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Discovery Learning Strategy to Enhance XI Grade MIPA Students' Critical Thinking Abilities regarding Hydrocarone Material in Madrasah Aliyah Laboratorium, Jambi

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Abstract

The discovery learning learning strategy is one of the determining aspects in chemistry learning. Chemistry learning at the MA Laboratory is still student-centered. Models and strategies must be collaborative. The research results reveal that the use of the discovery learning model can improve students' thinking skills. The use of the discovery learning model in the learning process for students who have higher intelligence and already have previous knowledge achieve success more quickly with a minimum error of 25.1923%. The use of the discovery learning model for students who have lower intelligence and do not have the prerequisite knowledge can only be done for explanations in understanding concepts, by taking notes, providing guidance in doing exercises and can minimize student errors to a maximum of 28.0385%. The discovery learning model can improve students' thinking skills.

Keywords : Learning strategies, discovery learning, thinking skills

Introduction

A problem faced by our world of education today is the low grades obtained by students who still show unsatisfactory results. The 2019 National Examination results showed that students' understanding of chemistry material at the Aliyah level is lower than in high school. Therefore, chemistry teachers at Madrasah Aliyah need to actively make improvements in various aspects that support improvement in a better direction.

In learning, teachers do not use a variety of methods so that students tend to be passive. The learning process tends to be monotonous and teacher-centered so that students are less stimulated to think. As a result, students feel bored so that the results of learning chemistry are less than satisfactory. Efforts that can be made to improve learning outcomes are to activate the learning process. The ultimate goal is to increase students' cognitive, psychomotor and affective understanding.

The implementation of a teacher's main duties cannot be separated from a teacher's ability to master knowledge, skills in developing more interesting ways of learning and involving the active role of students. As a required competency in

accordance with the mandate of the Minister of National Education Regulation Number 16 of 2007 concerning Academic Qualification Standards and Teacher Competencies. Mastery of teacher competence determines the quality of the learning process or guidance of students and the implementation of additional tasks and/or other relevant tasks in accordance with the function of the madrasah. Therefore, teachers must carry out competency development which is carried out according to needs, in stages, continuously to improve teacher professionalism.

The reality shows that our education today is more imposing on students, and is more implementing textual information than developing the ability to cultivate learning and develop learning individuals. This shows that the teacher is the controller of student activities in their learning and needs to think about solutions and innovations in terms of approaches, methods and assessments to minimize the problems we face.

Chemistry learning is currently dominated by teachers, so that students become less creative, both in asking and answering questions, apart from that, learning models that are not appropriate and in accordance with students' learning tastes also affect the grades obtained by students. Efforts to increase the average chemistry score require the ability to manage teaching and learning activities. On the other hand, some students' low curiosity about the chemistry material presented by the teacher and their lack of critical thinking skills also affect the results of chemistry lessons.

Thus far, the method used by chemistry teachers at the Laboratorium Madrasah Aliyah in teaching Hydrocarbons is using the expository method and assignments without using teaching aids only using a whiteboard. The reality shows that the results are less than satisfactory and teachers find it difficult to provide an understanding of hydrocarbons.

If this problem is left unchecked, it will result in teacher-centered learning. Students listen more and take notes on the teacher's explanations. Learning chemistry should build its own knowledge, not just memorize it.

So far, many students have not discovered the concept of hydrocarbons. One of the causes is the concept taught by teachers, motivation/interest, and critical thinking skills that students have. Students have critical thinking skills as their capital

to understand hydrocarbon concepts in more depth. With concepts, motivation/interest, students' critical thinking skills and models that suit students' tastes, it will certainly give rise to good concepts for students in understanding the concept of hydrocarbons. Students' critical thinking skills and the model chosen by the teacher can adapt to students' conditions in order to produce something better for students' progress.

Efforts to improve learning outcomes (students' critical thinking skills) need to be the teacher's attention, teachers must create a pleasant atmosphere so that students are more enthusiastic so that there is an increase in KBKS in chemistry learning. Teachers must design learning activities by applying models that are suitable for the material being taught.

Based on the problem above, the researcher is interseted in research about " Discovery Learning Strategy to Enhance X Grade MIPA Students' Critical Thinking Abilities regarding Hydrocarone Material in Madrasah Aliyah Laboratorium, Jambi."

Methods

The research procedures used in this research are planning, implementing actions, observing and reflecting. 1) Planning: Activities carried out in this planning stage are as follows: a) Creating learning scenarios, b) Creating practice questions, c) Creating evaluation tools for each cycle according to the indicators to see: 1). Can this discovery learning model improve students' thinking skills (KBKS) in completing the hydrocarbon concepts studied, 2). Have students been able to solve hydrocarbon problems properly and correctly in solving problems related to the problems they are facing. 2) Implementation of Actions: The activities carried out in this stage are implementing the planned learning scenarios. 5) Observation: At this stage, an observation process is carried out regarding the implementation of actions by observing the learning process using student observation sheets. Aspects observed include motivation, students' attitudes/behavior in listening to the teacher's explanation, enthusiasm in responding to questions, seriousness in finding answers, activities of asking, answering and collaborating in groups. To complete the observation results, observation sheets were distributed, questionnaires on student motivation for chemistry lessons. 4) Reflection: Reflection is carried out based on data obtained from observations and tests

carried out at the end of each cycle, the data is grouped and analyzed to see whether the activities carried out have minimized errors and increased students' ability to complete molecular shape operations in accordance with the success criteria. set. For classes whose success criteria have not been achieved, they will continue to the next cycle with several changes to the learning scenario in accordance with the test results and obstacles faced in the previous cycle, and in classes where the criteria have been achieved, consolidation of the actions that have been implemented will be carried out until the learning process is completed. about completing molecular shape operations.

The data source in this Research and Development (PTK) is all students in class XI MIPA 1 MA Jambi City Laboratory. The types of data that can be obtained are quantitative and qualitative which consist of: Learning outcomes, Data from observations of the learning implementation process, Learning Plans. Method of collecting data: a) Data on learning outcomes is taken by giving tests to students, b) Data about the teaching and learning situation during class actions, 3) Data about the relationship between planning and implementation is obtained from the RPP.

The data in this PTK research are: tests, observations and learning outcomes of students' thinking skills analyzed by making scores on the expected aspects. The test result scores obtained from the evaluation at the end of each cycle are calculated as the mean for each cycle which is used to see students' ability to solve the given hydrocarbon problem. The questions are given in essay form and a score is made between the items and the question number.

Results and Discussion

Cycle 1

In cycle 1, the learning process is carried out regarding indicators explaining hydrocarbons with the help of molymood and PPT. the scenario in cycle 1 is as follows: planning: 1) preparing teaching materials (rpp, lk), molymood and ppt, 2) developing initial tests that students take before learning begins, 3) developing evaluation tools to see the level of student success. implementation: 1) conditioning students to be ready to take part in learning, 2) providing information about the learning steps that will be implemented, namely the discovery learning method, 4) describing material regarding hydrocarbons, 5) providing explanations and instructions that will be

carried out by students in groups, 6) dividing students into 4 groups randomly and heterogeneously, 7) asking questions to identify problems, which will be discussed, 8) giving students time to present the results of group work and groups to listen and provide rebuttals or questions regarding the topic, 9) together students summarize the lesson material, 10) provide reflection and reinforcement to students and 11) provide assignments/homework. observation: the aspects observed were student behavior, including: 1) students' ability to follow lessons using the discovery learning method, 2) students' seriousness in learning, 3) students' activeness, 4) cooperation in groups. reflection: this reflection is to see whether in cycle 1 the learning taught is in accordance with what has been planned by looking at student success including 1) time used, 2) learning opportunities, 3) collaboration in groups.

Results in Cycle 1

The learning process at PTK is carried out alone. In carrying out the chemistry learning process the teacher uses molymood and PPT. The response from the students when they were distributed molymoods one to two was very enthusiastic so that the learning process that was created was very conducive and made the students active in manipulating and using the molymoods and PPTs in following the learning process and answering the practice questions given by the teacher.

From the observation results, it can be seen that the students pay attention to the teacher's explanation, the students are also active in finding the questions given by the teacher. For students this is something new so curiosity and wanting to try to discover it is high.

In cycle 1 the researcher used molymood to explain concepts and do exercises. However, when doing the test, Molymood was not introduced. In general, female students were confused about answering test questions, there were several female students who described using molymood by making their own blisters on opaque paper as a substitute for molymood. A description of the results of cycle 1 is presented in table 4.1 while the calculations are presented in appendix 1 and appendix 2:

Table 4.1 Student Test Results in Cycle 1

Cycle	N	Minimum	Maximum	Mean	Std. Deviation
1	26	65,00	78,00	71,9615	3,725

Based on table 4.1 in cycle 1, the maximum student score was 78.00, the minimum score was 65.00, the average was 71.9615 and the standard deviation was 3.725, namely with an error of 28.0385% with a total of 15 students and 11 female students. above KKM 70. The learning process in cycle 1 is very dependent on the use of molymood and PPT in working on questions and does not want to take notes first and then continue doing the exercises without using molymood and PPT. The data that the researcher obtained from the research results was data from Test 1 (appendices 1 and 2), in the hydrocarbon chemistry lesson. Processed with the help of the SPSS program. In this section you will see a description of the data that has been processed statistically. This data description can also be used as a guide to determine what statistical tests to use for data processing.

Cycle 2

This stage is improvements and refinements in cycle. 1. Planning. Develop a plan to improve learning implementation based on the results of reflection in cycle 1. Develop instrument improvements in the form of tests. Implementation. Emphasizes hydrocarbon material regarding the classification of hydrocarbons and naming alkanes. Observation: Observe the learning process and record students who are active, creative, serious, cooperative in learning, the same as in cycle 1. Reflection: To see the effectiveness of the discovery learning learning method and determine the success of students' thinking skills. analyzing the results of observations and test results of students' critical thinking skills (KBKS)

Results in Cycle 2

In general, female students pay attention to the teacher's explanation seriously, are active with enthusiasm and the classroom atmosphere is very conducive when compared to cycle 1. Students actively answer the questions given. Teachers guide and motivate students. The results of cycle 2 repetition can be shown in table 4.2. and appendices 4 and 5.

Table 4.2 Cycle 2 cycle results

Cycle	N	Minimum	Maximum	Mean	Std. Deviation
2	26	69,00	80,00	74,8077	3,08570

Based on table 4.2, the maximum student score is 80.00, the minimum score is 69.00, the average is 74.8077 and the

standard deviation is 3.08570, namely with an error of 25.1923%. The mean obtained shows a fairly good value.

Discussion of Research Results

After carrying out the learning process for students in class Both classes have almost the same value.

Table 4.3 Test results of female students in cycle 1 and cycle 2

Cycle 1				
Mean	**standar deviasi**	**Min**	**Max**	**Varian**
71,9615	3,72538	65	78	13,878

Cycle 2				
Mean	**standar deviasi**	**Min**	**Max**	**Varian**
74,8077	3,08570	69	80	09,522

From table 4.3, it can be seen that the learning outcomes of students X MIPA 1 MA Laboratory from cycle 1 and cycle 2 have been classically completed, which means they can minimize student errors by up to 28.0385%. One of the reasons for this is because female students are students who have high motivation, are active and creative to always find problems related to learning.

Based on the results carried out in cycles 1 and 2, in general the use of the Discovery Learning model in learning hydrocarbons can help students achieve success (thinking skills) in learning chemistry. This means that it can improve students' thinking skills (KBKS) in the learning process and can help students understand hydrocarbons.

The activeness, cooperation, creativity, communication displayed by students during teaching and learning activities is getting better. Apart from the intelligence and readiness of students in participating in learning, the process of learning success is also determined by the amount of motivation that is built. The higher the motivation that students have, the more active and creative the students will be in finding problems in learning.

Teachers must package learning that is able to build and arouse students' curiosity in the process. learning. High motivation will always determine the intensity of students' learning efforts, the higher the motivation a student has, the more influence it will have on the understanding and success of learning.

In finding the right pattern in teaching and learning, teachers need to pay attention to students' conditions (gender, motivation and economic

background), appropriate learning media, school facilities and infrastructure as well as other supporting factors. In order for the teaching and learning process to produce high-level thinking skills (KBKS), teachers need to create learning that helps students in learning and learning that guides students to react and construct themselves and find their own solutions to the learning problems they face.

This PTK can provide better learning outcomes. Of course, this proves that this media and model can be used as an alternative for other chemical materials. The advantages of this model in teaching and learning are that students are more creative, cooperative, *critical*, communicative, independent, tenacious, curious, and responsible with their friends to look for concepts related to ongoing learning.

Teachers need to understand learning models accompanied by media in order to achieve maximum learning outcomes, then teachers also need to understand the paradigm shift in the educational process, namely the learning paradigm from a paradigm that was originally teacher-centred to being student-centred, one form of learning model that can be implemented is media discovery learning model. This research will be in accordance with the criteria of constructivism theory. This is because there is a paradigm in chemistry learning as stated by Rahayu (2001:273) in the MIPA journal that the current chemistry education paradigm has shifted from the behaviorism paradigm to the constructivism paradigm.

The behavioral paradigm invites students to think that knowledge has its own existence. This knowledge is believed to exist outside and the teacher's job is to enter this knowledge into the minds of students. The constructivist view essentially believes that responding to five sensory experiences by constructing a schema or cognitive structure in the brain, this can be achieved through a learning model that invites students to discover for themselves the concepts they are studying. In this way, learning outcomes will be even better if students discover for themselves.

Conclusion

Based on the results of the Classroom Action Research (PTK) that has been carried out, it can be concluded that: 1) In general, the use of the Discovery Learning model in the hydrocarbon learning process can increase Student Thinking Skills (KBKS) by a maximum of 28.0385% and a minimum of

25.1923%, 2) Using the Discovery Learning model in the learning process for students who have higher intelligence and already have previous knowledge achieve success more quickly with a minimum error of 25.1923%, 3) The use of the Discovery Learning model for students who have lower intelligence and do not have the prerequisite knowledge can only be done with explanations in understanding concepts, and must be accompanied by asking students to take notes, providing guidance in doing exercises, and reminding them about prerequisite material. Thus it can minimize student errors to a maximum of 28.0385%.

References (12pt, bold)

Aunurrahman, 2012. *Belajar dan Pembelajaran.* Bandung: Alfabeta.

Hanafiah, N., & Suhana, C.,2009. *Konsep strategi Pembelajaran.* Bandung: PT Rafika Aditama.

Hosnan, M., 2014. *Pendekatan saintifk dan kontekstual dalam pembelajaran abad 21*, Kunci Sukses ikmplementasi kurikulum 2013. Jakarta: Ghalia Indonesia.

Kemendikbud, 2013. Model pembelajaran Penemuan (Discovery Learning). Jakarta: Direktorat Pembinaan SMA Direktorat Jenderal Pendidikan Menengah.

Kemendikbud, 2014. Pembelajaran Kimia Melalui Pendekatan Saintifik. Jakarta: Direktorat Pembinaan SMA Direktorat Jenderal Pendidikan Menengah.

Kinasih, E. M., Jalmo, T., & Yolida, B., 2014. *Pengaruh model discovery learning terhadap keterampilan berfikir kritis siswa*. Makalah Pendidikan Biolagi, 2014, Lampung.

Kurinasih, I. B. S., 2014. *Sukses Mengimplementasikan Kurikulum 2013 memahami berbagai aspek dalam kurikulum 2013*. Surabaya: Kata Pena

Mulyatingsih, E., 2013. *Metode Penelitian terapan bidangn pendidikan*. Bandung: Alpabeta.

Padmanigrum, T.R., Widjadyanti, E., & Sukarna, M. I., 2010. *Pengembangan Media Pembelajaran Kimia Berbasisi Teori Belajar Konstruktivisme.* Makalah dipresentasikan pada

Prosiding Seminar Nasional, Oktober 30, Yogyakarta.

Suhana. C., 2014. *Konsep Strategi Pembelajaran.* Bandung. Refika Aditama.

Susiwi, S., 2007, *Pendekatan Belajar dalam Kimia*, Makalah Handout, 2007, Universitas Pendidikan Indonesia.

Sutrisna, & Listiana, L., 2007. *Spektrum Kimia untuk SMA/MA Kelas X*. Depdiknas.

Yaniarti, 2012. Pengaruh Penggunaan Model Pembelajaran kooperatif tipe STAD Bermedia Dan Sikap Terhadap Hasil Belajar Matematika siswa SMK N Kota Jambi, *Tesis*. Universitas Jambi, Jambi.