2 (1), 2023, 18-27
Pedagogy Review
https://imrecsjournal.com/journals/index.php/pedrev

Efforts to Improve Chemistry Learning Outcomes Through the Problem Posing Learning Model in Class X Tkr 1 SMK Negeri 2 Palembang

Nova Astriani[1*], Muhammad Hadeli L[2]., Rahma Aini[3]**
FKIP Universitas Sriwijaya, Palembang, Indonesia
FKIP Universitas Sriwijaya, Palembang, Indonesia
SMK Negeri 2 Palembang, Palembang, Indonesia

Abstract: Efforts To Improve Chemical Learning Outcomes Through Problem Posing Learning Model In Class X Tkr 1 of SMK Negeri 2 Palembang. This classroom action research aims to improve students' chemistry learning result of Class X TKR 1 SMK Negeri 2 Palembang through Problem Posing learning model. The study was conducted in two cycles, each cycle consisting of two meetings. The data were obtained by using observation sheet and test instrument of student learning result which was done at the end of the meeting. Improvement of student learning outcomes can be seen from the average of student learning outcomes before the action done (T0) of 64.97 with mastery learning 33.33%, an increase in cycle I (T1) to 66.01 with mastery learning 45.45% and in cycle II (T2) increased to 79,5 with learning mastery 84,84%.

Keywords: classroom action research, problem posing model, student chemistry learning result

▪ INTRODUCTION

SMK Negeri 2 Palembang is one of the schools that has implemented the 2013 curriculum. The learning process according to this curriculum should be learning that focuses learning activities on students. Teachers must facilitate students to learn. The teacher must act as a facilitator in the learning process carried out in the classroom. This student-centered learning process also applies to chemistry subjects in all competency areas of Palembang State Vocational High School 2. Based on the results of interviews with chemistry teachers who have carried out learning activities in class

The learning process tends not to be student-centered, the teacher always gives students the opportunity to ask questions, but none of the students respond to questions or even ask the teacher. The teacher is still the center of learning activities in the classroom. Teachers have not applied the learning process with several innovative learning methods or models. Teachers only occasionally use the discussion method and take students to the laboratory due to the lack of conducive laboratory space available at school. This kind of learning process causes the chemistry learning outcomes of class X TKR 1 students to be 70% still below the KKM score of 75.

During the learning process, students are passive, activities such as asking questions, expressing opinions and drawing conclusions are not carried out by the students, the learning process is still dominated by the teacher's activities while all the students do is sit, be quiet, take notes and memorize what the teacher says. The learning process becomes uninteresting, students easily feel bored and do not focus on the lesson material that the teacher is conveying so that when given assignments students are unable to complete the assignments given because students cannot write down the points for solving questions systematically and analytically. Meanwhile, in chemistry subjects,

Nova Astriani
Email: nova_astriani@ymail.com

Received: 10 March 2023
Accepted: 13 May 2023
Published: 07 June 2023

students' analytical skills are really needed because they are closely related to student learning achievement. This was also stated by Suryani, et al., (2013).

The group discussion method that is occasionally used in the learning process in the classroom is only dominated by smart students in each group so that when the discussion learning process is taking place, only the same students are seen answering questions, most of the students do not have the courage to ask or even answer. questions given by the teacher. Other students often make noise during the learning process. The teacher is also still the center of attention, the teacher still has to explain the lesson material to students who do not play an active role during the discussion learning process. Apart from teaching and learning activities in the classroom, teachers also use experimental methods through practical activities in the laboratory. The activities that take place are able to encourage students' curiosity to pay attention to the teacher when explaining the lesson material, often because students' high curiosity results in students being happy to experiment which is just playing around without really understanding the lesson material that has been presented, plus Laboratory conditions are not conducive because they are in the same classroom, so practical activities are very, very rarely carried out.

Based on the description of the learning process in class The ongoing learning process does not characterize a scientific learning process, as students do not think systematically and analytically. Low student learning outcomes can be improved by implementing learning models that enable students to think systematically and analytically. According to a research journal, it is explained that Problem Posing can provide students with the ability to gain knowledge by analyzing a problem (Haryanti, et al., 2013: 87). The same opinion was also expressed by Ulandari, et al (2015) that the application of Problem Posing learning can also improve students' analytical skills, so it can be concluded that problem posing in this case can be used to invite students to analyze a problem with their own thinking abilities. Apart from that, the Problem Posing learning process can also create a fun learning process where interaction occurs between students and teachers so that the learning process that takes place is no longer centered on the teacher, this is because the learning process is cooperative and consists of several groups, this is in accordance with the opinion of Sriwenda, et al. ., (2013).

Research conducted by Ghufroni, et al., (2013) shows an increase in student learning achievement and social interaction. The same thing also happened in research conducted by Nuriyawan, et al., (2016) showing an increase in learning achievement and science process skills. There is also research conducted by Novianti, et al., (2017) showing an increase in student activity and learning outcomes through the application of the Problem Posing model. Based on the description above, research needs to be carried out with the title "Efforts to Improve Chemistry Learning Outcomes Through the Problem Posing Learning Model in class X TKR 1 SMK Negeri 2 Palembang".

Based on the description above, the problem in this research can be formulated as: How to improve the chemistry learning outcomes for class X TKR 1 SMK Negeri 2 Palembang through the Problem Posing Learning Model? The aim of this research is to improve students' chemistry learning outcomes by implementing the Problem Posing learning model in class X TKR 1 SMK Negeri 2 Palembang.

▪ METHOD

Subject, Time and Place of Research

The research subjects were 33 class X TKR 1 students, consisting of 33 male students. The research was carried out from April 6 to May 4 2018 at SMK Negeri 2 Palembang.

Planning Stage

The planning stage that the researcher will carry out is to create a series of necessary equipment, including subject matter learning units, Learning Implementation Plans (RPP), Student Worksheets (LKPD), Student observation sheets, and final evaluation test instruments.

Implementation Stage

Carry out the RPP that has been designed and hold a final evaluation test with essay questions. In implementation, the teaching and learning process is carried out in accordance with the RPP that has been designed (RPP attached).

Observation Stage

Observation activities are carried out simultaneously with the implementation of learning in class. This observation uses an instrument in the form of a student observation sheet. Observation activities aim to observe situations and conditions during the action, such as students' activities during the lesson, note the obstacles faced by students during the lesson, and see the effects resulting from class actions.

Reflection Stage

The results obtained from the first test are analyzed and studied so that researchers can reflect on themselves to determine appropriate actions in cycle II. In addition, reflection is carried out to identify things that have been achieved and have not been achieved in cycle I as a guide for making improvements in cycle II.

Data Collection Technique

The method used by researchers to collect data uses several instruments needed to obtain research data. The instruments used include student observation sheets, student worksheet (LKPD) and evaluation sheets.

Data analysis technique

Analyzing Student Observation Data

Students' activities in learning activities are observed based on visible descriptors, for the percentage of activity in each descriptor the formula is used:

$$\textit{Persentase keaktifan} = \frac{\textit{skor aktifitas}}{\textit{skor total aktivitas}} \times 100\%$$

From the data above, the percentage of class activity can be obtained, using the formula:

$$\textit{Persentase keaktifan} = \frac{\textit{rata – rata keaktifan siswa}}{\textit{Jumlah siswa dikelas}} \times 100\%$$

To determine the value of observations of student learning activities, it can be expressed using categories and values which can be seen in Table 2.1.

Table 2. Criteria Level of learning activity

Tingkat Aktifitas (%)	Arti
80 ≤ - 100	Sangat tinggi
60 ≤ - < 80	Tinggi
40 ≤ - < 60	Sedang
20 ≤ - < 40	Rendah
0 - < 20	Sangat Rendah

Analyzing Learning Results Average Value

$$X = \frac{\sum x}{\sum n}$$

Keterangan :
$\bar{X}$ = rata-rata seluruh siswa
Σ x = jumlah nilai seluruh siswa
ΣN = jumlah seluruh siswa

Indicators of Researcher Success

Learning completion is said to be successful if students obtain the following grades:
a. For individuals : if you get a score ≥75
b. For classical : if 85% get a score ≥75

▪ RESULT AND DISCUSSION

Research Result

The research results include initial observations, learning outcomes and student activities from cycles I and II. The results for each cycle are described as follows:

Initial Observations

Initial observation data was obtained from the results of students' daily tests on electrolysis material, there are still many students who have not achieved learning completeness. The daily test results of class X TKR 1 students can be seen in table 3.1.

Table 3. Data on students' daily test results

Hasil Tes	Pencapaian
Nilai terendah	30
Nilai tertinggi	80
Rata-rata nilai	64.97
Jumlah peserta didik kelas X TKR 1	33
Jumlah peserta didik yang tuntas	11
Persentase tuntas belajar secara klasikal	33.33%

Based on the table above, it is known that the average score of students reached 64.97 with classical learning completeness of 33.33%. So they haven't reached learning completeness.

Results of Research Cycle I Planning Phase

Based on the problems identified in the initial observations, learning was planned on the subject of hydrocarbons using the Problem Posing learning model.

Implementation Stage

In cycle I, action was carried out on April 6 and 13 2018 on the subject of hydrocarbons which required 6 hours of study with 2 meetings. The results of the first cycle test can be seen in table 3.2 below.

Table 4. Data on cycle I student test results

Hasil Tes	Pencapaian
Nilai terendah	27.5
Nilai tertinggi	97
Rata-rata nilai tes	66.01
Jumlah peserta didik kelas X TKR 1	33
Jumlah peserta didik yang tuntas	15
Persentase tuntas belajar secara klasikal	45.45%

Based on the table above, it is known that the average score of students reached 66.01 with classical learning completeness of 45.45%. This does not yet meet the achievement indicators.

Observation Stage

Observations are carried out so that they can be used as a reference in observations to find out deficiencies made by students during the learning process. The results of observations of cycle I student activities can be seen in table 3.3 below.

Table 5. Data on the results of cycle I student activities

Pertemuan	**Rata-rata Keaktifan**	**% Keaktifan Per kelas**
1	17.65	53.48
2	20.2	61.21

Based on the table above, it is known that student activity is still at sufficient criteria, which is indicated by an increase in the percentage level of student activity for each meeting.

Reflection Stage

Based on data on students' learning completeness in cycle I, the average score reached 66.01 with classical learning completeness of 45.45%. This can be seen from the data resulting from observations of student activity that has not been seen during the learning process. Students are not yet accustomed to the group learning model formed by the teacher and still seem shy about asking questions to either the teacher or their group friends. From data analysis in cycle I, re-explanation, guidance in creating questions on the problem posing sheet and providing feedback are needed.

Results of Research Cycle II Planning Phase

Based on the results of reflection in cycle I, researchers must increase students' activeness in the learning process, both in solving problems during discussions and when presenting the results of discussions. And improvements in techniques for providing motivation and feedback are needed.

Implementation Stage

Cycle II carried out actions on 20 and 27 April 2018 on the subject of petroleum and polymers which took 6 hours of class with 2 meetings. The results of the second cycle test can be seen in table 3.4 below.

Table 6. Data on cycle II student test results

Hasil Tes	Pencapaian
Nilai terendah	61
Nilai tertinggi	91
Rata-rata nilai	79,5
Jumlah peserta didik kelas X TKR 1	33
Jumlah peserta didik yang tuntas	28
Persentase tuntas belajar secara klasikal	85 %

Based on the table above, it is known that the average score of students reached 79.5 with classical learning completeness of 85%. This has met the indicators of learning completeness.

Observation Stage

The results of observing the activities of cycle II students obtained more improved criteria. It can be seen in table 3.5 below.

Table 7. Data on the results of cycle II student activities

Pertemuan	Rata-rata Keaktifan	% Keaktifan Per Kelas
1	21.1	63.94%
2	21.65	65.61%

Based on the table above, it is known that student activity is in the high criteria, which is indicated by an increase in the percentage of student activity compared to cycle I. This is because students are used to the group discussion learning process and are brave in presenting the results of the discussion and are able to provide responses to their friends' presentations in front of them. class.

Reflection Stage

From the results of students' learning tests in cycle II, the average score of students reached 79.5 with classical learning completeness of 85%. This has met the indicators of learning completeness. And data from observations of student activities shows that there is an increase in activity and the feedback provided by researchers can be understood by students. Apart from providing the correct answer, the researcher also explained how to obtain the answer.

Discussion

Action research has been carried out by applying the Problem Posing learning model in class X TKR 1 SMK Negeri 2 Palembang. Based on research data, there is an increase in student learning outcomes and student learning activity. The increase in student learning outcomes occurs in each research cycle which is accompanied by an increase in student learning activity in each cycle which is shown in table 3.2 and table 3.3 for cycle I and table 3.4 and table 3.5 for cycle II.

In cycle I, there was an increase in learning outcomes as seen from the average student learning outcomes before taking action (T0) of 64.97 with learning completeness of 33.33% in electrolysis material, experiencing an increase in average learning outcomes after being given action in cycle I (T1), became 66.01 with learning completeness of 45.45% on the subject of hydrocarbons which was accompanied by an increase in student learning activity of 57.34%. This increase occurred due to the implementation of the Problem Posing learning model in class X TKR 1 SMK Negeri 2 Palembang. In this model, students are given the opportunity to analyze a problem with their own thinking skills through problem posing sheets, namely by students creating questions about the material being studied and exchanging the question sheets with other groups, as well as solving the questions given. This activity is carried out using LKPD media. has been provided. The work steps carried out are in accordance with those stated by Throbroni (in Agustin 67:2017) problem posing can train students to create questions and answer them based on the information or situation provided by the teacher. This model also involves students actively searching for information through various available information sources, such as teaching materials, textbooks and the Internet.

This was observed when students solved the problems on the LKPD regarding the hydrocarbon nomenclature of alkanes, alkenes and alkynes at the first meeting and the isomerism material at the second meeting. had, consisting of 15 students at the first meeting and 17 students at the second meeting and 50% of students who read notebooks or chemistry textbooks consisting of 15 students at the first meeting and 18 students at the second meeting.

After implementing cycle I (T1), although there was an increase in learning outcomes, this was still less than optimal because there were still several weaknesses that occurred during the implementation of actions in Cycle I, such as, there were still students who came in and out of class during group discussions and there were still Also, students who did not use the time to discuss were seen as only 56.05% of students who tried to ask questions on the problem posing sheet in their group, plus there was one group that made questions that were not in accordance with what was expected in achieving the learning objectives, the reason was because the students were still reluctant. to ask questions to both the teacher and their friends, which can be seen from the observation data of 9 students at the first meeting and 3 students at the second meeting. So that during the evaluation test at the first meeting on the subject of hydrocarbon nomenclature of alkanes, alkenes and alkynes, student learning outcomes were lower than the results of the evaluation test at the second meeting on the subject of isomerism. This is because students are still adjusting to following the learning process using the problem posing learning model, students seem shy about asking questions to the teacher and are not used to sharing information with friends in the group formed by the teacher.

Then, during the presentation, students looked less enthusiastic, did not actively ask questions and express opinions, it was seen that only 15% of students asked questions to another group consisting of 10 students at the first and second meetings, and only 25.75%

of students expressed opinions. consisting of 7 students at the first meeting and 10 students at the second meeting. This is because only one group presented the results of their group discussion, resulting in no opportunity for other groups to present the results of their group discussions and limited other students to ask questions. So that in the first cycle, student learning outcomes were obtained at 45.45% which had not yet reached classical learning completeness and student learning activity was obtained at 57.34% which was still in the medium category.

Based on the weaknesses in cycle I and the students' learning completeness that was expected in cycle I, corrective actions were taken in cycle II, namely before entering learning, the teacher provided motivation and enthusiasm for students to be more enthusiastic in following the lessons given, such as using multimedia. in the form of power points, this refers to the opinion of Ghufroni, et al., (2013) who stated that power point media can be used to increase student motivation and interaction in learning because it not only displays text, but also images, graphics, animation, sound and other objects. so that learning material can be packaged to be more interesting. Then students are also guided to read the LKPD instructions first so that they can be used as a source of information for students. The teacher also guides the discussion in the group when asking questions on the problem posing sheet so that the questions created by students are as expected so that the learning objectives can be achieved. During the presentation, the teacher calls all group members selected for the presentation and for presenting the results of the discussion, a minimum of 2 groups are given at each meeting. Then the teacher gives rewards in the form of additional cognitive value so that students are more active in giving opinions or rebuttals during group presentations.

In cycle II, after improvements were made to the weaknesses found in Cycle I, there was an increase in the average student learning outcomes of 66.01 with 45.45% completeness in cycle I (T1) then increased to the average student learning outcomes amounting to 79.5 with learning completeness of 84.84% in cycle II (T2) with the topic of petroleum and polymers. The increase in learning outcomes was accompanied by an increase in student activity by 64.77% which was included in the high or good category. This increase occurred during group discussions and presentations. Students looked enthusiastic during the discussion, where students were able to utilize discussion time quite well as shown by observation data of 60.6% of students trying to ask questions on the problem posing sheet and discussing them within their respective groups which showed an improvement from the previous cycle. The same thing also happened to students' enthusiasm in asking questions, where 66.7% of students asked the teacher and 75.8% of students asked their group friends to solve problems on the LKPD.

During group presentations, there was an increase in students asking questions or students asking questions to other groups, namely 22.72%, consisting of 7 students at the first meeting and 8 students at the second meeting. There was also an increase in students' activeness in expressing opinions by 31.8%, greater than the first cycle which was only 25.75%. This shows that the problem posing learning model is able to increase students' active role in learning. This statement is in line with the opinion of Sriwenda, et al., (2013) which states that problem posing is part of cooperative (group) learning so that in its application students will be actively involved in discussion activities in the learning process.

The increase in completeness of learning outcomes in cycle II from cycle I increased by 39.39%. This result was greater than the increase in completeness of learning outcomes from T0 to Cycle I, namely 12.12%. This is because several corrective actions

have been carried out in implementing the problem posing learning model during the learning process in the classroom. These improvements can be seen from the learning results in cycle I where there are several findings of weaknesses in learning actions which are then carried out corrective actions in the next cycle, namely cycle II, although there are still other weaknesses, the student learning outcomes in cycle II have reached classical completeness of 84.84%, which means research can be stopped in cycle II, this is because the research carried out is limited to classical completeness learning outcomes which must be achieved at 85%.

Research results always show an increase in learning outcomes and student learning activity, this is in line with the opinion of Novianti, et al., (2017) who stated that the use of the problem posing learning model will help students be more active in learning which will influence learning activities and outcomes during learning. taking place. Based on the explanation above, it can be concluded that through the application of the problem posing learning model, student learning outcomes in class X TKR 1 SMK Negeri 2 Palembang can be improved.

▪ CONCLUSION

From the results of research using the Problem Posing learning model for class X TKR 1 SMK Negeri 2 Palembang students, the following conclusions were obtained. There is an increase in student learning outcomes by implementing the Problem Posing learning model in class X TKR 1 SMK Negeri 2 Palembang. The increase in learning outcomes can be seen from the average value of student learning outcomes before action (T0) was 64.97 with learning completeness 33.33%, there was an increase in learning outcomes in cycle I (T1) with an average learning outcome of 66.01 and learning completeness was 45.45% and student activity during the learning process was 57.34% and increased in cycle II (T2) with an average learning outcome of 79.5 and learning completeness 84.84% which was accompanied by an increase student learning activity was 64.77%.

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