

A Development Model of Lesson Study-Based Social Science Teachers at Muhammadiyah Schools in Sukoharjo Regency, Central Java, Indonesia

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Abstract: The study aims to analyze and describe a development model of lesson study-based social science teachers, lesson study validation as a development model of social science teachers and a development model of lesson study implementation as a development model of social science teachers. It used a qualitative phenomenological approach and it was located at Muhammadiyah Schools of Sukoharjo regency, Central Java, Indonesia. The study was included in the action class research. The subjects of the study were the students, teachers, principals, head of educational agency, members of the regional house of representatives. The techniques of the data gathering employed the observation, documentation and in-depth interview. The technique of the data analysis applied the first order understanding dan second order understanding. It could be concluded that a development model of social science teachers used a modified lesson study approach, a lesson study validation employed two validations: closed and open classes and a development model of lesson study implementation applied four approaches) a four-stage and three-circle, scientific, active, cooperative, collaborative and comfortable learning and) teachers' competency.

Key words: Development, teachers, lesson, study, validation, model

INTRODUCTION

Since its inception in 1959, the International association for the evaluation of Educational Achievement (IEA) has conducted a series of international comparative studies designed to provide policy makers, educators, researchers and practitioners with information about educational achievement and learning contexts and The Third International Mathematics and Science Study (TIMSS) is the largest and most ambitious of these studies ever undertaken. The scope and complexity of TIMSS is enormous. Forty-five countries collected data in <30 different languages. Five grade levels were tested in the two subject areas, totaling more than half a million students tested around the world Beaton (1996) summarize the major findings described in this report. Student's mathematics achievement T: Singapore was the top performing country at both the eighth and seventh grades. Korea, Japan and Hong Kong also performed very well at both grades as did Flemish-speaking Belgium and the czech republic. Lower-performing countries included colombia, kuwait and South Africa.

The Third International Mathematics and Science Study (TIMSS) also perform (of comparing) the achievements of mathematics with and natural science

learning of Class 8 (Class 2 of Junior High School). In 1995 a lesson study development throughout the world referred to TIMSS. Forty one countries were involved in TIMMS. An average score of mathematics in the twenty one of the countries was significantly higher than that in the United States, South Africa, US Department of Education (Williams *et al.*, 2000).

Since 1998 an Indonesian lesson study development through the Indonesian Mathematics and Science Teacher They are Singapore, Japan, Canada, France, Australia and Ireland but an average score of mathematics in the United States was higher than that in Lithuania, Cyprus, Portugal, Iran, Kuwait, Colombia and Education Project (IMSTEP) has been implemented at three Institutes: Bandung Teacher and Training Education Institute (or nowadays called Indonesian Education University), Yogyakarta Teacher and Training Education Institute (or nowadays called Yogyakarta State University) and Malang Teacher and Training Education Institute (or nowadays called Malang State University). They have cooperated with the Japan International Cooperation Agency (JICA). It aims to develop the qualities of mathematics and natural science education in Indonesia in general and at three Institutes in particular (Herawati, 2009; Susilo *et al.*, 2009). The above description raises "perception" of some teachers that it

lesson study is only suitable as a model for mathematics and science teacher guidance only and is not suitable for non matematika teacher coaching model and IPA. According to Ali Murtadho (a social science teacher of Muhammadiyah Sukoharjo SMK Vocational School), "he said that I am a social science teacher that wants to understand a lesson study but a lesson study-based teacher development at the school is merely intended to mathematics and natural science teachers whereas it can be viewed as a professional educator development model. It means that it can be useful for a development model of social science teachers. I ask the principal to develop it to other educators such as language, religious and social science teachers."

It can be inferred that the lesson study as a development model of professional educators can be implemented to all the teachers with such courses as social science, religious, pancasila (indonesian state ideology) and civics education, language, art and culture, handicraft and sport and healthy educations that are intended to improve a low quality of education in Indonesia.

Likewise, Yuni (a civics education teacher) suggests that a lesson study-based learning is not only useful for mathematics and natural science teachers but also for other teachers. It means that all teachers of courses may get training in a lesson study-based learning. Therefore, it is necessary to examine a development model of Indonesian teachers through the research entitled a development model of lesson study-based Social Teachers. It will be helpful to give academic information of whether the lesson study will be reasonable to mathematics and natural science teachers and others or not. In addition, it will be meaningful for overcoming a low quality of Indonesian education.

A development model of lesson study-based teachers is essential because in strategic planning of the indonesian ministry of national education from 2010-2014, it is stated that in comparison with other countries throughout the world education that can be seen as an aspect of determining Human Development Index (HDI) has not raised the Indonesian HDI level. Among the ten countries with medium level of HDI, Indonesia was the lowest in 2010. It is due to the educational problems of HDI indicators such as illiteracy, length of study, mortality of mothers and children and income per capita that could be solved more seriously in the countries than in Indonesia.

The stated the comparison of the access and quality of education achievements in such countries as Japan, Korea, Hong Kong, Australia, Thailand and Indonesia. The Indonesian education only achieved a low cognitive

level of remembering, understanding and applying and high cognitive level of analyzing and evaluating and creating as a very low cognitive level (Ditjen, 2013). Therefore, it indicates that a low quality of Indonesian education may include as follows) the learning process is confined to instructional materials to be memorized and affective development but it is low in cognitive aspects such as analysis and evaluation and learning independence). The students take a low role in learning process and instructional materials or knowledge they take are less beneficial for their daily activities and jobs) The instructional materials are less consistent to their study, survey and long-term needs). The teachers have employed a learning method monotonously). The curriculum review does not take a positive impact on changes in approaches, instructional materials, methods, strategies and learning media). Most of the learning competencies are limited to a low cognitive level.

The low learning is due to some factors) in general, the teachers prepare and carry out learning independently. If there is a creative and innovative teacher, it will not take an effect on others because there is no idea sharing among the teachers; so, if there is any retired teacher, the creativity and innovation will also be extinct) The teachers behave very egoistically. They generally feel literate in everything and are difficult to adopt insights of learning improvement although they see that there is no perfect learning method and it can change anytime for improvement) The development model of teachers has been in theoretical or material analysis but it has never been implemented at schools.

An Indonesia education reformation of all levels or grades must be developed by both a local and central governments and integrated community. The reformation is a long-term process to encourage the actualization of competitive nation. Therefore, the teachers' mindset needs to be improved so that it can make them collaborate and share with others and develop learning. A lesson study as a development model of professional teachers is an alternative way of teachers' mindset improvement.

Most Japanese schools have a school-based training system called *jugyou kenkyuu* (lesson study). *Jugyou kenkyuu* is collaborative research done at the school level on the teaching-learning process using practical quality circles and involves such activities as questioning, planning, acting, observing, reflecting and re-planning. *Jugyou kenkyuu* has a very significant effect on developing teachers' competencies, improving quality of teaching, promoting school change, enhancing student learning, and in recognizing teachers' common stake in the future of the school

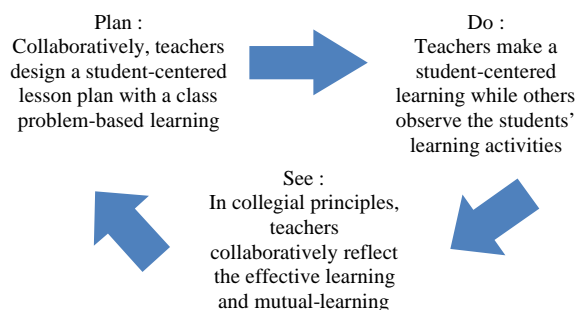


Fig. 1: Lesson study-based learning cycle (Saito *et al.*, 2006)

system. Moreover, for most Japanese teachers, learning and teaching is traditionally collaborative work and the most effective kind of in-service training is where ideas and experiences are shared and reflection is accomplished through discussion in small groups and networks (TCSAA, 2006).

Jugyou kenkyuu (lesson study) it is a model case analysis of learning activities that aims to help develop the professionalism of teachers and give them the opportunity to learn from each other on the basis of real activity in the classroom. Like the in Japan, lesson study as a development model of teachers are said to be very effective and can increase the professionalism of teachers and quality of education. For Japanese teachers, it can be used as a development model of teachers continually where they analyze lesson plans, activities, observations and reflections collaboratively. This model motivates students to take an active in collaborative learning while teachers try to make students familiar with the “learning”.

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Lewis (2002) stated that the essential lesson study can briefly and simply be described as follows: if a teacher

wants to improve learning, he or she may collaborate with other teachers to make lesson plan, observation, reflection and evaluation of learning. In other words, the term lesson study is a development model of professional teachers through analysis of collaborative and continual/sustainable learning on the basis of collegial principles and mutual-aid for building learning community. The term is a systematic process that is used by teachers for testing effective learning and learning improvement. The process is intended to actualize teachers’ jobs collaboratively for developing lesson plan, learning, observation, reflection, evaluation and revision (Lewis, 2002). In more details, the term lesson study consists of seven keywords: profession development, learning analysis, collaboration, continual, collegiality, mutual learning and learning community. It aims to develop educators’ profession continually so that it will be able to improve the quality of the profession continually. If it will not be realized, it is assumed that the quality of teachers’ professionalism will be falling.

Nevertheless, what is the system of development. In learning analysis, a development system of teachers is conducted collaboratively, continually and periodically, for example per week or twice a week because learning culture means facilitating its members in mutual-learning, mutual-correction, mutual-prevention of ego, mutual respecting and mutual-aid.

Building a learning culture takes a long time: how long is it? It is unlimited time; it is assumed that the longer is the better because there is no perfect learning; it must be the time to improve. Therefore, learning must be analyzed continually so it will be better in quality; teachers must get any training, so they will be more professional. The learning analysis is intended to find any solution to learning problem so that it will increase learning process and finally, it will produce its quality

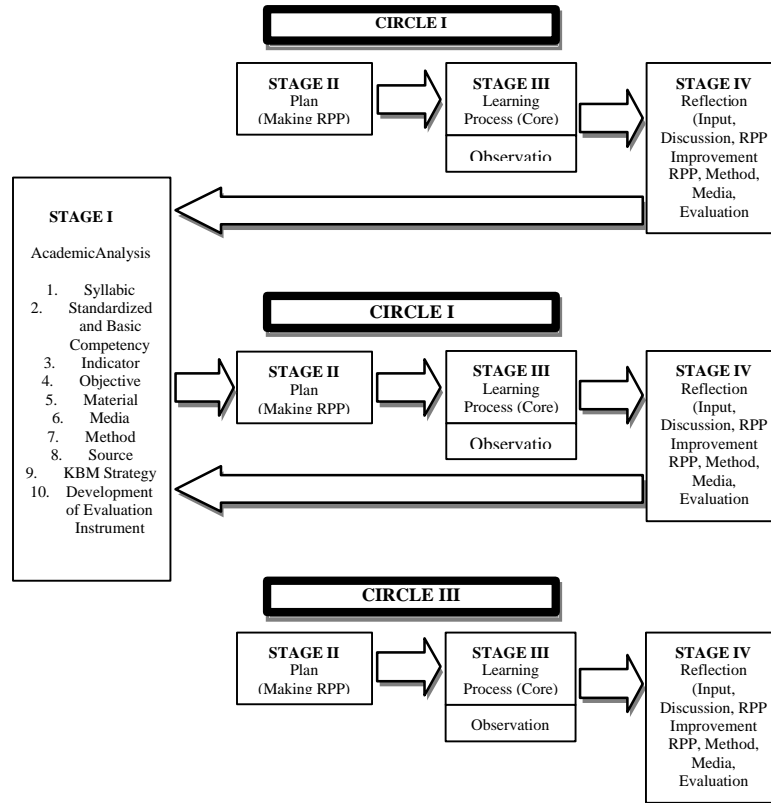


Fig. 2: Modified lesson study: subadi's model

improvement. It is necessarily seen that the object of learning analysis includes: instructional materials, students' work sheet, learning approach model strategy method, learning media, assessment instrument and so on.

Why must the learning analysis be collaborative? It will generate more insights, thoughts, knowledge, ideas and opinions; finally, they will greatly help increase the learning quality. It is thought that in his or her ideas, learning preparation seems good but when there are other ideas and opinions, it appears that there is something false. Therefore, the other ideas and opinions can improve learning qualities of preparation, process and outcome.

Collegial principles and mutual learning in a collaborative system, teachers can't be said to be the superior or the inferior when they employ a lesson study-based learning but they intently take a mutual-learning activity or share learning activity with one another. Those with more knowledge must share with those with less knowledge but those with less knowledge must share with less knowledge. Or, those with more knowledge must transfer it to those with less knowledge. The activities of learning analysis will develop a learning culture if it is implemented in the class at all educational levels (primary, junior, high, vocational schools and higher education), so it will improve an Indonesian

education quality. Therefore, the problem statements of the study include) what is a development model of lesson study based social science teachers) what is a lesson study validation as a wide development model of social science teachers; and) what is a development model of lesson study implementation as a development model of social science teachers for enhancing quality and professionalism at Muhammadiyah Schools of Sukoharjo regency, Central Java, Indonesia?

The study aims to analyze and describe) a development model of lesson study-based social science teachers) a lesson study validation as a wide development model of social science teachers; and) a development model of lesson study implementation as a development model of social science teachers for enhancing quality and professionalism at Muhammadiyah Schools of Sukoharjo regency, central Java, Indonesia.

MATERIALS AND METHODS

The research used a phenomenology descriptive qualitative method with a socially-defined paradigm in micro analysis. The paradigm will provide individuals as a research subject that interprets questions in the study. The research design used a lesson study-based class

research action. The lesson study circle employed a class action research modified with Subadi *et al.* (2013) as described in Fig. 2. The study was located at Muhammadiyah Schools of Sukoharjo regency, Indonesia. The subjects of the study included three groups of social, civic education and Indonesian language teachers. Each teacher represented his or her group as a model for taking a three-time teaching training while other teachers served as an observer. The informants included the students, teachers, principals, heads of Education Agency, members of the House of Representatives and lecturers. The techniques of data gathering were observation, test (question) and in-depth interview.

The observation technique was employed to examine the activities in the classes while the test methods were used to obtain the scores of students' learning outcomes. The researchers interviewed teachers, principals, education supervisors, members of Parliament and lecturers (experts) to find a development model of lesson study-based social science teachers) a lesson study validation as a wide development model of social science teachers and) a development model of lesson study implementation as a development model of social science teachers for enhancing quality and professionalism at Muhammadiyah Schools of Sukoharjo regency.

An interview process used the first order understanding and second order understanding approach where the researchers gave any chance of the individuals as a research subject or informant to interpret the questions asked by the researchers. Then, the researchers understood their interpretations for finding their accurate meaning but the researchers' understanding may not be opposite to the first interpretation (Berger *et al.*, 2002). The technique of data analysis applied an interactive model, including data reduction, data display and conclusion verification (Subadi *et al.*, 2013)

RESULTS AND DISCUSSION

A development model of lesson study-based social science teachers: A development model of social science, civic education and Indonesian language teachers at Muhammadiyah School of Sukoharjo regency employs a modified lesson study model of four stages in three cycles) academic analysis) plan and) do (observation) and) see (reflection, discussion, evaluation and revision). A 2013 curriculum-based development model of the teachers (Ali Murtadho, Yuni and Munawaroh uses a scientific approach of these steps observing, questioning, experimenting, associating and communicating cooperating networking. It focuses on a student-centered learning where the students take an active role in observation) a multi-interactive learning between teacher

and students, students and students, teacher and instructional materials and students and instructional materials) a multi-media learning,) a real-context learning, a team-based learning,) a cooperative learning and) a critical learning where the students think creatively.

The modified lesson study development model takes some impacts on) a significant difference between before and after the lesson study use. Furthermore, it can be described as follows) for the social science teacher, it increases from 42-67% (at cycle 1), 73% (at cycle 2) and 80% (at cycle 3); b) for the civics education teacher, it increases from 40-72% (at cycle 1), 79% (at cycle 2) and 81% (at cycle 3); c) for the Indonesian language teacher, it increases from 47-76% (at cycle 1), 80% (at cycle 2) and 83% (at cycle 3) A development of the teachers' competence with the indicators include employing a more complete lesson plan, IT-based learning, multi-interactive learning, a multi-methods learning, a student-centered learning, a collegial-tutor operating, a collaboration of in-cluster teachers of course, an improved preparation of the student's learning, a reflection-based learning process and an evaluation development.

Validasi lesson study as a development model of social science teachers: There are two validations of lesson study-based learning as a development model of social science teachers: closed-class and open-class. The former refers to testing the implementation of lesson study-based learning to the teachers with learning in a fewer observers where it is restricted to the teachers with the same course. The later refers to testing the implementation to the teachers with learning in more observers where it is unlimited to the teachers with various courses Fig. 3 the open-class validation.

A development system of lesson study implementation as a development model of social science teacher: A development system of lesson study-based learning as a development model of social science teachers at Muhammadiyah Schools of Sukoharjo regency employs four approaches) a four-cycle approach of three stages with collaboration and peer teaching) a scientific approach of three steps (introduction, core and closing), PAKKEM (learning, active, cooperative and comfortable) approach and) competency approach (teachers' competence).

First, the four-stage approach includes) academic analysis KI, KD, indicator, objective, instructional materials, approach, model and method, media, facilitates and sources, learning activities and evaluation) plan (products): lesson plan and appendixes (development of instructional materials and students' work sheet, instruments of attitude, knowledge and skill evaluations;



Fig. 3: Reports the open-class validation

do (action and observation): introduction, core and closing and d) see (reflection, discussion, evaluation and revision). The three cycles covers cycles 1-4 and so forth.

A scientific approach of three steps comprises introduction, core and closing. The introduction consists of orientation, motivation, apperception and objective. The core includes observing, asking, comprehending, trying and building a network. The closing comprises conclusion, reflection, evaluation assignment and follow-up.

Second, The PAKKEM (learning, active, cooperative, collaborative, effective and comfortable) approach uses a learning model of PjBL (Project-Based Learning), PBL (Problem-Based Learning), DcL (Discovery Learning) and so forth. These approaches are intended to create a class as a heaven for students.

Third, A competent approach consists of pedagogic, social, professional and personality aspects with the four approaches, the findings of the study show that a

development system of the implementation of the lesson study-based as a development model of social science teachers at Muhammadiyah Schools can significantly improve preparation quality and learning process. The indicators can be describes as follows) the teachers collaborated with one another when they make a lesson plan with the four appendixes: development of instructional materials and student's work sheet (LKS), attitude, knowledge and skill). The teachers collaborated with one another by using multimedia). The teachers collaborated with one another by using a proper learning strategy such as a problem-based learning). The teachers collaborated with one another by using a scientific approach, including observing, questioning (asking), trying, analyzing, presenting, making a conclusion and building a network) The teachers collaborated with one another by scoring in consideration with complete, authentic, continual, criteria-based learning characteristics and by using a variety of evaluation techniques (Fig. 4). A discussion of a development model of social science

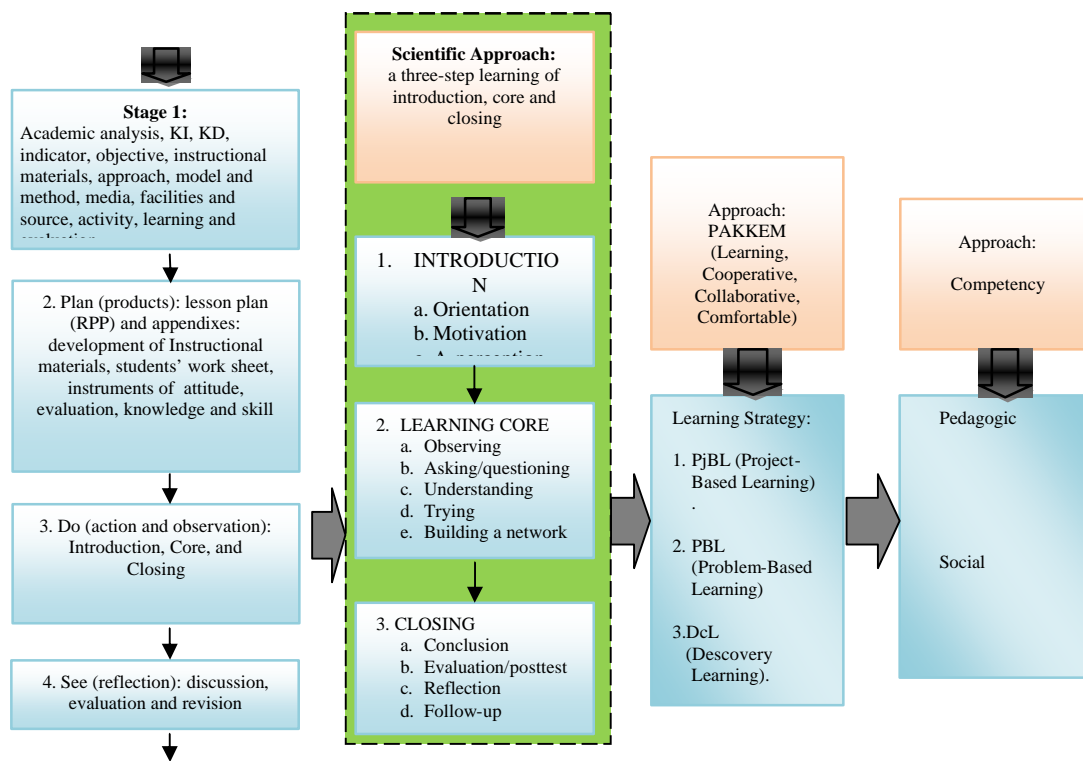


Fig. 4: An Accompanying model of social science teachers Subadi's Model

teachers uses a modified lesson study. The model covers four stages of three cycles. The stages include an academic analysis, plan and solution, action and observation and reflection, evaluation and revision. The cycles comprise cycle 1-3. The modified lesson study works more effectively as a development model of professional teaches as suggested by Thompson (2007) his research entitled *Inquiry in the Life Sciences: The Plant-in-a-Jar as a Catalyst for Learning.* In conclusion, the results of the study showed that the teachers tried to change a learning system (modified learning pattern). It means that they must be creative and innovative in learning process. The teachers used any method for conveying or transferring instructional materials of the given KD so that a learning process operates more comfortably. The teachers employed a learning model as a reference to the students. Furthermore, Thompson suggested that the essential-professional development of the more creative and innovative teachers could produce comfortable and democratic learning.

A discussion of lesson study validation refers to two approaches closed-class and open-class. In his research entitled *A Model for Teacher collaboration* (stated that the best way to complete a positive improvement at each class level of school is adopting a validated learning model. A discussion of a development system of the

lesson study-based learning as a development model of social science teachers at Muhammadiyah Schools of Sukoharjo regency applied three approaches, including) the four-stage approach of three cycles operated collaboratively and in peer teaching) a scientific approach of the three-step learning: introduction, core and closing, PAKKEM (learning, active, cooperative, collaborative and comfortable) approach and teachers' competence and) competency indicators (social, pedagogic, professional and personality competences). It is consistent to the results of the research by Subadi *et al.* (2013), describing the development model design of teachers plan stating. Furthermore, it is stated that a development model of lesson study implementation employed four development systems: lesson study-based collaboration cycle, a scientific learning approach, active, innovative, creative, effective and comfortable approach with learning strategies: Project-Based Learning (PjBL), Problem-Based Learning (PBL) and Discovery Learning (DcL).

CONCLUSION

First, A development model of lesson study-based social science teachers employs a lesson study modified with four stages of three cycles. The stages include an

academic analysis, plan and solution, action and observation and reflection, evaluation and revision. The cycles cover cycle 1-3. Second, there are two validations of lesson study as a development model of social science teachers: closed-class and open class. Third, A development system of the implementation of lesson study-based learning as a development model of social science teachers at Muhammadiyah Schools of Sukoharjo regency uses four approaches) The four-stage approach includes academic analysis: KI, KD, indicator, objective, instructional materials, approach, model and method, media, facilitates and sources, learning activities and evaluation; plan (products): lesson plan and appendixes (development of instructional materials and students' work sheet, instruments of attitude, knowledge and skill evaluations; do (action and observation): introduction, core and closing and see (reflection, discussion, evaluation and revision. The three cycles covers cycles 1-4 and so forth). A scientific approach of three steps comprises introduction, core and closing. The introduction consists of orientation, motivation, apperception and objective. The core includes observing, asking, comprehending, trying and building a network. The closing comprises conclusion, reflection, evaluation/assignment and follow-up) The PAKKEM (learning, active, cooperative, collaborative, effective and comfortable) approach uses a learning model of PjBL (Project-Based Learning), PBL (Problem-Based Learning) and DcL (Discovery Learning). The PAKKEM (learning, active, cooperative, collaborative, effective and comfortable) approach uses a learning model of PjBL (Project-Based Learning), PBL (Problem-Based Learning) and DcL (Discovery Learning) A competency approach consists of pedagogic, social, professional and personality aspects. (A Development System can be seen in Fig. 2. a development model of social science teachers: Subadi's model).

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building a network). The teachers collaborated with one another by scoring in consideration with complete, authentic, continual, criteria-based learning characteristics and by using a variety of evaluation techniques. The modified lesson study development model takes some impacts on) a significant difference between before and after the lesson study use. Furthermore, it can be described as follows) for the social science teacher, it increases from 42- 67% (at cycle 1), 73% (at cycle 2) and 80% (at cycle 3); b) for the civic education teacher, it increases from 40-72% (at cycle 1), 79% (at cycle 2) and 81% (at cycle 3); c) for the Indonesian language teacher, it increases from 47-76% (at cycle 1), 80% (at cycle 2) and 83% (at cycle 3).

SUGGESTIONS

It is hoped that a central government implements a development system of lesson study-based learning can be made as a development model of professional educators or teachers. It is recommended that the principles implement a development system with lesson study approach routinely and continually. It is suggested that a local government provide any grant or fund (budget) for development of professional teachers continually.

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