

IMPLEMENTING THE CONCEPT ATTAINMENT MODEL TO DRILL THE STUDENT SKILL OF GIVING OPINION IN CHEMICAL BONDING MATERIAL

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Abstrak

Tujuan dari penelitian ini adalah untuk mengetahui keterlaksanaan, keterampilan berpendapat siswa dan ketuntasan hasil belajar siswa melalui penerapan model pembelajaran pemerolehan konsep dalam materi pokok ikatan kimia. Penelitian ini merupakan penelitian pre-eksperimen dengan metode *One Shoot Case Study* dengan jenis penelitian deskriptif kuantitatif dan kualitatif. Instrumen yang digunakan dalam penelitian ini adalah lembar pengamatan keterlaksanaan pembelajaran dan keterampilan berpendapat siswa serta tes ketuntasan hasil belajar siswa. Berdasarkan hasil penelitian, nilai keterlaksanaan pembelajaran selama tiga pertemuan adalah 4,23; 4,63; dan 4,81 dengan kriteria rata-rata adalah sangat baik sedangkan nilai keterampilan berpendapat siswa untuk indikator kebahasaan dapat dilatihkan dengan nilai tiap pertemuan berturut-turut adalah 2; 2,21; dan 2,52 dengan rata-rata kategori cukup baik Keterampilan berpendapat siswa untuk indikator kelogisan juga dapat dilatihkan dengan nilai tiap pertemuan berturut-turut adalah 2,15; 2,48; dan 2,64 dengan rata-rata kategori baik. Dari hasil tes pada materi ikatan kimia, ketuntasan hasil belajar siswa dikatakan baik dengan persentase ketuntasan tiap pertemuan adalah 78,78%; 93,93%; dan 96,96%.

Kata kunci: Model pembelajaran pemerolehan konsep, keterampilan berpendapat, ikatan kimia.

Abstract

The aims of this research are to know the enforceability, student skill of giving opinion, and student learning mastery by implementing the concept attainment model in chemical bonding material. This research is pre-experiment research by using *One Shoot Case Study's* method and analyzed by descriptive qualitative and qualitative. The instrument that used is the learning enforceability's observation sheet, the student skill of giving opinion's observation sheets, and the student learning mastery's test. According to the result of this research, the average score of learning enforceability for three meetings are 4.23, 4.63, and 4.8 with the average criteria is very good criteria, while the student skill of giving opinion for language's indicator is able to be drilled for three meetings which scores are 2, 2.21, and 2.52 and belong to "good enough" criteria. The student skill of giving opinion for logic's indicator is able to be drilled for three meeting which scores are 2.15, 2.48, and 2.64 and belong to "good" criteria. From the student learning mastery's test, the student learning mastery is good with the percentages of learning mastery for each meeting are 78.78%, 93.93%, and 96.96%.

Keywords: concept attaining model, student skill of giving opinion, chemical bonding.

INTRODUCTION

Curriculum 2013 is a new curriculum that is implemented in

Indonesia's education. According to the Regulation of Minister of Educational and Cultural in Republic Indonesia No.

70 in 2013, one of the comprehension that adopted in curriculum 2013 is the direct learning experience which suitable with the background, characteristic, and early capability of student. [1]

One of the chemical materials that often only be memorized by students and has low learning mastery is chemical bonding. In chemical bonding learning, students just commit to memory the material and lazy to think about the material.

According to the information processing model that conceives of memory as consisting of three components: sensory memory, short-term working memory, and long-term memory [2]. Because the students just commit to memorize, it means that information processing stop in short-term memory. In this way, students will forget what they commit to memory easily because they didn't try to think and understand the materials. In the other words, the learning process is meaningless.

According to Uzuntiryaki, chemical bonding is an abstract concept that can't be implicated in daily live directly, so students may have some difficulties to understand this material [3].

Chemical bonding is a topic where the understanding is developed by diverse models that can build a range from each character, and students are able to accept the concepts easily by interpreting its range step by step [4].

Based on the classroom's experiences, there are many teachers use a conventional teaching, just explain the material in front of class. Based on the Regulation of Minister of Educational and Cultural in Republic Indonesia No.

69 in 2013, the learning process should change (1) the patterns of teacher-centered be student-centered, (2) patterns of one direction learning be interactive learning, (3) patterns passive learning to active learning [5]. According to that pattern, the student's skill that must be gotten is communication skill. One of communication skill that is able to drill is the skill of giving opinion. This skill is important because student won't able to bring them to take a part in interactive and active learning process without skill of giving opinion.

On the Regulation of Minister of Educational and Cultural in Republic Indonesia No. 81A in 2013[6], one of competence that developed in scientific learning method is skill of giving opinion. In the fact, there are many students which has high learning result can't give their opinion bravely.

According to constructivism's theory, learning is an active process where students build concept or opinion based on the initial knowledge [7]. So, the skill of giving opinion must be needed to build new concept for students, especially in chemical bonding materials. To solve some problems above, it is needed to make meaningful learning process and to help students connect each concept in chemical bonding material.

Based on the explanation above, so the problem questions are: (1) how is learning enforceability by using concept attainment model? (2) how is student skill of giving opinion by using concept attainment model in basic material of chemical bonding by using the concept attainment model? (3) how is the student learning mastery in chemical bonding by using the concept attainment model?

From the problem question above, so the objective of this research is to know the enforceability, the student skill of giving opinion, and the student learning mastery in chemical bonding material by using concept attainment model.

METHOD

The kinds of this research is pre-experiment of descriptive qualitative and quantitative. The sample of this research is all students in class X-SCIENCE 4 at Senior High School 1 Krian (SMAN 1 Krian).

The design of this research is "One Shoot Case Study." This design can be described as bellow [8]:



Note:

X = the treatment of learning process by using concept attaining model.

O = the result of the treatment by using concept attaining model in drilling student skill of giving opinion.

In this research, the learning equipment that used is syllabi, lesson plan, textbook, and worksheets. The research instrument is observation sheet of enforceability and giving opinion skill.

The observation sheet of enforceability is observed by two observers, while the observation sheet of giving opinion skill is observed by five observers where each observer observed six or seven students in a class. The observer must write the way and contain of student give their opinion in a class while the learning process got the first phase in concept attainment model.

To know the learning enforceability by using concept

attainment model, observer filled the observation sheet with score 1 until 5. The score that gotten is analyzed by converting it into these criteria [8]:

$$\text{Learning enforceability} = \frac{\sum \text{score for each syntax}}{\sum \text{syntax}}$$

Table 1. The Criteria of Learning Enforceability

Score	Criteria
1 – 2	Not good
2,1 – 3	Good enough
3,1 – 4	Good
4,1 – 5	Very good

If the average score from each meeting is greater than equal to 3.1, so the learning enforceability is good.

To know the student skill of giving opinion, observer filled the score's rubric with range 1 until 4 in each indicator of language and logical in the observation sheet. The score for each indicator is averaged and converted by criteria in the table below [6]:

$$\text{Student score} = \frac{\sum \text{student score}}{\sum \text{max score}} \times 4$$

Table 2. Conversion of Student's Score in Giving Opinion Skill

Score	Criteria
1 – 1,32	Less good
1,33 – 2,32	Good enough
2,33 – 3,32	Good
3,33 – 4,00	Very good

If the classroom's average score is greater than equal to 2.33 for language and logic's indicator, so the student skill of giving opinion could be drilled in three meeting.

If the percentage of the student learning mastery in class is greater than 75%, so the student learning mastery is good. The minimal score that student

should get is 2,85 in range 1 until 4. Below is the pattern to calculate the student's score [6]:

$$\text{Student's score} = \frac{\sum \text{right answer}}{\sum \text{question}} \times 4$$

RESULT AND DISCUSSION

The phase of concept attainment model is divided into four phases. They are: showing the example, analyzing the hypothesis, closing, and application [9]. The opening of learning process is conducted by motivation and apperception. The phase of showing example and analyzing hypothesis is entered in the main of learning process. The phase of closing and application is entered into ending of learning process.

The enforceability of learning process for three meetings is shown by the figure 1 below:

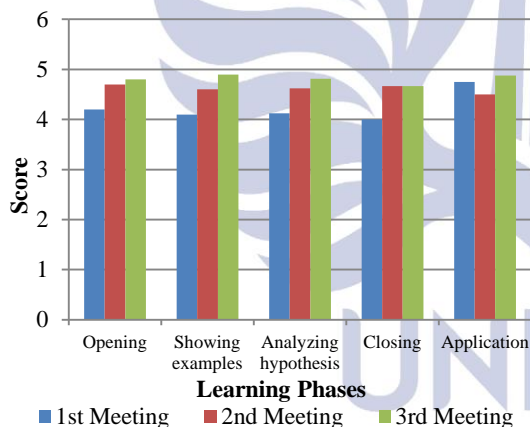


Figure 1. Diagram of learning enforceability for three meeting.

According to the diagram above, so the enforceability learning process for the implementation of concept attainment model was good. It's because the enforceability learning process has the average score 4.55 with very good criteria.

The student skill of giving opinion in this research is based on Parera, which stated the skill of giving opinion has two indicators. They are the ability of giving opinion in good language and logic. The characteristic of language's indicator is students should be able to give opinion in formal, respectful, and connect each opinion that explained by student. While the characteristic of logic's indicator is students should be able to give opinion from the fact and support the material in each meeting [10].

As long as the learning process, the students will be observed their skill of giving opinion by observers in the observation sheet based on the rubric. According to the data of observation sheet, the researcher analyzed and gave score for each student in their skill of giving opinion.

The observation process to know the student skill of giving opinion is started in the phase of showing example, when the students are asked to give their opinion about the differences of example and non-example's table. The observation process to know the student skill of giving opinion is stopped when the application's phase is ended.

In phase of showing examples, students were given some minutes to look for the differences between example and non-example's table and prepare their opinion. After time was up, teacher asked students to give their opinion in class. Students raised their hands and teacher chose one by one the students that want to give their opinion. When students started to give their opinion, the observer observed the student skill of giving opinion in observation sheet. In this way, teacher didn't judge any student's opinion, but teacher write all of

the opinions in the whiteboard. After all of student's opinions were collected, the teacher and students think about student's opinions one by one whether the opinion right or wrong. After the right opinions were gotten, teacher asked the students to give the hypothesis in class.

The observation of student skill of giving opinion was going to the next phase, analyzing the hypothesis by answering the questions that had been prepared by teacher. Students were given some minutes to finish it. As the previous phase, after the time was over, teacher gave a chance to give student's opinion and answer the question in class. When the students had wrong opinion, teacher would ask the other friends to give the respond.

The next phase is closing phase. Students gave their opinion about the conclusion and the definition of the concept that they had been learned. Teacher pointed toward the students who still not active in the previous phase. The observer would observe each student's opinion.

For the final phase is the application phase, when students were asked by teacher to give their opinion in answering some questions about the chemical bonding's concept. In this phase, the students not only gave their opinion in answering the question, but also explained the formation process of chemical bonding in front of class. After this phase was finished, the observers didn't observe the student's opinion anymore. After the teacher and student reflected the learning in that day, teacher closed the class and the learning process was end.

Based on the data's result, below is the table that shows the student skill of giving opinion for the first meeting until third meeting:

Table 3. Score of Student Skill of Giving Opinion

N	Meeting I		Meeting II		Meeting III	
	Indicator		Indicator		Indicator	
	A	B	A	B	A	B
S1	1	1	3	2	3	3
S2	1	1	2	2	2	2
S3	2	3	1	1	3	3
S4	1	1	1	1	3	2
S5	1	1	2	3	3	4
S6	1	1	2	3	4	4
S7	2	2	1	1	3	3
S8	3	3	3	4	3	4
S9	1	1	2	3	1	1
S10	3	3	4	4	3	4
S11	1	1	1	1	4	4
S12	3	3	3	4	1	1
S13	4	4	4	4	4	4
S14	3	3	3	4	4	4
S15	1	1	1	1	3	2
S16	1	1	1	1	1	1
S17	4	4	4	4	4	4
S18	1	1	1	1	3	3
S19	3	2	2	3	2	3
S20	3	3	1	1	1	1
S21	4	4	4	4	4	4
S22	1	1	1	1	1	1
S23	1	1	1	1	1	1
S24	2	2	3	4	4	4
S25	3	3	3	2	3	3
S26	1	1	3	3	3	3
S27	3	2	2	3	1	1
S28	2	3	2	3	1	1
S29	2	3	3	4	3	3
S30	2	3	1	1	1	1
S31	2	4	3	2	1	1
S32	2	3	3	3	3	3
S33	1	1	2	3	2	4
Σ	66	71	73	82	83	87
\bar{n}	2	2,2	2,2	2,5	2,5	2,6

Note: N = name; A = language; B = logic

For the first meeting, the average score for student skill of giving opinion on language indicator is 2 with criteria of good enough. In the second meeting, the

average score for student skill of giving opinion on language indicator become 2.21 with good enough criteria. According to this result, the average score in language indicator is increase although the criteria just stay at good enough criteria. It means that the students start to learn how to giving opinion in class step by step. In the third meeting, the student skill of giving opinion on language indicator increase to 2.52 with good criteria. According to this result, the increasing score from first meeting until third meeting, the student skill of giving opinion can be drilled well for language indicator.

According to Parera, the opinion that gave by students usually don't have any effect of logical reasoning, the student's opinion just for repeating what would they say. The just told their opinion in the other words. For students that usually have habit to speak in over language, their skill of giving opinion is less for language indicator [10]. In many cases, students will not only give their opinion in class, but also in public area. If the student didn't drill to increase the skill of giving opinion in language indicator, they will meet some difficulties in their live. By drilling the student skill of giving opinion, especially for language indicator, students are able to give their opinion better as their score based on the observation's result.

The student skill of giving opinion with logic's indicator has been observed for three meeting. For the first meeting, the average score is 2.15 with good enough criteria. For the second meeting, the average score increase into 2.48 with good criteria. For the third meeting, the average score increase again into 2.64 with the same criteria, good criteria.

According to this result, the increasing score from first meeting until third meeting, the student skill of giving opinion can be drilled well for language indicator.

By regularly drilling, the student skill of giving opinion with both indicators, language and logic, could be increased until student reach very good criteria.

The new knowledge enters the brain and memory system as a result of picking up stimuli from the environment through one of the senses: sight, hearing, touch, smell, and feel [2]. As the skill of giving opinion has been drilled in each meeting, students will pick up the stimuli from the hearing of another friend that gave their opinion and feel the way they gave the opinion. In this way, students will have a habit about how to give explain their opinion to another people.

The figure 2 below shows the student skill of giving opinion for three meeting in language and logic indicators.

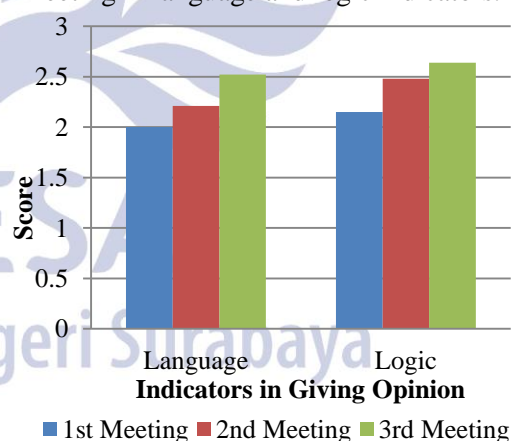


Figure 2. Diagram the student skill of giving opinion for three meetings.

According to the diagram above, students can be drilled in giving opinion skill with language and logic's indicator by using concept attaining model in

chemical bonding material. The scores of language indicator for three meetings are 2, 2.21, and 2.25 on good criteria. While the scores of logic indicator for three meetings are 2.15, 2.48, and 2.64 on good criteria.

From the first meeting until the third meeting, the chemical bonding materials that had been learned are ionic bonding, covalent bonding, and coordination covalent bonding. The figure 3 below shows the student learning mastery from each meeting:

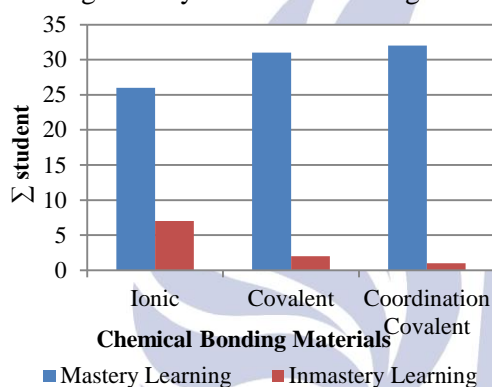


Figure 3. Diagram of student learning mastery for three meeting.

Based on the diagram above, the number of student learning mastery from the first meeting until the third meeting increase. Students will memorize in long-term memory all the things that they processed by manipulating, looking the problems form many perspectives, and analyzing for it [2]. In the learning process, students will process the information and give the output that show there is interaction of internal and external condition. By giving opinion in the class, students were looking the problems from many perspectives and catching the information by hearing. Because students were taught by many interactions in the learning process by concept attainment model so the way

they process the information is good. It make the result of student learning mastery is good.

From the student learning mastery's test, the student learning mastery is good with the percentages of learning mastery for each meeting are 78.78%, 93.93%, and 96.96%. From this result, the student learning mastery had been reached more than 75%, so the student learning mastery in chemical bonding materials by using concept attainment model is good.

CLOSING

Conclusion

Based on the research's data, the conclusions that can be taken are:

1. The learning enforceability of concept attainment model in chemical bonding material is good because it has score average for three meeting is 4.56 with very good criteria. The score details for each meeting is 4.23 for the first meeting, 4.63 for the second meeting, and 4.81 for the third meeting.
2. By implementing the concept attainment model in chemical bonding material, the student skill of giving opinion could be drilled for each indicator. For the first indicator, the student skill of giving opinion that seen by language indicator for three meetings can be increased with the scores are 2, 2.21, and 2.25 on good criteria. For the logic indicator, the student skill of giving opinion that seen by the logic indicator can be increased too for three meetings with the scores are 2.15, 2.48, and 2.64 on good criteria.
3. The student learning mastery by using concept attainment model in

chemical bonding materials for each meeting is good which the percentages are 78.78%, 93.93%, and 96.96%.

Suggestion

By the implementing the concept attainment model in chemical bonding material, the student skill of giving opinion in verbal can be drilled. The suggestion for the next research is good to make a research to drill the student skill of giving opinion in nonverbal way.

For the implementation in class, the student skill of giving opinion could be increased again in the higher criteria when the implementation of concept attainment model is done regularly and supported by good interaction between students and teacher.

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