observation sheet on the competence of the students' skills in the science of biology learning by applying the learning model of PBL has increased. The average competence of

students' skills on prasiklus reached 2.05, with a sufficient predicate. The average competence of students' skills in Cycle I reached 2.71, with good predicate. Meanwhile, the average competence of students' skills in Cycle II reached 3.39, with good predicate. The results of the analysis can be concluded that through the implementation of learning model *Problem Based Learning*, the competence of students' skills has increased.

Assessment of skills competence is an assessment conducted to determine the ability of learners in applying knowledge to perform certain tasks in various contexts in accordance with indicators of achievement of competence. Skill competence seen in this research through preparation of concept map and poster making. Preparation of concept maps and poster making is done at the last meeting for each cycle.

Preparation of concept maps serve as an activity to reveal the competence of learners' skills because through concept maps learners able to describe the way of thinking and mastery of the concept of learning materials that have been studied. Vanides (2005) suggests that concept maps represent a relationship between one concept and another. Asan (2007) suggests that concept maps are representations of several concepts as well as the various relationships between knowledge structures possessed by a person. Alberta (2005) explains that concept maps can be used as a tool to solve problems in education as a solution option or as an alternative. Furthermore, Sholahudin (2002), using concept maps as a tool to know what has been known by learners as well as produce meaningful learning process. Through the preparation of concept maps it helps researchers to reveal the competence of the students' skills.

Poster making is also used to see the competence of students' skills in this research. Making this poster with the aim to know the mastery of learners who poured in the form of posters, then to see the creativity of learners to convey the message and content of the poster itself. According to Kramadibrata, Dewi and Didik (2008: 183) the poster writing activity is a positive tool for pouring ideas and hobbies. Create a poster, stimulate learners to have a clear concept of the purpose of making a poster. Learners can create a harmonious and appropriate mixture in combining between images and writing. In accordance with the opinion, it can be concluded that poster making activities have enormous benefits in the learning process and the lives of learners.

Through the application of learning model *Problem Based Learning* (PBL), the preparation of concept maps and poster making can be done by students well. Learning *Problem Based Learning* that emphasizes learning groups. Each learner from each group is required to interact and cooperate in completing the task of the group, including in communicating ideas in preparing concept maps and making posters. During the preparation of concept maps and poster-making on researchers there are many diverse thoughts of emerging learners. With different levels of cognitive brings up opinions and ideas in the preparation of concept maps and poster making. The diversity of these ways of thinking makes it easier for them to find the right solution in concept map creation and poster creation. Using this PBL model, learners will produce more accurate hypotheses and get a more coherent explanation related to the problem they are trying to solve (Friesen & Scott, 2013), they will have a broad and flexible knowledge base, the ability to solve problems which are effective as well as develop self-sustaining lifelong learning skills, being effective collaborators and will be intrinsically motivated to learn (Barrows & Kelson, 1995, in Hmelo-Silver, 2004).

#### **4. Activity of Student**

Activity Activity of learners in learning also become target which need to be paid attention in this research. In every learning, the activity of the learners is needed. The result of the analysis of activity observation sheet of learners that the activities of learners on the science of biology learning through the model of *Problem Based Learning* (PBL) has increased. Percentage of student activity on prasiklus reach 30,88%, with criterion good enough. The percentage of learner activity in the first cycle reached 49.01%, with the criteria quite good. Meanwhile, the percentage of students activity in cycle II reached 74.03%, with good criteria. The results of the analysis so that it can be concluded that through the implementation of model of learning *Problem Based Learning* (PBL) can increase the activities of learners on science biology learning.

Learners who are known as learning actors, then required the involvement of learners at each stage of learning. Activity is a principle or principle that is very important in the interaction of teaching and learning (Sardiman, 2011: 95-96). Meanwhile, the activities of learners are the involvement of learners in the form of attitudes, thoughts, attention, and activities in learning activities to support the success of teaching and learning process and benefit from these activities (Kunandar, 2011:

277). Involvement of learners in teaching and learning activities will be a bridge for teachers to provide understanding to learners in understanding and mastering learning materials.

Implementation of learning model *Problem Based Learning* (PBL) in research is very contribute to train and develop learners activity in follow science learning biology. The learning model *Problem Based Learning* is a learning model that requires the activity of students in full in order to resolve any problems faced by learners independently by means of constructing knowledge and understanding possessed (Ward, 2013). The PBL learning model that creates learning centered on the learners provides enough space and time for the learners to become the learning actors themselves. Learners are directed to focus on listening to the teacher's instruction, engage in questions or communicate any ideas needed in group assignments, interact in groups, cooperate with each other and help low-skilled friends, and organize each core of learning. These activities can be done by learners on every lesson.

#### V. CONCLUSIONS

Based on the explanation description on the result of research and discussion about the implementation of learning model *Problem Based Learning* (PBL) in class VIII<sub>a</sub>, it can be concluded that:

1. The application of this model can improve the competence of learners' knowledge. In the first cycle the number of students who complete as many as 21 people or 61.76%. In the second cycle, the number of students who completed 27 people or 79.41%. Can be concluded that through the model of *Problem Based Learning* can improve the competence of learners knowledge.
2. Competence attitude of learners have increased through the application of model *Problem Based Learning* (PBL). The average competence attitude of learners in Cycle I reached 2.17 with a sufficient predicate. The average competency attitude of learners in cycle II reached 2.97 with good predicate. The average score of students 'attitude competencies has increased in each cycle, so it can be concluded through the application of model *Problem Based Learning* (PBL) able to improve the students' attitude competence in science biology learning.
3. Skills competence of learners have increased, after the model applied *Problem Based Learning* (PBL). The average competence of students' skills in Cycle I reached

2.71 with good predicate. Meanwhile, the average competence of students' skills in Cycle II reached 3.39 with a good predicate. The results of the analysis can be concluded that through the application of model *Problem Based Learning* (PBL) able to improve the competence of students' skills in science biology learning.

4. The activities of learners in learning also increased through the application of model *Problem Based Learning* (PBL). Percentage of students activity in the first cycle reached 49.01% with good enough criteria. Meanwhile, the percentage of students activity in cycle II reached 74.03% with good criteria. The results of the analysis so that it can be concluded that through the implementation of model *Problem Based Learning* (PBL) can increase the activities of learners on science biology learning.

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#### AUTHOR BIOGRAPHY



**Murnihati Sarumaha**, born in Bawolowalani, June 26, 1969, has graduated from Biology degree in STKIP Nias Selatan and has also completed his education and graduated from the Magister of Biology Education at Universitas Negeri Padang.