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Application of CORE Learning Model with Molymod-Assisted on Hydrocarbon Material to Improve the Students' Learning Outcomes

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Abstract

This study aimed to describe the improvement of learning outcomes by applying the learning model of Connecting, Organizing, Reflecting, Extending (CORE) with molymod-assisted hydrocarbon material of class X students of SMA Labschool UNTAD Palu. This type of research was experimental designs with one group pretest-posttest design. The study used 2 classes, namely class XA as replication class 1 (n = 26) and class XB as replication class 2 (n = 27). The students' learning outcomes were affective, psychomotor, and cognitive aspects. In replication class 1, the value of student learning outcomes was 71.37, while in replication class 2 was 66.00. The data analysis results showed increased student learning outcomes after using the Molymod-assisted CORE learning model in both classes. So it can be concluded that applying the Molymod-assisted CORE learning model on hydrocarbon materials can improve student learning outcomes for class X SMA Labschool UNTAD Palu.

Keywords: Hydrocarbons, CORE, molymod, learning outcomes

Introduction

Teachers are teaching staff who facilitate and facilitate students in a learning activity to achieve maximum learning goals (Inah, 2015). The maximum achievement of learning objectives can improve the quality of education. Indicators of enhancing the quality of education, especially student learning achievement, can be seen from academic achievement in the form of general test scores, National Final Examination (UAN), scientific works, and academic competitions, while non-academic achievements such as IMTAQ, honesty, courtesy, sports, arts, and extra activities other curricular activities (Raharjo, 2012).

Chemistry lessons are one of the compulsory subjects for senior high school (SMA) in the science department. Science subjects in high school in the Education Unit Level Curriculum (KTSP) in 2006 divided science subjects, namely physics, biology, and chemistry. The material in chemistry lessons needs to be well understood by the younger generations to be applied in everyday life (Subagia, 2014). However, Supardi & Putri (2010) stated that chemistry is grouped into complex subjects to learn.

One way that can be done so that chemistry subjects become interesting for students is to choose a learning model that is by the characteristics of the chemical material. A study shows that applying the connecting, organizing, reflecting, and extending (CORE) learning model can improve chemistry learning outcomes in solubility product material. Rijal & Rusmansyah (2016) affirmed that in the CORE model learning process, students are skilled in communicating and mastering the concept of solubility and solubility product in reflecting activities to increase concept mastery.

Hydrocarbons are one of the materials in chemistry learning in class X. This material contains concepts that must be understood because there are terms, theories, and carbon chain structures (Jahro & Ridho, 2015), to master the students' hydrocarbon material. They are expected to be able to link the previously related material with the material to be taught to students. So that learning through connecting activities, students who can link these concepts is expected to explain their knowledge so that it can be communicated to other students. Therefore, learning with the CORE model on hydrocarbon materials improves student learning outcomes in the affective, psychomotor, and cognitive domains.

This learning model is more effective if it is assisted by a media that makes students interested and can concretize abstract material, one of which is molymod. Research conducted by Sulhajir et al. (2013) showed that the learning outcomes of class XI students of SMA Negeri 2 Dolo in the 2012/2013 academic year increased when using the help of molymod media. Thus, in Hydrocarbons

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learning, the connecting, organizing, reflecting, and extending (CORE) learning model, assisted by molymod, improve student learning outcomes.

This paper is intended to describe "the application of the connecting, organizing, reflecting, extending (CORE) learning model with the aid of molymod on hydrocarbon material to improve the learning outcomes of class X SMA Labschool UNTAD Palu."

Methods

This research is a pre-experimental design using one group pretest-posttest design (pretest-posttest in a group). This research activity was conducted at SMA Lab school UNTAD Palu, with 53 students divided into two classes: replication class 1, 26, and replication class 2, totaling 27 people. The sampling technique used was purposive sampling.

The instrument used to measure student learning outcomes in the form of multiple-choice tests totaling 20 items that have been validated using the Anates v4 application, which looks at the validity of the items, the analysis of the level of difficulty of the test, the study of discriminating power, and the reliability of the test. Observation sheets used observation sheets to measure skills and attitudes carried out in the learning process. The observation sheet aims to obtain data on affective assessment and student psychomotor assessment during the learning process on hydrocarbon material. Student learning outcomes tests aim to get student cognitive data at the beginning and end of learning hydrocarbon material (Prasetya, 2012).

Results and Discussion

Affective domain

There are five criteria: independent attitude, honesty, curiosity, enthusiasm, and responsibility; a student affective assessment measures student attitudes during the learning process.

Based on the research results conducted at SMA Labschool UNTAD Palu, data were obtained for each meeting, namely in replication class 1 and replication class 2, which relatively increased. Still, at the second meeting in replication class 1, there was a decrease due to internal factors, which decreased enthusiasm because students were less enthusiastic about learning. Ask questions, support, and provide opinions on naming hydrocarbon compounds, but students' attitudes in replication class 1 increased at the next meeting. Furthermore, in replication class 2, there was an increase from the first meeting to the third meeting, but at the fourth meeting, the average value was the same as the average value in the previous session, as shown in **Figure 1**.

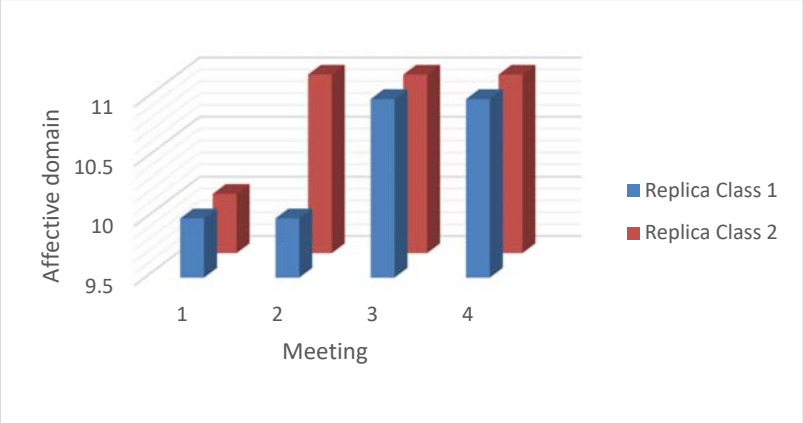

Figure 1. Affective assessment for replication class 1 and replication class 2

The **Figure 1** shows that the average of each meeting in both replication class 1 and replication class 2 is relatively increasing. The average value of students' affective assessment by applying the Molymod-assisted CORE learning model in replication class 1 students was obtained at 69.56, while in replication class 2, it was received at 71.01. One of the reasons for improving students' effective learning outcomes is the CORE learning model, where students' effectiveness will arise at the organizing stage; at this stage, students seek new knowledge or information with teacher guidance. That results in students being curious, independent, and enthusiastic. In addition, effective improvement is also influenced by the reflecting stage. The reflecting stage is where students explain a concept with their thoughts. Giving assignments in groups causes students to have curiosity, responsibility, independence, and enthusiasm. Then students' effectiveness also arises at the extending stage, where students are allowed to expand their knowledge by using concepts that have been obtained through individual assignments. That results in students being independent and honest, so it can be concluded that the application of the Molymod-assisted CORE learning model

when viewed from the affective aspect, increases. In line with research conducted by (Hariyanto, 2016), most students have a positive attitude toward learning mathematics using the CORE model.

Psychomotor domain

Based on the research results, it was found that the psychomotor aspect of students in replication class 1 and class 2 replication obtained an average of each meeting, which showed the students' skills in replication class 1 increased from the first meeting to the third meeting. The increase also occurred in replication class 2, as shown in **Figure 2.**

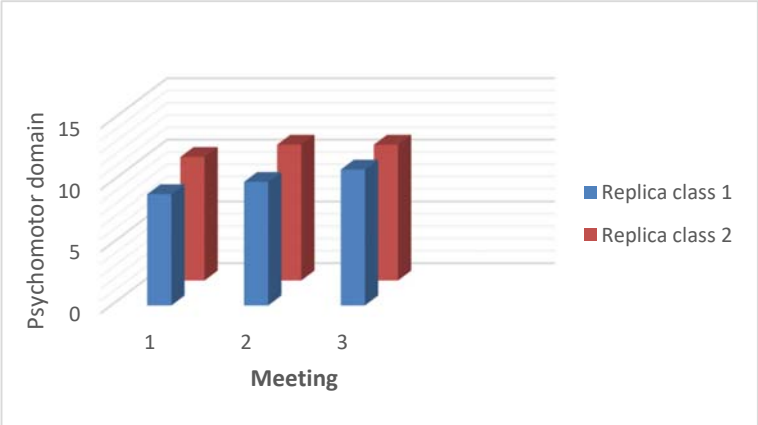

Figure 2. Psychomotor assessment for replication class 1 and replication 2

The **Figure 2** shows a significant increase from each meeting, both replication class 1 and replication class 2. Psychomotor data assessment in student observation sheets aims to measure students' skills in using molymod media. 4 criteria are assessed: determining the structure of hydrocarbon compounds, creative in assembling molymod, creative in naming a compound, contributing to groupmates, and communicative in the discussion.

The results of the psychomotor assessment in replication class 1 obtained an average of 84.34, while in replication class 2, an average value was received at 87.54. Satriani et al. (2015) claimed that the CORE learning model could improve students' skills and mastery of concepts. Results show that the CORE learning model assisted by molymod can improve students' skills. So this research is in line with a study conducted by Muizaddin & Santoso (2016), who says that applying the CORE learning model in the learning process makes students more active in speaking, asking, and refuting in group discussions. According to Safitri et al. (2014), applying the CORE model can also increase student creativity.

Cognitive domain

Based on the research, the data obtained from the pretest-posttest results for replication class 1 and 2.

The increase in student learning outcomes in this domain can be seen in the average post-test value, wherein the replication class 1 is 67.26, and in replication class 2, it is 54.38. There is a difference in the average post-test results because, in the replication class, 1 hour of learning takes place in the morning, and 2 hours of education takes place in the afternoon. Then this is also influenced by the learning interest of students who are active in knowledge, namely the replication class 1, because the class was more enthusiastic in the learning process.

The increase in student learning outcomes can also be seen from the calculation of the effect size, which sees whether the model used has a positive impact on students or vice versa, so the following values are obtained:

a. Replication class 1

From the calculation results obtained, ES = 2.51. ES value > 0.8, which means the test criteria significantly increase learning outcomes using the Molymod-assisted CORE model.

b. Replication class 2

From the calculation results obtained, ES = 2.96. ES value> 0.8, which means the test criteria significantly increase learning outcomes using the Molymod-assisted CORE model.

Effect size is a measure of the magnitude of the effect of one variable on other variables. The calculation results obtained in the replication class 1 of 2.51 and in replication 2 of 2.96 where the criteria are that there is a significant increase before and after the learning model is applied (Megasari et al., 2018) which means that the learning model used has a positive impact on students, so high learning outcomes prove it. It is in line with research conducted by (Raihana et al., 2014); the study results show significant differences in cognitive learning outcomes between students using the CORE learning model that uses more effective media than those utilizing the CORE learning model alone.

c. Value of learning outcomes

Based on three aspects of the assessment, namely the affective, psychomotor, and cognitive

domains, the overall learning outcomes were obtained with 50% cognitive, 30% effective, and 20% psychomotor (Kamaluddin et al., 2014). Learning outcomes in replication class 1 were obtained at 71.31, and in replication class 2 were obtained at 66.00. The results obtained in replication class 1 were higher than in replication class 2 because in replication class 1, when viewed from the daily test, scores were higher than the replication class 2. The learning hours in the two classes were different in replication class 1, carried out in the morning. Replication class 2 is held in the afternoon so that student learning outcomes in replication class 2 tend to decrease from replication class 1.

According to Humaira et al. (2014), the CORE learning model has four stages; each stage has its role in helping students understand the material that the teacher will teach. For example, at the first meeting with the first stage, namely connecting, the researcher asks material about the periodic system and Lewis structure when students recall the material. Second, at this stage of the process, the researcher incorporates content that will be taught, such as the unique properties of the carbon atom. One example with 4 valence electrons can form a carbon chain, and the C atom has a different position in a one-carbon chain. Then the researchers used molymod media so that students more easily understand the learning material. Molymod is a learning media that can concrete abstract hydrocarbon material by direct observation.

The third stage is reflection. Students work on questions in groups and then answer them together. In the fourth stage, students expand their abilities by working on hydrocarbon questions by giving individual questions or worksheets. However, sometimes mistakes that occur during the teaching and learning process are when students' assumptions do not appear in direct observations made by students. The teacher immediately helps students find an explanation for why their suspicions are not valid, or the teacher can help students change their assumptions and justify the original allegations as not accurate.

Conclusions

An increase in learning outcomes after using the Molymod-assisted CORE learning model in Labschool UNTAD Palu High School students was seen from the assessment of student learning outcomes, which included affective, psychomotor, and cognitive aspects. In replication class 1, the student learning outcomes were 71.37, and in replication class 2, the student learning outcomes were 66.00.

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References

Hariyanto (2016). Penerapan model core dalam pembelajaran matematika untuk meningkatkan kemampuan komunikasi matematika siswa. *Jurnal Gammath*, *2*(1), 11-19.

Humaira, F. A., Suherman., & Jazwinarti. (2014). Penerapan model pembelajaran CORE pada pembelajaran matematika siswa kelas X SMAN Padang. *Jurnal Pendidikan Matematika*, *3*(1), 31-37.

Inah, E. N. (2015). Peran komunikasi dalam interaksi guru dan siswa. *Jurnal Al- Tad'dib*, *8*(2), 150-167.

Jahro, I. S., & Ridho, D. (2015). Penerapan model based learning menggunakan media exe learning untuk meningkatkan hasil belajar dan kerjasama siswa pada materi hidrokarbon. *Jurnal Pendidikan Kimia*, *7*(3), 80-86.

Kamaluddin., Soebali, B., & Kardi, S. (2014), Pengembangan perangkat pembelajaran dengan model siklus belajar 5e pada materi kalor untuk meningkatkan hasil belajar siswa. *Jurnal Pendidikan Sains Pascasarjana Universitas Negeri Surabaya*, *4*(1), 468-475.

Megasari., Sundaryono, A., & Firdaus, M. L. (2018). Pembelajaran *probing prompting* untuk meningkatkan berpikir kritis siswa anggota kelompok ilmiah remaja. *Journal of Science Education*, *2*(2), 163-169.

Muizaddin, R., & Santoso, B. (2016). Model pembelajaran core sebagai sarana dalam meningkatkan hasil belajar siswa. *Jurnal Pendidikan Manajemen Perkantoran, 1*(1), 224-232.

Prasetya, T. I. (2012). Meningkatkan keterampilan menyusun instrumen hasil belajar berbasis modul interaktif bagi guru-guru IPA SMP N Kota Magelang. *Journal of Educational Research and Evaluation*, *1*(2), 106-112.

Raharjo, S. B. (2012). Evaluasi trend kualitas pendidikan di Indonesia. *Jurnal Penelitian dan Evaluasi Pendidikan, 16*(2), 511-532.

Raihana, E., Iriani, R., & Leny. (2017). Keefektivan media prezi dan flash terhadap hasil belajar kognitif siswa dengan model pembelajaran connecting, organizing, reflecting, & extending materi hidrolisis garam di SMA Banjarmasin. *Journal of Chemistry and Education, 1*(1), 58-64.

Rijal, M. F., & Rusmansyah. (2016). Meningkatkan hasil belajar siswa melalui model pembelajaran core (connecting, organizing, reflecting & extending) berbantuan mind mapping pada materi hidrolisis garam. *QUANTUM, Jurnal Inovasi Pendidikan Sains*, 7(1), 66-73.

Satriani, G. A. N. D., Dantes, N., & Jampel, I., N. (2015) Pengaruh penerapan model core terhadap kemampuan pemecahan masalah matematika dengan kovariabel penalaran sistematis pada siswa kelas III gugus Raden

Ajeng Kartini kecamatan Denpasar Barat. *Jurnal Penelitian dan Evaluasi Pendidikan Indonesia*, *5*(1), 1-10.

Subagia, I. W. (2014). Paradigma baru pembelajaran kimia SMA. *Prosiding Seminar Nasional MIPA* (pp 152-163). Denpasar: Universitas Pendidikan Ganesha.

Sulhajir, W., Sitti, N., & Tangkas, I. M. (2013). Pemanfaatan molymod pada hasil belajar siswa pada konsep alkana alkena dan alkuna pada siswa kelas X SMA Negeri 2 Dolo. *Jurnal Akademika Kimia*, *2*(4), 203-208.

Supardi, K. I., & Putri, I. R. (2010). Pengaruh penggunaan artikel kimia dari internet pada model pembelajaran creative problem solving terhadap hasil belajar kimia siswa SMA. *Jurnal Inovasi Pendidikan Kimia, 4*(1), 574-581.

Safitri, D., Handayani, S., & Umamah, N. (2014). Penerapan connecting, organizing, reflecting, extending untuk meningkatkan kreatifitas dan hasil belajar sejarah peserta didik kelas X3 SMAN 1 Bangorejo tahun ajaran 2013/2014. *Jurnal FKIP UNEJ*, *1*(2), 10-14.