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## Description of the Students Learning Motivation in the Subject of Mathematics Learning Basic and Process Using the Lesson Study

**ABSTRACT:** The learning process, which was made by the model observer lecturers, was success in increasing the students learning process. Based on the result and the discussion of some researchers, it can be concluded that the learning process, in the basic subject of mathematics learning process through applying "lesson study", can help in increasing the learning students' motivation. The learning model modification was done based on the students need. Meanwhile, the role of intrinsic and extrinsic motivations are needed in the learning process. The intrinsic motivation is the encouragement coming from the students themselves, such as the desire and the willingness to be success, the encouragement and the learning need, and the dream of the future. The extrinsic motivation is the encouragement coming from the outside of the students themselves, which are shown by the existence of the reward, the interesting activity, the conducive learning environment in the learning process, so that the students are able to learn well. This research aimed at describing the students learning motivation in the subject of mathematics learning basic and process through applying the "lesson study". The research consisted of 4 cycles, and every cycle consisted of 3 steps, they are "plan, do, and see". The subject of research was the Class D mathematics education study program students of UMP (Muhammadiyah University of Purwokerto) in academic year 2012. The data were got from the observation sheet, video recording, and questionnaire. The data analysis techniques were data reducing, data presenting, and concluding. The research showed that the students learning motivation was different in every cycle and the highest average motivation score was the fourth cycle.

**KEY WORDS:** Learning motivation, lesson study, intrinsic and extrinsic motivations, basic subject of mathematics, and students learning process.

### INTRODUCTION

Motivation is the combination between feeling in grabbing and arising the succeed encouragement (Johnson & Johnson, 1987). Motivation can change the activities that are done by the students in the learning process. The lecturers can't ask the students to study, but they can create the studying motivation by changing the condition of the learning environment and the students' psychology.

By having this motivation, someone can have this encouragement to do something (Hook & Vass, 2000). The arising of the learning motivation can come from the students' subjective experiences, which is connected by the involving of the learning

activities and the reason why they do this thing (Brophy, 2010).

The factors influencing the learning motivation, such as the individuality factor, the class condition, the cultural-social, and the internal factor (Dembo, 2014). Furthermore, these factors can be categorized into two major factors, they are: internal factors and external factors. Motivation coming from the internal factor influence is called as an intrinsic's motivation; meanwhile the one coming from the influence of the external factor is called extrinsic's motivation (Woolfolk, 2007).

Intrinsic motivation is the natural preference to find and to defeat a challenge during someone is trying to chase the

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individual longing (Woolfolk, 2007). When the students are motivated intrinsically, they don't need the appreciation, the punishment, or even the command coming from someone else to do the activity. The motivation coming from the principal willingness or the satisfying toward the success that encourage someone in doing the activity and it comes from the individual involving in doing something is called intrinsic motivation (Cohen & Swedlik, 2005).

In another one, the power that encourages someone coming from the appreciation, such as the salary, the bonus, or even the obstacle such as losing job, embracement in the social live, is called extrinsic motivation (Cohen & Swedlik, 2005; and Arends & Kilcher, 2010). The students will be motivated, when they are given with the choice, are happy in facing the challenge which is suitable with their ability and get the reward consisting the information that is not used as the control.

There are some types of motivation that can be used in the learning process, such as: (1) the score giving; (2) the reward giving; (3) the ego-involvement; (4) the assessment giving; (5) the product showing; (6) the cooperation encouraging; (7) the compliment giving; (8) the warning giving toward the bad students; (9) the competition giving; (10) the learning willingness encouraging; (11) the challenging assignment giving; and (12) the interest arising (Zaim *et al.*, 2009).

Based on the explanation above, it can be concluded that the role of intrinsic and extrinsic motivations are needed in the learning process. The intrinsic motivation is the encouragement coming from the students themselves, such as the desire and the willingness to be success, the encouragement and the learning need, and the dream of the future. The extrinsic motivation is the encouragement coming from the outside of the students themselves, which are shown by the existence of the reward, the interesting activity, the conducive learning environment in the learning process, so that the students are able to learn well. By having the motivation, the students can develop the activities and initiative, can aim and maintain the perseverance in doing the learning activities.

The students should have the learning

motivation in the learning process. The learning motivation is absolutely needed since by having the strong motivation, the learning process will run well and the product will be satisfying. Meanwhile, the class condition in the learning process of Class D at the Study Program of Mathematics Education FKIP UMP (Faculty of Education and Teacher Training, Muhammadiyah University of Purwokerto) in Central Java, Indonesia, in academic year 2012, showed that the students didn't focus, most of the students were passive, and there were only some students who had strong motivation that could be shown by their active participation during the learning process. The problem above should be overcome. In order to encourage the learning motivation, the teachers can foster the students' extrinsic motivation, so that the students can encourage the intrinsic motivation as well (*cf* Suherman *et al.*, 2003; and Aida & Wan, 2009).

### COOPERATIVE LEARNING AND LESSON STUDY

One of the learning processes that can be used to encourage the students learning motivation is the use of cooperative learning. In this learning process, the students can cooperate to learn and to be responsible toward their advancement of cooperative learning (Slavin, 1995; Johnson & Johnson, 2002; and Jolliffe, 2007). The cooperative learning includes the students' small group activity, which works together as a team to solve the problem given and to reach the same goal (Suherman *et al.*, 2003). Moreover, this learning process is often used as the success learning model for the teamwork, which has the heterogeneous members (Sapon-Shevin, 2004; and Dimiyati & Mudjiono, 2009).

There are 5 elements belonging to the cooperative learning, such as: (1) *Positive interdependence*, it is the cooperative bond among the students to reach the common goal and the existence of the bond among the students in a group; (2) *Individual accountability*, it is the individual responsibility in the cooperative learning, that is to help their friends who need helps and also they do not only be a follower for their friends' product; (3) *Interaction*, it is the interaction

among the students in their group to help each other to be success in the learning process; (4) *Interpersonal and small group skill*, it is the ability that asks the students not only to learn the material given but also they should have the interaction with the others in their group, and also how the students act as the member of a group and how to deliver their idea; and (5) *Group processing*, it is the element which believes that the cooperative learning cannot run without the group process (Johnson & Johnson, 2002).

The advantages of the cooperative learning are: (1) positively dependence; (2) the acceptance of the individual differences; (3) the students engaging in planning and managing the class; (4) the relaxing and fun class; (5) the friendship relation between the teachers and the students; and (6) the sufficient chance to express the joyful feeling (Isjoni, 2010).

It can be concluded, from the explanation above, that the cooperative learning is one of the methods focusing on the students center emphasizing the collaboration among the groups aiming at the success learning product for the individual or group as well. By having the responsibility, it is hoped to encourage the students learning motivation to grab the common succeed.

The quality of the learning can always be controlled and also be risen by doing the planning, applying, and evaluating continuously. The lesson study is one of the ways to rise the quality of the learning, since it has 3 steps: plan, do, and see. The lesson study applies the leaning community concept that motivates each other to learn more knowledge (Syamsuri & Ibrohim, 2012). Besides, the lesson study is a method for analytical case for the learning process in order to help the professional development for the teachers and give the chance for the teachers to help each other in learning process in the class (Kemendiknas RI, 2012).

The advantages of the lesson study, as an alternative way to heighten the learning process, are: (1) the implementation of the lesson study based on the professional knowledge taken from the practice and the learning result; (2) focusing of the students learning quality; (3) the learning aim becomes

the main focus; (4) used as the learning development; and (5) making the teachers as the learning research (Syamsuri & Ibrohim, 2012). Another advantage of the lesson study is having a role to develop the learning system and the teacher's professionalism (Susilo *et al.*, 2009).

The Mathematics learning basic and process is one of a compulsory subject that should be taken by the students at the Study Program of Mathematics Education FKIP UMP (Faculty of Education and Teacher Training, Muhammadiyah University of Purwokerto) in Central Java, Indonesia, in the fourth semester. This subject consists of the material about how to plan a Mathematics learning process in the high school based on the valid curriculum in that time. The used curriculum is Curriculum 2013, so that it can motivate the students since this curriculum is a new curriculum and the students do not get the material of this curriculum yet from the other subjects.

#### AIM AND METHOD OF THE RESEARCH

The aim of the study is to help in developing the students' motivation of the Class D at the Study Program of Mathematics Education FKIP UMP (Faculty of Education and Teacher Training, Muhammadiyah University of Purwokerto) in Central Java, Indonesia, in academic year 2012 using lesson study. The learning model that was used in the first meeting was the cooperative learning model. The model was used in the next meeting was the modification of the cooperative learning model that was suited by the result of the cycles in the step of lesson study.

This research belongs to the qualitative description research based on the lesson study learning step. This research was conducted on the even semester in academic year 2013/2014 in the UMP (Muhammadiyah University of Purwokerto) in Central Java, Indonesia. The subject of the research was the fourth semester Class D students at the Study Program of Mathematics Education FKIP UMP in year 2012, who studied the process basic of Mathematics learning subject on the even semester in academic year 2013/2014.

The research implementation was conducted in 4 cycles, with the steps of the cycles were:

*First, Plan.* This step aimed at planning the learning process, so that it can give the solution toward the problem and the events happened in the learning process done by the role lecturer. The model lecturer and four observer lecturers plan the learning process. Before doing the plan, the model lecturer gives the teaching instruments to the observer lecturers and, then, the instruments are evaluated. The teaching instruments consist of lesson plan, class seat layout, learning observation sheet, and learning motivation observation sheet. The learning process focuses on the students in order to encourage the students learning motivation.

*Second, Do.* This step aimed at implementing the learning process using the plan that has been made in the previous step. In this step, the model lecture implement the learning process based on the evaluation from the first step. The handbook for the model lecturer and the students in the learning process is lesson plan, which is agreed in the first step. In this step, the role of the observer is to take note the student's activities, which take the attention and take note the students learning motivation improvement. The guide for the observer in doing this observation is the class seat layout of the students, lesson plan, the learning observation sheet, and learning motivation observation sheet.

*Third, See.* This step aimed at to do the reflection and evaluation toward the learning implementing in the second step. This step begins with the explanation from the model lecturer of what he/she did in the learning process. The model lecturer gives the self-reflection about what he/she has felt and what has happen during the learning process. He/she gives the obstacles which were got in the learning process. The next activities in this step are continued by giving the explanation by the observer lecturers of what they have been found in the learning process in the second step. The finding may be the positive and the negative as well toward the learning process and the students learning motivation.

*Fourth, Suggestion.* The next activity in this

step is the suggestion giving from the observer lecturers toward the problems happen. The suggestion, moreover, will be made in the form of lesson plan by the model lecturer and then it is used as the evaluation substance in the "plan" step for the next cycles.

The data collection techniques, which are used, are following here:

*First, Observation.* The observation is conducted during the learning process in which in the "do" step. The observation is done by four observers lecturer. The observation guides, which are used, are the learning process observation sheet and the learning motivation observation sheet. The observation sheet consists of some questions about the learning process, the students learning motivation, and the finding by the observers during the learning process.

*Second, Questionnaire.* The questionnaire is given to the students in order to know the students learning motivation after the learning process. The questionnaire that is used consists of some closed questions to describe the intrinsic and the extrinsic motivations of the students. The questionnaire is filled by giving the check mark in the column given based on the suitable answer of the students. The column consists of 4 types of scores, such as: score 1 means that it's never done; score 2 means that it's rarely done; score 3 for often; and score 4 for always.

*Third, Documentation.* The documentations, which are used, are in the form of video, photograph from every steps "plan, do, and see". The data which is got will be analyzed qualitatively using the data reduction, data presenting, and concluding. The data reduction is directed to the students activities connected to the learning motivation and the new findings which are interested in the learning process. The result of the data reducing, then, is shown in the data presenting in the form of a picture or some explanation. The next step of analysis is making the conclusion by considering and joining all of the data.

## THE RESEARCH RESULT AND DISCUSSION

Based on the research, and it was got the data, which were about the learning



**Table 1:**  
The Changing of Learning Model Step

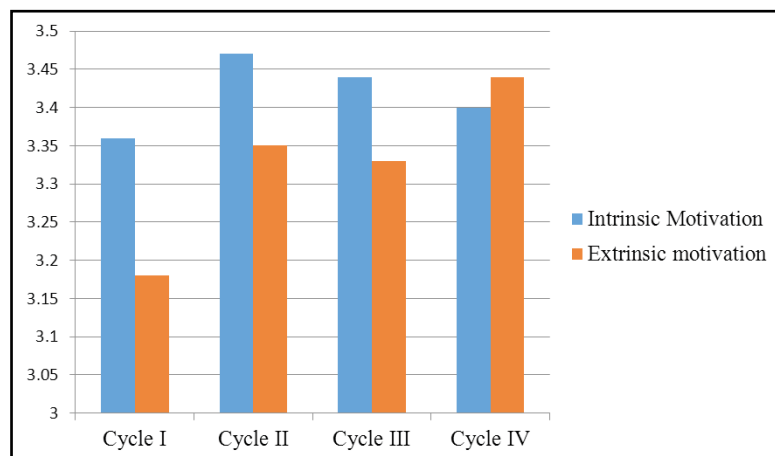
Cycles	Changing of Learning Model
Cycle I	<ol style="list-style-type: none"> <li>1. The discussion form was decided by each groups. There were 2 forms of discussions, they are 2-3 students coupled form and a group (5 students, one student as the speaker and 4 others as the audiences).</li> <li>2. The presentation was done randomly. The role of the presentation was that the group who had been chosen randomly would present their paper pair.</li> <li>3. Each of the learning process consisted of 2 presentations in which the drawing of cycle I was done in the beginning of the learning process.</li> </ol>
Cycle II	<ol style="list-style-type: none"> <li>1. The drawing of the second group was done after the presentation of the first group.</li> <li>2. The form of the group discussion was done in pair.</li> <li>3. It was done by arranging the seat position and the discussion pair member.</li> </ol>
Cycle III	It was given an ice-breaking activity as the interlude during the discussion.
Cycle IV	<ol style="list-style-type: none"> <li>1. Before the learning process, the students were asked to make a mind mapping.</li> <li>2. The ice-breaking was done once that was after the first presentation was done, before the second presentation would be done. The ice-breaking was given in the form of physical activity guided by the lecturer.</li> </ol>

motivation of the students and the solution given to overcome the problem risen in every cycles. The data taken from the questionnaire about the students learning motivation are presented in figure 1.

The learning model changing was done in every learning process, as shown in table 1.

The description of the students learning motivation was summarized based on every cycle in the learning process done. The description of the students learning motivation in every cycle is given as follows:

**Cycle I: Plan.** The main discussion in this step for cycle I was the learning process model that would be implemented in the step “do”. The learning process, which was implemented, was the cooperative learning process which had been modified. The modification was located in the discussion section. It was done in order to know the students condition and the motivation toward the learning process. The next modification was in the discussion presentation outcome. The material which was presented by the students came from the partner of every student, so they didn’t present their own material. It meant that the students could be motivated in doing the discussion, besides they were given a chance to learn their



**Figure 1:**  
The Average of the Students Learning Motivation Based on the Questionnaire

own material and their partner’s material as well.

**Do.** The action done in the step “do” was suited with the lesson plan which was made, but there were some students who still needed more explanation about the learning process. It was caused by the use of this new learning process for the students, so that they needed more time to adapt it. There were two forms of discussion rising during the learning process. The first form was done in pairs; and the second one that was done in a group with one student became the leader in the discussion, meanwhile the others would respond to it.

**See.** The student’s motivation could be considered as good in a whole, but there were

some students who still needed more attention. The discussion of pairs 1 and 5 were done by some students only, meanwhile the other students were passively became the listeners. For example, during Dyah Ratna did the presentation, Eddo just kept silent. The more explanations for every indicator were presented as follow:

*First, the existence of willingness to be success.* Most of the all groups had the eager to succeed. It could be seen from the students who were very active during the discussion, not only in the group but also in the class discussion. In the contrary, in the end of the learning process, Widan and Bangkit were doing their own conversation instead of paying attention to the material, even their seat were far each other. Taken from the students' questionnaire, this indicator belonged to good criterion.

*Second, the existence of the encouragement and the necessity of learning.* Almost all of the students were motivated actively to give their opinions, or to have a discussion, and then to take note the result of the discussion in the learning process. Taken from the students' questionnaire, this indicator belonged to good criterion.

*Third, the existence of hope or future dream.* The students also had their hope or their own dream to reach. For instance, Arum wanted to know in solving the obstacle of the Curriculum 2013 implementation, moreover they also wanted that this curriculum could be implemented maximal. Despite of it, there was a student who was passive and didn't have any hope and it could be seen from his/her act during the learning process which was lazy and didn't seem enthusiastic. Taken from the students' questionnaire, this indicator belonged to very good criterion.

*Fourth, the existence of reward in the learning process.* The reward was given to the students who were being active or giving their opinion by giving them the additional point based on the name and the students number mentioned. Taken from the students' questionnaire, this indicator belonged to good criterion.

*Fifth, the existence of the interesting activity in the learning process.* This activity

was considered as the interesting activity by the students, who liked to give their opinion since they would have a chance to give their opinions or their ideas. In the contrary, for the students who were passive, this activity was not interested to them. They would be active when the lecturer asked them to give their opinions or ideas. Taken from the students' questionnaire, this indicator belonged to good criterion.

*Sixth, the existence of the conducive learning environment.* The good environment would give the students the chance to experience the good learning process. Moreover, this environment gave the wide chance for the students to develop their skills, beside in mastering the learning material. The learning processes were so various, such as having one presenter in a group (Dyah and Eko); doing face to face (Dona and Arum); and doing discussion (Windarti, Ita, and Yuni). The learning environment was shown surprisingly in this cycle. Taken from the students' questionnaire, this indicator belonged to good criterion.

*Cycle II: Plan.* The changings, were done in the cycle II, were: (1) the second drawing of the group, which would do the presentation, would be done after the presentation of the first group; (2) during the discussion session, the students who delivered the question and also answered it, were asked to stand; (3) group discussion was done in pair, since in a big group there were some students, who were not actively involved in the learning process; (4) there were some students who still needed more attention, such as Fuad, Eddo, and Nur Arif; and (5) the lecturer arranged the students seat and the discussion partner.

*Do.* There were some groups that weren't suit with the model lecturer's command. The groups, which didn't do the pair discussion, were group 2 & 6 and group 3 & 4. The students, who needed more attention, had become more active in the discussion, such as Nur Arif and Eddo, moreover Fuad could speak actively even still reading the summary. The effort of the lecturer, in trading the member of the group, showed the significant result to Fuad, and the students who were not actively involved in the learning process. There

was a student who needed more attention in this cycle, named M. Arif. M. Arif was similar with Fuad in delivering the material, in which both of them were reading the material without understanding what they explained about. It could be seen when they looked so confuse to follow the discussion session.

*See.* The student's motivation in this step was better than the first cycle. The further explanations in every indicator were presented as follow:

*First, the existence of willingness to be success.* The students had the eager to be success and it could be seen from the students who were actively involved by delivering some questions to the presenter. The students' questionnaire showed that this indicator was considered as good.

*Second, the existence of the encouragement and the necessity of learning.* This condition could be seen from Diah, the student who gave the idea to complete the answer, and also the other students also gave their opinion during the discussion.

*Third, the existence of hope or future dream.* Many students were involved actively in the learning process, despite of it, there were some students who did their own conversations, such as Yuni and Retno. The students' questionnaire showed that this indicator was considered as very good.

*Fourth, the existence of reward in the learning process.* The rewards given were the applause and the additional score for the students who got involved in giving their opinion.

*Fifth, the existence of the interesting activity in the learning process.* The interesting activity, which was done, was showing the report of the discussion about the students who delivered their opinions or ideas without the request of the lecturer.

*Sixth, the existence of the conducive learning environment.* The good environment would give the students the chance to experience the good learning process. It could be seen from the act of the students who were enthusiastic and the ability they had in following the learning process. Then, the condition became different when the second presentation began. The enthusiasm of the

students, during the second presentation, was lower than the first presentation. It might happen because the students felt boring.

*Cycle III: Plan.* In this cycle, there was a different from the previous cycles. It was given the ice-breaking in the discussion session as the interlude. The ice-breaking consisted of the physical activities, which were guided by the lecturer and the video which was shown in the front of the class.

*Do.* The group discussion had been done in pair. There was a student who was lack of concentration named Indah. The implementation of ice-breaking run well, but it didn't work when it used the video. After watching the video, the students didn't focus on the learning process, they still were attracted with the video. The video, which was watch, was about the mistakes done in the Senior High School learning process.

*See.* All of the indicators in the learning process were done appropriately. The students' motivation in delivering their opinions was rising. There was a student who was lack of concentration named Indah, because she was lack of preparation in attending the learning process. It could be seen that in the group discussion, she always read the material from her laptop.

If the students' answer was not appropriate with the learning aim, the lecturer would ask other students to deliver their opinion and also would deliver her/his opinion to complete the answer. All of the discussion sessions run well, but one discussion which was done after the second ice-breaking and the video watching was not run well. It happened because the video watched decreased the students' concentration in the learning process.

*Cycle IV: Plan.* In this step, it was given the innovation by asking the students to make mind mapping as homework. So that the students would not read their material, but they would read their mind mapping during the discussion session. The ice-breaking was done once only, and it was done after they had the first presentation before they did the second presentation. The ice-breaking was physical activities guided by the lecturer.

*Do.* The students were motivated to give their opinion. Even Indah was also motivated

in the discussion session. The mind mapping of the students could help them in the discussion session.

*See.* All of the indicators of the learning motivation were done appropriately. The students were actively involved in the learning process. Based on the students' questionnaire, there were six questions given to the students and they belonged to very good. The activity, which needed to be modified, was the mind mapping making. Some of the students didn't make the mind mapping appropriately, moreover some of them still made it in the form of material summary.

## CONCLUSION

The learning process, which was made by the model observer lecturers, was success in increasing the students learning process. Based on the result and the discussion of the research, it can be concluded that the learning process in the basic subject of Mathematics learning process, through applying "lesson study", can help in increasing the learning students' motivation. The learning model modification was done based on the students need.

This research gives some suggestion for the teachers and the lecturers to concern about in the learning process, they are: (1) the lecturer should give attention to the students consistently; and (2) the learning model modification must be done continuously.<sup>1</sup>

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<sup>1</sup>*Statement:* Herewith we declare that this article is our original work, not product of plagiarism, and not yet also be reviewed and published by other scholarly journals.