

## IMPLEMENTATION OF THE LEARNING CYCLE 5E MODEL BY USING MIND MAPPING TO INCREASE THE LEARNING ACTIVITY CLASS X1 SMA 1 CEDANA ENREKANG REGENCY

Muthmainnah\*<sup>1,2</sup>, Ramlawati<sup>1</sup>, Muhammad Anwar<sup>1</sup>, Muhammad Fajar Marsuki<sup>3</sup>

<sup>1</sup> Department of Chemistry, Faculty of Mathematics and Natural Science, Universitas Negeri Makassar, Indonesia

<sup>2</sup> SMA Muhammadiyah 1 UNISMUH Makassar, Indonesia

<sup>3</sup> Department of Science Education, Faculty of Mathematics and Natural Science, Universitas Negeri Malang, Indonesia

Email: muthmainnahfajar@gmail.com

---

### Abstract

*This research is class action research. The aim is to apply the steps of the learning cycle 5e learning model by using mind mapping to increase the learning activities of class X1 students at SMA Negeri 1 Cendana, Enrekang Regency. This research was conducted in two cycles. The results of the study show that the steps in each phase of the learning model that can improve students' learning activities are: (1) the engagement phase is carried out by associating concepts with other concepts, (2) the exploration phase is carried out by observing, asking questions and investigating by discussing, as well as recording the concepts obtained in the form of mind mapping, (3) the explanation phase is carried out by expressing the concepts that have been obtained using their own words, (4) the elaboration phase is carried out by working on problems by applying the concepts that have been obtained or expanding the concepts that have been obtained. is known, (5) the evaluation phase is carried out to determine the extent of students' knowledge of the concepts that have been studied. The learning activities of students increased from cycle I of 45.91% with an adequate predicate to 61.88% in cycle II with a good predicate.*

**Keywords:** hydrocarbons, learning cycle 5e, learning activities, mind mapping

---

Accepted: September 2022, Revised: October 2022, Published: December 2022

### INTRODUCTION

One of the problems facing the world of education in Indonesia today is the weak learning process in the classroom. Students do not actively participate in the learning process; the teacher explains more in the learning process so that the learning process in the classroom is teacher-centered rather than student-centered.

Learning activities are very important for students because they provide opportunities for students to encounter the object being studied. Thus, the knowledge construction process that occurs will be better. Learning activities in the learning process describe the abilities of students during the learning process. Through appropriate learning, students are expected to be able to understand and master the material so that student learning achievement increases and can be useful in everyday life. One indicator of the success of the teaching and learning process can be seen from the learning achievements achieved by students.

Based on the results of observations in all class X at SMA Negeri 1 Cendana, it showed a lack of student activity during the learning process. One of the problems is that students do not pay attention to the material explained by the teacher, students look bored in receiving learning so that student activity in class can be said to be lacking. One class was obtained which had very little activity during the learning process, namely class X1, this was because the learning process only took place in one direction, the teacher used a conventional model (lecture method). This conventional model is less attractive to students, so it is not effective for activating students. This can be seen in the learning outcomes of students who have not yet reached the Minimum Completeness Criteria. This can be seen from the completeness of students in the Hydrocarbon material which only reaches 55% of the Minimum Completeness Criteria.

The activity of students can be increased if an interesting learning model is used for students, as well as a learning model that is student-centered learning process. The Learning Cycle 5E learning model is a student-centered learning model. The Learning Cycle 5E learning model consists of 5 stages, namely engagement, exploration, explanation, elaboration, and evaluation. The Learning Cycle 5E learning model can be used to observe student activities during the learning process. Teachers no longer transfer concepts that students must memorize, but students are able to express concepts and ideas based on information received from the teacher.

The application of learning models will be more perfect if accompanied using learning methods. Each phase in the 5E Learning Cycle model allows students to find and develop the concepts found. The concepts found will be easily stored in long-term memory and well organized if they are poured into interesting notes with various interrelated patterns. In this case the note-taking method with Mind Mapping can be an alternative

The Learning Cycle 5E learning model using Mind Mapping was chosen because in its implementation it made students more active in the learning process so that class action research was held with the title application of the Learning Cycle 5e learning model using Mind Mapping to increase the learning activities of class X1 students at SMA Negeri 1 Cendana Enrekang Regency on the study of the subject matter of hydrocarbons.

Table 1. The Steps of Learning Cycle 5e Learning Model Using Mind Mapping

Phase	Activity
<i>Engagement</i>	At this stage the teacher informs and explains the patterns in the Mind Mapping concept, these patterns can be chosen by students according to their wishes.
<i>Exploration</i>	At this stage the teacher directs and guides students to record concepts found during the learning process in the form of Mind Mapping. This recording allows students to store these concepts in their long-term memory.
<i>Explanation</i>	At this stage the teacher directs and guides students to record concepts found during the learning process in the form of Mind Mapping. This recording allows students to store these concepts in their long-term memory.
<i>Elaboration</i>	At this stage, the concepts recorded by students can be applied to solve new problems given by the teacher related to the concepts being studied.
<i>Evaluation</i>	At this stage, the teacher begins to collect and evaluate the Mind Maps made by students. At this stage it will allow the teacher to assess students' knowledge and understanding of the concepts being studied. From this stage it will also help the teacher determine what kind of follow-up will be given next.

One of the learner-centered learning models is the Learning Cycle 5E learning model. Learning Cycle 5E is a learning model based on constructivist theory. Constructivist theory was developed by Piaget's theory. In accordance with the principles of teaching based on constructivism theory, the teacher must teach not as a process where the teacher's ideas are passed on to students. Rather, it is a process of changing existing children's ideas that may be "wrong". Thus, teaching is considered not as a process in which materials are transferred to students, but as a process for constructing students' ideas and connecting them with what they already know (Dahar, 1996).

Constructivist theory emphasizes the importance of students building their own knowledge through involvement in the learning process. So that the teaching and learning process is more centred on students and teachers as facilitators. The Learning Cycle is a series of activity stages (phases) that are organized in such a way that students can master the competencies that must be achieved in learning by playing an active role (Wibowo et al, 2009).

The 5E Learning Cycle according to Eisenkraft (2003) has the following stages, namely the engagement, exploration, explanation, elaboration, and evaluation stages. The engagement stage is an introduction to the lesson that functions to motivate students to be able to associate concepts with other concepts. This stage can be done by asking questions, giving an overview of the material being studied, reading, demonstrations, or other activities that are used to open students' knowledge and develop students' curiosity. This stage is also used to determine the initial level of knowledge of students regarding the concepts to be studied.

Mind mapping is a high-level note-taking technique. Information in the form of subject matter received by students can be remembered with the help of notes. Mind Mapping is a form of notes that is not monotonous. Mind Mapping can also connect new and unique ideas with existing ideas. So that it gives rise to specific actions taken by students. Using interesting colours and symbols, a new and different mapping will be created. Mind mapping is a creative product produced by students in learning activities (Rostikawati, 2006). The purpose of this study was to find out how to apply the Learning Cycle 5E learning model by using Mind Mapping to increase the learning activities of class X1 students at SMA Negeri 1 Cendana Enrekang Regency.

**RESEARCH METHOD**

This type of research is Classroom Action Research (CAR) conducted collaboratively between researchers and chemistry teachers in class X1 SMA Negeri 1 Cendana Enrekang Regency. In general, the stages of implementation include planning, implementation, action, observation, and reflection. The four stages are carried out in a cyclic manner. The subjects in this study were students of class X1 at SMA Negeri 1 Cendana Enrekang Regency which amounted to 22 people. This research was conducted at SMA Negeri 1 Cendana Enrekang Regency The research time is planned for 8 meetings (8 x 45 minutes), namely in March-May 2016. Pre-action activities were carried out in February 2016.

The research is designed to be cyclical. Cycle I was held in four meetings, namely three meetings for the implementation of the action and one meeting for the implementation of the test.

1. The preparatory stage, includes:
  - a. Request permission from the principal to conduct research.
  - b. Interviewing chemistry teachers to determine research subjects and materials
  - c. Observing learning activities in class X.
  - d. Delivering the research design to be carried out to chemistry teachers.
  - e. Discuss with the chemistry subject teacher to determine the time for conducting the research.
2. Implementation phase, including:
  - a. Carry out learning in accordance with the RPP that has been prepared.
  - b. Fill in the student activity observation sheet according to the activities that occur during the learning process.
  - c. Doing the end of cycle I test.
3. Reflection stage

Reflection is carried out after all stages in cycle I have been completed. The results of this reflection correlate with student activity so that it can be used as a consideration for designing actions in the next cycle. At this stage, the researcher observes the obstacles that occur during the learning process. The results of reflection in cycle I are used as a reference for carrying out actions in cycle II. With the hope that there will be an increase in cycle II.

Cycle II was held in three meetings, namely two meetings for the implementation of the action and one meeting for the implementation of the test in accordance with the stages planned in cycle I. The stages of cycle II refer to the reflection results of cycle I which have been carried out. The research instruments used in this study are as follows:

- a. Observation sheets for student learning activities are observation sheets used to measure student learning activities during the learning process.
- b. Tests are used to measure student learning outcomes regarding the material that has been studied and is given at the end of each cycle.

Table 2. Category of Student Learning Activities

Average Score	Category
81% – 100%	Very Good
61% – 80%	Good
41% – 60%	Enough
21% – 40%	Lack
≤20%	Very Less

Source: (Desi, 2006).

**RESEARCH RESULT AND DISCUSSION**

**Research Result**

This research lasted for two cycles where each cycle consisted of three actions and one end-of-cycle test. This study discusses the improvement of students' learning activities on Hydrocarbon material. The average percentage of student learning activity in cycle I is 42.16% with the predicate sufficient. Details of quantitative data from observations of students' learning activities can be seen in Table 3. The average percentage of theoretical activity in cycle I was 41.86%.

Details of quantitative data from observations of students' learning activities in theory can be seen in Table 4. The lowest percentage of students' learning activities is in the aspect of oral activities. Oral activities are aspects of activities that focus on the ability of students to express opinions, responses, solutions, questions, and everything related to communication between students. This causes a lack of students who speak during

the explanation phase in the Learning Cycle 5E learning model using Mind Mapping because students are less active in expressing their opinions.

The average value obtained by students in cycle I was 67.90. This of course shows that most of the class X1 students at SMA Negeri 1 Cendana Enrekang Regency has not reached the minimum completeness criteria (Minimum Completeness Criteria  $\geq 75$ ). The percentage of completeness of the class also only reached 54.54% which means that there were 12 students who completed and 10 students who did not complete.

Table 3. Observation Results of Student Learning Activities

Learning Phase	Cycle I			Predicate	Cycle II			Predicate
	M1	M 2	M3		M1	M2	M3	
Engagement	66.48%	90.91%	74.43%	Good	79.55%	88.07%	89.77%	Very Good
Exploration	42.61%	51.71%	46.59%	Enough	66.48%	83.52%	80.11%	Good
Explanation	36.36%	41.48%	39.77%	Lack	42.05%	40.91%	42.61%	Enough
Elaboration	31.05%	31.82%	31.82%	Lack	36.36%	40.91%	43.18%	Lack
Evaluation	32.32%	42.05%	32.96%	Lack	42.05%	77.27%	76.71%	Good

Table 4. Theoretical Observation Results of Student Learning Activities in Cycle I

Learning Activity Indicator	Percentage	Predicate
<i>Visual Activities</i>	54.36%	Enough
<i>Oral Activities</i>	32.53%	Lack
<i>Writing Activities</i>	41.76%	Enough

The average percentage of student learning activity in cycle II is 62.16% with a good predicate. Details of quantitative data from observations of students' learning activities can be seen in Table 3. The average percentage of students' learning activities in theory in cycle II is 61.43% with a good predicate. Details of quantitative data from observations of students' learning activities can be seen in Table 5. The results above show that the percentage of students' learning activities has increased both in process and theoretically has increased when compared to cycle I. This is also evidenced by the increase in the categories of students' learning activities for each aspect observed.

Table 5. Theoretical Observation Results of Student Learning Activities in Cycle II

Learning Activity Indicator	Percentage	Predicate
<i>Visual Activities</i>	70.39%	Good
<i>Oral Activities</i>	56.34%	Enough
<i>Writing Activities</i>	58.15%	Enough

The average value obtained by students in cycle II was 74.22. This shows that most of the class X1 students at SMAN 1 Cendana Enrekang Regency has achieved the minimum completeness criteria (Minimum Completeness Criteria  $\geq 75$ ). The percentage of completeness of the class has also reached 72.72%, which means that 16 students are categorized as complete and only 6 students are categorized as incomplete. This data shows that the results of the final test of learning cycle II increased compared to cycle I.

## Discussion

The results of research on student learning activities in class X1 SMA Negeri 1 Cendana Enrekang Regency experienced an increase in student learning activities using the 5E Learning Cycle learning model using Mind Mapping. The Learning Cycle 5E learning model teaches students to learn independently to find concepts learned by way of discussion, so that students can get used to communicating in expressing their opinions. Whereas Mind Mapping is used to make it easier for students to recall concepts that have been found and can make students interested again in reopening notes that have been made in the form of Mind Mapping. Implementation of the Learning Cycle 5E learning model using Mind Mapping can make students more active in the learning process.

The results show that the learning activities of students syntactically in cycle I only reached 42.16% with the predicate sufficient and the learning activities of students in theory were 41.86% with the predicate sufficient. These results indicate that there are still many students who are not actively involved in the learning process. Students are not used to student-centered learning so that there are still many students who are awkward to express their opinions for reasons of shame and fear of being wrong. The problems that arose in

cycle I in this study were relevant to the learning outcomes of students in cycle I, namely only achieving an average score of 67.90. With class completeness in cycle I also only reaching 54.54%, this means that there were 12 students who completed by achieving the Minimum Completeness Criteria and there were still 10 students who did not complete from the number of students in class X1 SMA Negeri 1 Cendana Enrekang Regency as many as 22 people.

The problems that arise in cycle I in this study are as follows:

1. Only 28.41% of students answered the teacher's apperception questions.
2. Only 46.97% of students could find the concept due to their lack of prior knowledge.
3. Only 18.18% of students dare to raise their hands and present the concepts that have been written in Mind Mapping in front of the class.
4. Only 31.56% of students tend to work on questions given by the teacher.
5. Only 35.77% of students dare to express their opinions in front of the class

Class completeness in cycle I also only reached 54.54%, which means that only 12 students reached the Minimum Completeness Criteria out of 22 students in class X1 SMAN 1 Cendana Enrekang Regency. Some of the actions taken by researchers in cycle II to overcome the problems that arose in cycle I are as follows:

1. The teacher emphasizes that the courage to express opinions in public is very important and is also included in the teacher's assessment component. In addition, the teacher must be able to direct students to recall the lessons they have learned. This solution is made so that it is easier for students to follow the material that will be discussed at the next learning stage.
2. The teacher reiterates to students that activity in discussion is one of the assessments, this is expected to raise the enthusiasm of students. The lack of prior knowledge that students have is overcome by giving assignments to students to find material to be studied at the next meeting so that they can add references to students in finding the concepts studied. Meanwhile, to make students comfortable in discussions, the order of group members is changed by determining the group leader and then other students grouping themselves.
3. The teacher emphasizes to students the importance of being able to express opinions in public. In addition, the teacher also explained that opinion is one of the important assessments in this study and an appointment will be carried out by lottery if no one dares to express his opinion in front of the class.
4. The teacher confirms to students at this stage, where students who answer the questions correctly will be given a score of 1 and -1 for students who do not work on the questions given by the teacher. This fine will apply to all group members. This action is expected to be able to motivate students to play an active role not only during discussions.
5. The teacher reiterates the importance of courage in expressing opinions and giving added value to students who dare to express their opinion. To improve student learning outcomes the teacher gives assignments that can enrich students' knowledge to complete practice questions.

The actions taken by researchers in cycle II can be categorized as effective in increasing student learning activities. This can be seen in Table 3 which shows the average percentage of learning activity.

## CONCLUSIONS AND SUGGESTION

### A. Conclusion

Based on the results of the research that has been done, it can be concluded that the steps in the Learning Cycle 5E learning model using Mind Mapping which can increase student learning activities are as follows: (1) The engagement phase is carried out by building students' initial knowledge by reviewing the material that students have learned at the previous meeting and then continuing with questions and answers and linking the material that has been studied with the material to be studied, (2) the exploration phase is carried out by guiding students in discussions with their respective group members where the group is formed by selecting the group leader based on the level of activity in the class and the closeness of the group leader with other students, then other students choose the group leader according to the wishes of the students so that the discussion process runs smoothly and cohesiveness is established between group members, (3) the explanation phase is carried out by guiding students to be able to express their opinions in accordance with the concepts found by using their own words. This is done by appointing students by drawing lots to express their opinion if no one dares to raise their hand. While other students recorded the concepts they heard on their Mind Mapping, (4) the elaboration phase was carried out by activating students in answering questions by appointing students to work on questions on the blackboard which were the result of group discussions. As well as making rules, namely students who answer questions correctly will be given a score of 1. This is done with the aim of giving motivation to students to dare to argue, (5) the evaluation phase is carried out by appointing group

representatives to conclude the material that has been studied and giving questions exercises done at home to evaluate students' abilities. Student learning activities increased by 19.57%.

## B. Suggestion

The Learning Cycle 5E learning model using Mind Mapping is used as an alternative to increase student learning activities. Future researchers are expected to conduct research up to cycle III so that students' learning activities can increase and reach the very good category.

## REFERENCES

- Apriyani. 2010. Penerapan Model Learning Cycle "5E" Im Upaya Meningkatkan Kemampuan Pemecahan Masalah Matematika Siswa SMP N 2 Sanden Kelas VIII Pada Pokok Bahasan Prisma dan Limas. *Jurnal Pendidikan Universitas Negeri Yogyakarta* (Online) [Http://eprints.uny.ac.id/pdf\\_diakses\\_pada\\_tanggal\\_13\\_April\\_2015](http://eprints.uny.ac.id/pdf_diakses_pada_tanggal_13_April_2015).
- Arikunto, Suharsimi. 2008. *Dasar-Dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara.
- Asiyah, Siti. 2013. Penerapan Model Pembelajaran *Learning Cycle 5e* Berbantuan *Macromedia Flash* Dilengkapi Lks Untuk Meningkatkan Aktivitas Dan Prestasi Belajar Siswa Pokok Bahasan Zat Adiktif Dan Psikotropika Kelas VIII Smpn 4 Surakarta Tahun Pelajaran 2011/2012. *Jurnal Pendidikan Kimia (JPK)*, Vol. 2 No. 2 (Online) <http://eprints.uns.ac.id/11709/1/1157-3391-2-PB.pdf>.
- Aqi, Zainal. 2013. *Model-Model, Media, dan Strategi Pembelajaran Kontekstual*. Bandung: Yrama Widya.
- Bybee, Rodger *et al.* 2006. *The BSCS Instructional Model*. Colorado: Mark Dabbling.
- Dahar R.W. (1996). *Teori-Teori Belajar*. Jakarta: Erlangga.
- DePorter Bobbi & Mike Hernacki. 1999. *Quantum Learning*. Bandung: PT Mizan Pustaka.
- DePorter, Bobbi, Mark Reardon & Sarah Singe-Hourie. 2000. *Quantum Teaching*. Bandung: PT Mizan Pustaka
- Desi. 2006. *Peningkatan Keaktifan Siswa melalui Penggunaan Multimedia dalam Pembelajaran Kimia di SMA Negeri 10 Palembang*. Tersedia: [www.kntia.unsri.ac.id](http://www.kntia.unsri.ac.id). Diakses pada tanggal 14 Juli 2014.
- Eisenkraft, A. (2003). *Expanding the 5E Model*. New York: National Science Teachers Association.
- Isnaini, Iin. 2012. Peningkatan Aktivitas Belajar Siswa Dalam Pembelajaran Ilmu Pengetahuan Alam Dengan Menggunakan Metode Bermain Peran Pada Siswa Kelas Iv Sdn 19. Pontianak.
- Jumadi. 2013. Penerapan Pembelajaran Penemuan Terbimbing untuk Meningkatkan Hasil Belajar Matematika bagi Siswa Kelas VIII SMP Negeri 9 Malang. *Jurnal Online Universitas Negeri Malang*.
- Kesowo, Bambang. 2003. Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 Tentang Sistem Pendidikan Nasional. Jakarta: Sekretaris Negara Republik Indonesia.
- Kulsum U. dan N. Hindarto. (2011). *Penerapan Model Learning Cycle pada Sub Pokok Bahasan Kalor Untuk Meningkatkan Keaktifan dan Hasil Belajar Siswa Kelas VII SMP*. *Jurnal Pendidikan Fisika Indonesia* 7, 2011, hal. 126-133.
- Muhtadi, Ali. 2005. Pendekatan *Contructivist Learning Cycle* Untuk Meningkatkan Kualitas Pembelajaran Lebih Bermakna Pada Mata Kuliah Media Pembelajaran. *Jurnal Pendidikan Universitas Negeri Yogyakarta* (Online) [Http://eprints.uny.ac.id/10156/1/JURNAL.pdf\\_diakses\\_pada\\_tanggal\\_9\\_April\\_2015](http://eprints.uny.ac.id/10156/1/JURNAL.pdf_diakses_pada_tanggal_9_April_2015).
- Rahayuningsih, Rina. dkk. 2012. Penerapan Siklus Belajar 5e (*Learning Cycle 5e*) Disertai Peta Konsep Untuk Meningkatkan Kualitas Proses Dan Hasil Belajar Kimia Pada Materi Kelarutan Dan Hasil Kali Kelarutan Kelas Xi Ipa Sma Negeri 1 Kartasura Tahun Pelajaran 2011/2012. *Jurnal Pendidikan Kimia* Vol 1 No 1 (online) <http://download.portalgaruda.org/article.php> diakses 13 April 2015.
- Rahma, Ari. 2013. Pengaruh Model Siklus Belajar Berbantuan *Mind Map* terhadap Prestasi Belajar Fisika Ditinjau dari Kinerja Laboratorium Siswa Kelas VIII SMPN 1 Rejoso Kabupaten Pasuruan. *Jurnal Pendidikan Sains* Vol 1 No 2 (online) <https://id.scribd.com/doc/253265281/mind-map> diakses 9 April 2013.
- Rostikawati, R.T., (2006), *Mind mapping dalam metode Quantum Learning Pengaruhnya Terhadap Prestasi Belajar dan Kreativitas Siswa*, <http://www.wordpress.com> diakses pada tanggal 10 April 2015.
- Sanjaya. Wina. 2008. *Strategi Pembelajaran*. Jakarta: Erlangga.
- Sardiman A.M. 2004. *Interaksi & Motivasi Belajar Mengajar*. Jakarta: PT Raja Garfindo Persada.
- Suastika, K.G. dkk. (2010). *Implementasi Model Pembelajaran Siklus (Learning Cycle) pada Pembelajaran Fisika Materi Dinamika Partikel di Kelas X Semester 1 SMA Negeri 1 Palangkaraya Tahun Ajaran 2010/2011 (Prosiding Seminar Nasional Penelitian)*. Yogyakarta.
- Subana, dkk. 2000. *Statistika Pendidikan*. Bandung: Pustaka Setia.
- Sugiyono, 2013. *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung: CV Alfabeta.
- Sumiati & Asra. 2007. *Metode Pembelajaran*. Bandung: CV Wacana.

- Susanti R.Y. dkk. (2011). *Pengaruh Penerapan Model Pembelajaran Learning Cycle 5 Fase (LC 5-E) Terhadap Hasil Belajar Siswa Kelas XI IPA pada Materi Termokimia di SMA Negeri 2 Malang.* (online) <http://jurnal-online.um.ac.id> diakses 15 Maret 2015.
- Utami, Budi, dkk. 2009. *Kimia untuk SMA dan MA Kelas XI Program Ilmu Alam.* Jakarta: Departemen Pendidikan Nasional.
- Wibowo, A. dkk. (2009). *Penerapan Model Pembelajaran Siklus Belajar (Learning Cycle) 5E Dalam Meningkatkan Hasil Belajar Siswa pada Mata Pelajaran Teknologi Informasi dan Komunikasi.* (online) <http://cs.upi.edu> diakses 15 Maret 2015.