The Implementation of Collaborative Learning Using AfL through Giving Feedback Strategy for Improving Students’ Attention to Mathematics Lesson

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Abstract. This research aims to describe the process of implementation collaborative learning with AfL through giving feedback strategy for improving students’ attention to mathematics lesson. Data which is collected in this research are students’ attention towards learning and students’ achievement. The result of this research showed that the learning steps by using collaborative learning with AfL through giving feedback strategy which can improve students’ attention are: 1) pre activity: the teacher delivers the purpose of the learning, successful criteria, apperception, and motivation. 2) main activity: the teacher gives the background of learning activity, explains learning materials at a glance, divides students discuss, the teacher observes and guides students to the problem solving, present their discussion result, gives feedback, the students do AfL problem and the answer is collected and result will be given before next meeting. 3) post activity: the teacher with students concludes the material. Test result, the percentage of students who complete the examination in the second cycle is 77.27%. Based on those results can be concluded that the implementation of collaborative learning using AfL through giving feedback can improve students’ attention towards learning and students’ achievement of XI IPA Students MA Al-Islam Jamsaren Surakarta academic year 2013/2014.

1. Introduction
Mathematics learning in senior high schools (SMA / MA / SMK) is designed to achieve the objectives that the students appreciate the usefulness of Mathematics in real life, which is possessing curiosity, attention and interest in learning Mathematics as well as tenacious attitude and confidence in problem solving. These learning objectives will be achieved when the indicators of learning effectiveness are met. The effectiveness of learning Mathematics can be shown when students behavior involving the students active participation in Mathematics learning process is achieved and the evaluation processes is appropriate.

The success of learning will be realized from the success of student learning indicated by students’ achievement. Learning outcome is the result of interactions of various affecting factors such as attention. Student attention in the classroom can be conditioned so that students can accustom themselves to learn, so student attention will affect student achievement [13].

Low attention of students can be caused by many factors such as learning processes that fail to attract the attention of the students. According to research results, lack of students’ attention to is due to the learning process which focuses only on teachers [12]. Teacher-centered learning process makes
students feel bored, moreover if the teacher only uses the lecture method. Therefore, the attention of
students towards learning becomes essential.

Students’ attention towards learning is the students’ psychical activity to receive the
lesson. Students’ attention in Mathematics learning is very important to be improved in classroom
learning activities so that students can understand the learning materials presented during the
lesson. In addition, giving feedbacks should be done by the teachers to the students in order to correct
the mistakes that have been made.

The problem of low students’ attention in learning processes does exist in several schools in
Surakarta. MA Al-Islam Jamsaren is an Islamic school with life skill education accredited as an A-
grade school category (good). It could be seen that low students’ attention towards the learning is also
experienced by students in grade XI IPA MA Al-Islam Jamsaren Surakarta. In addition, the evaluation
which is intended to provide feedbacks for students has not been implemented exhaustively by the
teachers. It can be seen from the results of observations and interviews to teachers of Mathematics in
grade XI IPA MA Al-Islam Jamsaren Surakarta.

Based on preliminary observations in MA Al-Islam Jamsaren Surakarta at 08:30 to 10:00 on
20th January 2014 it is observed that in the learning process students’ attention was not optimal. It can
be seen from students’ activities in the learning process in which many students were busy with other
activities such as reading books other than Mathematics books, talking to their seatmates, sleeping and
most of the students were reluctant to ask questions. Furthermore, it could be seen that there are only a
few students who actively discussed the materials, answered questions from the teacher, did exercises
given by the teacher and took notes of the learning materials.

Results of interviews with Mathematics teachers of grade XI IPA MA Al-Islam Jamsaren
Surakarta showed that the teaching mostly used direct teaching methods. Students’ learning
achievement is classified as low because only a few students are able to pass the passing grade
(KKM). From the identified problems it can be concluded that learning effectiveness has not been
maximum. It is indicated by how students’ attention towards the learning has not been optimal yet.

Based on the problems above, it is necessary to apply a model of learning that can involve
the participation of students thoroughly, so that the attention of the students in the learning process can be
improved. One of learning models that is known to correspond to such issue is collaborative learning
with AfL learning assessment through feedback giving strategy.

In collaborative learning, it is applied a learning strategy with a number of students as group
members and each member of the group must cooperate actively to achieve the goals that have been
determined in an activity with a certain structure resulting in a meaningful learning process
[3]. Collaborative learning can train students to pay attention to the learning. One of beneficial values
of learning is to train attention [1].

Moreover a learning strategy that includes learning assessment is the AfL assessment through
the feedback giving strategy. Assessment for learning (AfL) can be definition as using evidence and
feedback to identify where students are in their learning, what they need to do next, and how best to
achieve this. The others word, AfL is the process of seeking and interpreting evidence for use by
learners and their teachers to decide where the learners are in their learning, where they need to go,
and how best to get there [5]. AfL, if it is effectively used, can improve students’ achievements [5].

The reason for choosing the collaborative learning model with AfL through feedback giving
strategy on teaching and learning activities in MA Al-Islam Jamsaren as an improvement of learning is
expected to be able to improve students’ attention towards Mathematics learning and eventually
improve students’ achievement in learning Mathematics. Through the implementation of collaborative
learning model with AfL through feedback giving strategy teachers provide opportunities for students
to learn in groups, the use of more immediate feedback giving so it is expected that students are more
interested in learning Mathematics and facilitating students in understanding materials presented by
the teacher.

Based on the backgrounds the research problems are formulated as follows: (1) What is the
learning process using a collaborative learning model with AfL evaluation through feedback giving
strategy that can improve students’ attention in grade XI IPA MA Al-Islam Jamsaren Surakarta academic year 2013/2014 towards Mathematics learning? (2) Can the collaborative learning model with AfL evaluation through feedback giving strategy enhance students’ Mathematics learning achievement on derivative materials?

2. Research Method
This research is classroom action research to improve student’s attention to learning and student’s achievement. The subject research is students of XI class IPA MA Al-Islam Jamsaren Surakarta, academic year of 2013/2014, that consisted of 22 students.

This research started from January 2014 until May 2014. The implementation of this research divided into 3 phases of activity. The first phase is the preparation of this study that took time on January 2014 until the beginning of May 2014. The second phase is the implementation of the action that took time on April until May 2014. The third phase is the analysis of data and reporting that implemented on April until July 2014.

The data collected in this research were obtained from the results of observations, questionnaires and students’ final cycle test. The results of observations of the learning process, the observation of the students’ attention and results of questionnaires of students’ attention towards the learning. In addition, the result of students’ final cycle test is the data of students’ achievement on derivative materials.

Based on the source on the data used, it’s used three methods of data collection. The first is observation methods, which is observing the events and activities in the classroom during the learning process [4]. The activities that observed is indicators of students’ attention, as calm and orderly, pay attention to the teacher’s explanation, do the tasks or AfL, active in discussions, answering and asking questions, and take note. The second is questionnaire method, which is the data collected through the submission of questions / statements to the respondent by scoring according to the Likert scale [11]. Third is test method, which is a data collection that contains of a number of questions to the subject of research [4]. To examine the validity of the implemented learning data and students’ attention toward learning is used the triangulation of source [10]. Whereas for data obtained from tests is implemented with the test of content validity.

Analysis of the results of learning process observations included the implementation of actions that have been planned, problems encountered during the implementation, and all of the students’ activities when the learning took place. Analysis of test result data started with correcting each student’s works at the same time. While the analysis of observations and questionnaires results of students’ attention taking the increase of students’ attention on every cycle into account used the following formula:

\[ p = \frac{\text{achievement score}}{\text{maximum score}} \times 100\% \]

Note :
p = the percentage of students attention
achievement score = total score of observe
maximum score = total maximum score of observe

The percentage of students’ attention has been calculated based on the formula and then adjusted to the qualification percentages observation and questionnaires such as the following Table 1[2].

| Percentage       | Category |
|------------------|----------|
| 0% ≤ p ≤ 33.33%  | Low      |
| 33.34% ≤ p ≤ 66.66% | Medium  |
| 66.67% ≤ p ≤ 100% | High     |

Table 1. The qualification percentages observation and questionnaires
3. Result and Discussion

From pre-cycle activities it is obtained that the average of students' attention before the implementation of the collaborative learning model with AfL evaluation through feedback giving strategy only reached 46.32% for observation results and 53.82% for the questionnaire results that can be classified into medium category. Based on the results of observations on students learning activities in the pre-cycle activity, it is shown that for the indicator of paying attention to teachers’ explanation the percentage of students who performed these activities was 60.61% and for the indicator of being calm and orderly the percentage of students who did them reached 77.27%. For the indicator of answering teachers’ questions the percentage was only 18.18% of students who did that, meanwhile for the indicator of students’ willingness to ask questions to the teacher the percentage was only 9.09%. Furthermore, for the indicator of the willingness of students to work on the assignments given by the teacher the percentage was 54.55%, students’ willingness to be actively involved in the discussions was 64.40%, while for the willingness of the students to take notes of learning materials conclusions the percentage reached 40.91%.

The results of the questionnaire which were used to determine students' attention to the learning that cannot be observed suggest that average students’ attention leading to achievement of indicators of paying attention to the teachers’ explanation was at the percentage of 69.32%. For the indicator of being calm and orderly the percentage reached 73.86%. The percentage for the indicators of students’ willingness to answer the questions of teachers was 44.89%, asking questions to the teacher was 37.50%, doing the tasks that are given by the teacher was 60.61%, being active in group discussions was 51.99% and taking notes of learning materials conclusions was 38.64%.

From the observation and questionnaire results on pre-cycle activity, cycle I action was implemented by applying collaborative learning model with AfL evaluation through feedback giving strategy. Based on observations and questionnaires results in the first cycle, the average students’ attention in the first cycle increased compared with the average students’ attention that was based on preliminary observations. The improvement of results of observation was 17.97% and the improvement of the results of questionnaire was 12.28% compared with the pre-cycle results.

Despite an increase in the average students’ attention, the increase has not shown the percentage of success of indicators that have been determined that is the average percentage of students’ attention reached 70%. Thus further action needed to be done at cycle II by reflecting on the improvements of actions in cycle I. It is possible because of collaborative learning process with the AfL through strategies that emphasize on the provision of feedback on the group discussion has not been operating effectively since there are some students who remain silence and reluctantly ask the teacher.

The purpose of this learning process is for students, they can learn in groups and find out their mistakes through the feedback given. It’s in line with Lin (2011) [9], the importance of feedback in the learning process is students’ understanding on how well they perform their duties and assess students' progress. Students who do not actively participated in group discussions should get teacher’s attention so they can be as active as the other students. The reason of why some students reluctantly ask the teacher is because students are embarrassed to ask questions. Students prefer to ask when the teacher approached the group.

Besides the teaching process which is not optimal yet, it’s possibly because of the AfL assessment through feedback strategy which is not precise yet. According to Budiyono [5] “Scoring on the AfL or exercises are not used as the final score sinceAfL exercises just as formative assessment but need to be given feedback on students' mistakes”.

In line with Budiyono, Cooper and Cowie (2010) [7] states that formative assessment is the process used by teachers to recognize and respond to students’ learning but the quality of interactive feedback is a critical feature in determining the quality of learning activity. It turns out in this study that giving feedback on students’ work paper (excellent, good and not bad) and the students’ mistake are not able to attract students’ attention of students of grade XI Science MA Al-Islam Jamsaren. It means that students need to be scored on students’ work paper. Thus, it is needed for corrective action on the first cycle so that the second cycle will be better.
The improvements of action in cycle I was time management on the learning process, such as giving the motivation, giving example of application mathematics in daily life and using question to all students. In the main activity, motivates students to active in discussion and all of students ask to teacher or the others students. After the students collected the answer of AfL exercise, teacher explain or elaborates and briefly discussion as a feedback. In this research, AfL as a feedback in each learning process giving score and criteria such as excellent, good and not bad.

The results of observations and the questionnaire of students’ attention in the cycle II activity using indicator of attention to teachers’ explanation, calm and orderly, answering teachers’ questions, etc. The result of observation and questionnaire of students’ attention percentage can be seen in the Table 2.

### Table 2. The result of observation and questionnaire on students’ attention percentage in cycle II

| Indicators of students’ attention | Observation | Questionnaire |
|----------------------------------|-------------|--------------|
| attention to the teachers’ explanation | 87.88 | 90.34 |
| calm and orderly | 90.91 | 91.48 |
| answer the questions of teachers | 78.41 | 72.73 |
| asking questions to the teacher | 72.73 | 78.03 |
| doing the tasks that are given | 88.64 | 82.95 |
| active in group discussions | 77.27 | 73.01 |
| taking notes of learning materials conclusions | 75 | 82.39 |
| average | 81.56 | 81.56 |

After cycle II actions were implemented by applying collaborative learning model with AfL evaluation through feedback giving strategy, the average percentage of students’ attention has increased compared with the average percentage of students’ attention in the preliminary condition (pre-cycle) and also increased when compared with the average percentage of students’ attention in cycle I. Comparison of the average percentage of students’ attention can be seen in the following Table 3.

### Table 3. Comparison of the average percentage of students’ attention

| The average percentage | Pre-cycle | Cycle I | Cycle II |
|------------------------|-----------|---------|----------|
| Observation result | 46.32% | 64.29% | 81.56% |
| Questionnaire result | 53.82% | 66.10% | 81.56% |

Based on the Table 3 can be seen the increasing of the average students’ attention in every cycle. The increasing of the average students’ attention can be seen in the following diagram.

#### Figure 1. The increasing diagram of students’ attention percentage
Meanwhile for students’ learning success after the implementation of collaborative learning model with AfL evaluation through feedback giving strategy that can enhance students’ attention it was obtained positive results, in cycle I it was obtained the percentage of students whose grades were above KKM reached 50% or as many as 11 students and the percentage of students whose grades were below KKM reached 50% or as many as 11 students. On the results of the test on cycle II, the percentage of students whose grades were above KKM reached 77.27% or as many as 17 students. For the percentage of students whose grades were below KKM reached 22.73% or as much as 5 students.

Students’ achievement in the school year 2013/2014 on derivative materials obtained from the test results on cycle I and II showed better results compared with students’ achievement in 2012/2013 school year taken from the students’ daily test scores. Comparison of percentage of students’ achievement in the derivative materials can be seen in the Table 4.

Table 4. Comparison of percentage of students’ achievement

| School Year | 2012/2013 (%) | 2013/2014 (%) |
|-------------|---------------|---------------|
| ≥ KKM       | 21.62         | 77.27         |
| <KKM        | 78.38         | 23.73         |

The table above shows a fairly significant difference on students’ achievement of derivative passed the passing grade (KKM) in the year 2012/2013 was 21.62% while in 2013/2014 was 77.27%. This indicates that the implementation of the learning model gives better impacts on the learning.

The increase of the average students’ attention on cycle I and II that has a positive impact on students’ learning mastery was achieved after the implementation of collaborative learning model with AfL evaluation through feedback giving strategy. Some improvements of learning steps that occurred in cycle II were made in order to become better. The collaborative learning model with AfL evaluation through feedback giving strategy provides the opportunity for all students to improve the ability to socialize with other friends, the ability to understand the materials, solve problems, and also train the students’ attention. This is the same with Adi [1] that collaborative learning can improve attention. At the time of previous learning, problems such as students could not complete the exercises appeared. The formation of small groups can be trigger students to be able to finish the practice by exchanging opinions during group discussions. When students are having difficulties, students can directly ask other friends and the teacher without any hesitation. In addition, in cycle II after the students presented the results of discussions to all friends and with clarifications of the teacher students better understand what is written by the students in front of the class. So it is expected an increase in the ability of the students in solving exercises that will affect students learning outcomes.

Cooperation between members of group discussions to solve the problem can give positive impacts on students' understanding. Vygotsky's theory in Djamilah [8] states about the importance of social interaction to help students gain a higher level of understanding that can affect student learning outcomes. Therefore, the implementation of collaborative learning model with the AfL through the provision of feedback strategy is one of learning groupmodel by involving students actively during the learning process. This is consistent with Djamilah [8] who said that "collaborative learning is a model of learning group, where students in the group are encouraged to interact and learn together to improve students’ understanding”. Collaborative learning is a strategy in which students work together in small groups and they depend on one another as knowledge-providers instead of expecting the instructor to be the sole source of knowledge [6].

Based on the increase on the average percentage of students’ attention in every cycle it can be concluded that the implementation of collaborative learning model with AfL evaluation through feedback giving strategy can increase students’ attention towards the learning. In addition, based on the test results obtained by the students it can be concluded that the collaborative learning model with AfL evaluation through feedback giving strategy used to improve students' attention towards the learning can give positive impacts on students learning mastery. From the two cycles carried out by
the researchers it is obtained the collaborative learning model with AfL evaluation through feedback giving strategy can improve students' attention with improvements made on the reflection stage result the following stages: 1) opening activity; (A) the teacher delivers the learning objectives and success criteria (b) the teacher provides apperception by reminding previous materials or supporting materials of the materials to be studied (c) the teacher gives the motivation about the importance of the materials in daily life and motivates students to actively participate in every teaching and learning activity 2) main activity; (A) the teacher provides the overview of the learning activities (b) the teacher explains a glimpse of learning materials (c) the teacher divides the students into 4-5 people per group (d) students of the same group discuss to do exercises given by the teacher (e) the teacher monitors and guides students towards the problem solving (f) the teacher gives opportunities to the spokesman of groups to present the results of discussions (g) the teacher classically gives feedback to students related to results of discussions (h) the students go back their seat to do AfL exercises as an individual quiz then the answer sheets are collected (i) the teacher examines and briefly discusses the AfL exercises as feedback giving and the results of the students’ work will be distributed before the next meeting 3) closing activities; (A) the teacher together with the students conclude the lessons learned on that day and give home works (if any). Those are the stages in learning using collaborative learning model with AfL evaluation through feedback giving strategy that have been improved after being put into practice in the first and second cycle which can improve students' attention towards learning and students’ achievement.

4. Conclusions
Based on the results of the research on the implementation of the collaborative learning model with AfL evaluation through feedback giving strategy to improve the students' attention towards Mathematics learning in grade XI IPA MA Al-Islam Jamsaren Surakarta academic year 2013/2014 it can be concluded as follows: (1) Learning process using collaborative learning model with AfL evaluation through feedback giving strategy can increase students attention towards learning with the following steps: opening activities in which the teacher delivers the learning objectives, success criteria, motivation and apperception. Main activities by forming discussion groups then the group representatives present the results of the discussion and the teacher gives feedback as a clarification of the results of the discussion. Afterwards, doing AfL exercises and then the results of the students works will be distributed before the next meeting. Closing activities in which the teacher along with students conclude the learning materials with a question and answer and the teacher gives home works. (2) The implementation of the collaborative learning model with AfL evaluation through feedback giving strategy that can improve students’ attention gives positive impacts on students’ learning mastery.

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