Improving Teacher Pedagogic Competences in Remote Areas through Lesson Study Activity

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ABSTRACT

The purpose of this study was to investigate the effect of a community service activity on improving teachers' pedagogic competence in Bawean Island of Gresik Regency, Indonesia. The treatment method was based on a model of special education profession in a remote island by implementing lesson study activity introduced and developed previously on different period of community services. The samples of this activity were teachers from a Junior High School and a Senior High School in Tambak, sub-district of Bawean Island. Ten teachers from those two schools were chosen using snowball sampling technique. The data collection methods used were observation and interview. The lesson study activity implemented three cycles with stages such as Plan, Do and See. The results of this community service program indicate that there is an improvement in pedagogic trait of teacher competence as shown in teacher skills in developing teaching and learning plans, implementing learning and evaluating learning.

Key words: Pedagogic, Lesson Study, Remote Area

INTRODUCTION

As teachers, we certainly have a desire to present the best learning for our students, a learning activity that can give every student an opportunity to learn well. The ability of teachers in managing learning activities is one of the skills that must be possessed by professional teachers. This ability is called pedagogic competence. Pedagogic competence is a special competence, which will differentiate teachers from other professions and will determine the learners' level of success in their learning process. This competency is not obtained suddenly but through continuous and systematic learning efforts, both during pre-service (teacher education) and during service, supported by the talents, interests and other potentials of each individual teacher concerned.

Pedagogic competence is not only related to the planning of learning, implementation of learning and evaluation, but also concerned with several factors related to any efforts to improve the quality of learning in the classroom. The Efforts in improving the quality of learning in the classroom is also inseparable from the educational qualifications of a teacher. The teacher's educational qualifications should also be suitable with the teacher's area of expertise. But what if there are still teachers whose educational qualifications are not in accordance with the area of expertise of the teacher, even the educational qualifications have not met the minimum requirements of a teacher. This is a fact that happens to most teachers in remote areas such as teachers on the island of Bawean, Gresik, Indonesia.

The geographical location and transportation conditions that connect Bawean Island with the Gresik regency become the root of the problems described above. This affects low quality of learning process conducted by teachers. Teachers on Bawean Island are rarely able to attend trainings to improve their professional skills. Teaching process in the classroom conducted by teachers is still conventional. There are still many teachers who are not familiar with Information Technology that is normally used by teachers in urban areas to support the learning process. They cannot upgrade their knowledge where they may face so many obstacles which consequently causes their knowledge to become outdated. The Government and Gresik District Education Office, in particular, still find the problem difficult to solve.

The authors conducted a community service program on this remote island. The program provided teachers with issues related to teaching through special training. Based on these experiences the authors found the fact that teachers still face difficulty in preparing learning tools such as lesson plans, learning media, student worksheets, evaluation tools and teaching materials. Currently, they use the old learning devices, tools, instrument or media and they are used continuously without any revision or modification.

Another problem is the difficulty of finding teachers who qualify for educating school students. Very rarely teachers from outside Bawean are willing to settle in Bawean to become teachers. So, most of the teachers in Bawean come from the region itself. This affects the existence of some teachers who only graduate from high schools and many

teachers who teach subjects that are not in accordance with their educational background. For example, Mathematics subjects are taught by teachers whose educational background is from Islamic studies. This is also the cause of their low competence. One example is MTs (Junior High school level for Islamic Schools) and MA (Senior High for Islamic Schools) in Bawean Island of Gresik Regency.

Solving this problem can contribute significantly to the changing atmosphere of the academic environment. It is necessary for teachers to be able to improve their pedagogic ability continuously. To be effective the mentoring process should be collaborative. We may have heard about collaborative learning so often; even we may have applied it in the teaching learning process. For instance, in Japan, collaborative learning has been the central feature in the application of learning-based Lesson Study for a century. According to Sato (2014), collaborative learning is principally the essence of learning because in reality there is no learning which is done individually that may be accomplished. Collaborative learning provides students a right to learn in which students are present in the learning process to progress in learning and to bring the expected results. Collaborative learning can also create collaboration among teachers to plan, implement, observe and reflect teaching learning process in order to perform better for both teacher and students in the teaching and learning process. This is an activity in *lesson study*, which has been implemented in schools in Indonesia since 2001.

But what if LS (Lesson Study) is implemented in isolated areas? Can it be done well? Lots of valuable experiences have been gained when applying LS on this isolated islands. It is then very interesting and challenging to implement Lesson Study activity to this remote island to determine whether teachers' pedagogic competence improves so considerably or not. Lots of valuable experiences have been gained when applying LS on many different settings. Several positive atmospheres occur positively such as interaction between teachers in the lesson study that can improve their competence and the learning process that is able to build students' activeness, encourage students to deliver argument, interact with other ideas with ideas that they have not received in previous learning. However, implementing this LS activity in a remote island is hardly conducted. It is worth to be investigated and explored. Based on this background, this study focused on lesson study activities to improve pedagogic competence of teachers in Bawean.

Research Question

Referring to this argument the following research question is addressed;
- How effective are lesson study activities in increasing pedagogic competence of teachers in Bawean?

Lesson Study

Lesson Study is a collaborative learning study between teachers aimed at improving the quality of learning in the classroom. Lesson study can be applied in the form of cycles and each cycle consists of steps namely; Plan, Do, and See.

"PLAN" activities are activities that can be done collaboratively or team to develop learning tools. "DO" activity concerns with the implementation of what teacher has prepared for. It is the implementation of how learning tools are applied in the classroom teaching and learning process. Classroom learning activities are emphasized in collaborative learning with various learning models that enable students to be more active and provide tasks with the aim of enhancing high-level thinking skills such as on jumping task (Asari, 2017).

There will be a teacher performing as a model while other teachers have roles as observers who observe the activities of students in the classroom. Reflection activities are activities undertaken by the team in order to discuss the findings at the time of observation that can be used to improve the next learning (Directorate of Learning and Students Affairs, 2011).

This lesson study activity can be implemented at all levels of schools as well as in remote schools (Fauziyah & Uchtiawati, 2017). Activity of students in learning at the college level can be improved (Fauziyah, 2014) through improving the quality of learning by implementing lesson study activities (Fauziyah, 2015). According to Ibrohim (2011) when lesson study activity is done continuously, it will provide a positive impact for the improvement of teacher competence. Consequently, teachers continuously will conduct innovative learning which is aimed at improving teaching and learning that have been done before over and over again. Continuous lesson study activities will produce a learning community (Sato, 2014).

Activity Model

Based on the analysis of the priority problems experienced by most teachers in remote areas, then through this program, the devotee team tries to offer a solution that is by applying "model of professional development of special educators of remote areas through the implementation of *lesson study*" which has been developed previously through competing grants research program. The model is as follows (Figure 1):

This social service program focuses its activities on improving teacher pedagogic competence that is planning learning, implementing learning and evaluating learning.

In this community service program, it can be disclosed data about teacher pedagogic competence in the form of qualitative data. To obtain data about the pedagogic competence of teachers, researchers use instrument in the form of analysis and observation sheet. From the results of analysis of teacher learning tools, further data will be obtained about the ability of teachers in planning lessons. Meanwhile, from the observations made on the learning process in the classroom, data on teachers' ability in implementing the learning process is obtained. In addition to this data collection process, data about the ability of teachers in preparing the evaluation of learning is obtained as well through reviewing teachers' assessment tools. The instruments in this study adopted the instruments used in the assessment of the Teacher Profession and Training (PLPG) by making adjustments to certain statement items. The first instrument
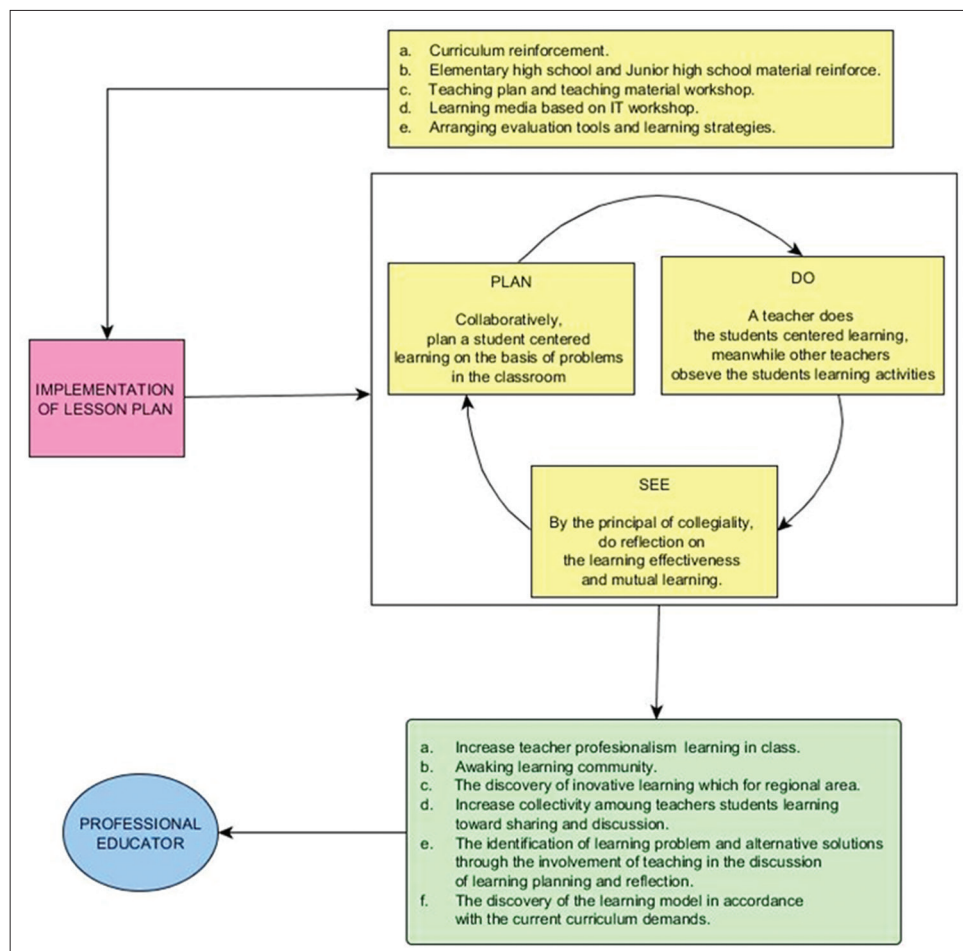
Figure 1: Model of Professional Educator Development through Implementation of Lesson Study (Fauziyah & Uchtiawati, 2017)

is the instrument of the teachers' ability to develop learning tools that include syllabus, lesson plans (RPP) and teaching materials. The second instrument is the instrument of the teacher's ability to carry out learning which includes preliminary, core and closing activities. The third instrument is the instrument of teachers' ability to develop learning evaluation tools.

METHOD

This research uses qualitative approach.

Participants

Subjects in this study were 10 teachers of Mts and MA in Bawean Island, Gresik Regency, East Java Province of Indonesia. These 10 teachers were chosen and selected employing snowball sampling technique.

Data Collection and Analysis

The main instrument in this study is the researchers themselves since the researchers themselves conducted the entire process of research, including data retrieval and processing. In addition, supporting instrument in the form of observation sheet and interview question guide were also used to obtain teacher pedagogic competence data.

Data were obtained through observation and doing an interview. The appendix provides a detailed account of the data collection instruments used in this study. Data were analysed following the flows proposed by Huberman, Miles, and Sadana (2014). The flows are: (1) data condensation, (2) data display, (3) drawing conclusion or verification.

FINDING AND DISCUSSION

Based on the analysis of learning devices, teachers' ability in preparing the learning is shown in the following table.

Based on the observations in the teaching and learning process in the classroom the data obtained on teacher's ability in implementing learning is as shown in the following table.

Based on the analysis of the learning evaluation tools which is obtained from teachers' ability in preparing the learning evaluation tool, the following table describes it thoroughly of the activity.

Assessment of pedagogical competencies that have been assessed is based on three aspects, namely the ability to develop learning tools, the ability to implement learning in the classroom and the ability to perform the assessment. Assessment is done after the assistance of lesson study activities as much as 3 (three) cycles. Based on the results of the assessment there is a significant increase on teachers' pedagogical

Table 1. Teachers' ability in developing learning tools

No.	Rated aspect	Assessment
1	The identity of the syllabus is clearly written	School names, classes, subject names and time allocations are clearly written.
2	Compatibility between the competency standard and the curriculum	Standard competence in accordance with the applicable curriculum is still using the curriculum KTSP (Educational Unit Level Curriculum)
3	Compatibility between basic competencies with competency standards	Basic competence is a breakdown of the competency standard.
4	Learning indicators can fulfill basic competencies	All learning indicators can represent basic competencies well.
5	Learning activities, evaluation and learning resources are well documented	Learning activities are well structured along with evaluation tools and learning resources or references.
6.	Learning indicators are in accordance with the syllabus	Indicator of learning in accordance with basic competence in syllabus.
7.	Formulate explanation of learning objectives and reveal clear learning outcomes	Learning objectives can be measured well using operational sentences.
8	The teaching material is divided according to the learning indicator	Teaching materials use references that are appropriate to learning indicators.
9	Learning methods are in accordance with teaching materials and enable students to be active	Learning method using discovery learning that allows students to actively construct their own concept.
10	The clarity of learning scenarios corresponds to the steps in the learning method	The learning scenarios are clear and the learning steps are well planned.
11	Each learning step reflects a clear learning activity	The learning step reflects or conforms to the syntax of the learning method used.
12	Sources or instructional media allow students to construct concepts	Using real-life media to enable students to actively use it.
13	Conformity of assessment techniques with learning objectives (authentic, portfolio or performance)	Assessment in accordance with the technique of learning because before preparing the assessment instrument firstly compiled the assessment lattice
14	Completeness of assessment instruments (questions, answer keys and scoring guidelines)	Problem according to the indicator to be measured accompanied by the key answer well.
15	There is a teaching material that is appropriate to the learning indicator	Teaching materials use the form of PPT (Power Point) and are accompanied by modules that are distributed to students.
16	Completeness of teaching materials	Teaching materials are prepared completely.
17	The teaching materials are presented in an interesting and IT-based form	The material is packaged in the form of PPT (Power Point) that can attract students' interest to follow the lesson.
18	There are LKS (Worksheet) that lead students to find their own concepts	Prepared LKS (Worksheet) that can guide students to find concepts or formulas.
19	LKS (Worksheet) in accordance with the material and learning indicators	LKS (Worksheet) arranged well in accordance with the purpose of learning.
20	There is a learning media in accordance with learning indicators	Media are suitable with learning materials and indicators.

competence. This finding is in accordance with the results of research that has been done by Jeane (2007) who investigates teachers' professional development for teaching and learning Mathematics. It is also in line with a study carried out by Fauziyah and Uchtiawati (2017) who investigated about a model of educators' professional traning for remote area teachers. It revealed that Lesson Study was very effectively applied in the area where access of obtaining information is hard to get. As a consequence, there was significant contribution to teachers' competences.

CONCLUSIONS AND SUGGESTION

Based on activity on Plan stage, it could be identified some aspects related to pedagogic competence of teachers. In preparing the syllabus for instance, the identity in the syllabus is completely written, there is a match between the standard competency written in the syllabus and the one in the curriculum as well as the conformity with the written basic competency.Teachers are skillful in determining learning achievement indicators and learning objectives referring

Table 2. Teachers' Ability in Learning Implementation

No.	Rated aspect	Assessment
1	Preparing students to learn	Observe all students and ask students to sit neatly for learning preparation.
2	Delivering learning goals	Present the appropriate learning objectives in the RPP. (Learning Implementation plan)
3	Perform apperception activities	Apperception is less than perfect because it has not involved most students.
4	Conducting motivational activities	Provide motivation by explaining the benefits of learning materials.
5	Shows the mastery of learning materials	The mastery of the material is not good because there is still a little wrong concept or misconception.
6.	Associate material with other relevant knowledge	It has not related material with material beyond mathematics.
7.	Deliver the material clearly, in accordance with the learning hierarchy and student characteristics	The shuffle of material delivery has been well coherent.
8	Relating matter to the reality of life	Relate the material to real life in everyday life.
9	Implement learning in accordance with the competencies (goals) to be achieved and the characteristics of students	Learning in accordance with the lesson plans in RPP (Learning Implementation plan)
10	Carry out coherent learning	Learning is well suited.
11	Mastery classes	Mastery classes are very good.
12	Implementing contextual learning	Learning using realistic media.
13	Carry out learning that enables the growth of positive habits	Less provide guidance to develop positive habits in students.
14	Implementing the learning in accordance with the time allocated	The learning time corresponds to the time allocation in the RPP. (Learning Implementation Plan)
15	Use media effective and efficient	The media used are effective.
16	Generate an interesting message	Less able to deliver a compelling message.
17	Involve students in media utilization	Involve students in full in the learning process.
18	Grow students' active participation in learning	Involve students in full in the learning process.
19	Shows an open attitude towards the student's response	Provide opportunities for students to ask questions.
20	Grow students' cheerfulness and enthusiasm	Students look very enthusiastic in following the lesson because they are very active in learning both in using learning media, group discussion and presentation.
21	Monitor student progress throughout the learning process	Teachers travel around the classroom to provide assistance to students who are less clear in understanding the material.
22	Conduct a final assessment in accordance with the competence (goals)	Giving questions as a form of assessment.
23	Use spoken and written language clearly, well and correctly	The language used is still mixed between the Indonesian languages with the local language. Comparison of between use Indonesian languages with local language around 45:55.
24	Reflect or create a summary by involving students	Guiding students to conclude learning materials.
25	Carry out follow-up by giving directions or activities or tasks as remediation or enrichment	Provide follow-up in the form of exercise questions to be done at home.

to the basic competencies. Operational verbs used in the learning objectives can be measured clearly, as well as the selection of learning materials in accordance with predetermined learning achievement indicators. The learning method used in preparing the learning steps is various as presented on the lesson. The methods mostly emphasize on the activities of students in the classroom, such as discovery learning and inquiry.

In do stage, all teachers use students' worksheet which are prepared and provided for exam and exercises to evaluate student learning outcomes. However, after being accompanied in the preparation of learning tools that in-

Table 3. Teacher's ability to develop evaluation tools

No.	Rated aspects	Assessment
1	There are lattice problem that fit the syllabus (competency standards, basic competencies and learning indicators)	The lattice assignment developed based on the syllabus.
2	Each item is subject to the learning indicator	Each item can measure indicators.
3	In the lattice there is a score of each item	Each item is accompanied with a score according to the difficulty level of the question.
4	Each item is formulated clearly by using easy-to-understand sentences	Sentences in the matter easy to understand by the child.
5	The difficulty level of the problem is evenly distributed from easy, medium and difficult.	Level of difficulties about evenly distributed well.
6.	There is the right answer key for each item	Key answers are made clear and detailed.
7.	There is a scoring guide in every step of the question	Scoring guidelines are provided in each stage of completion.

clude media, students' worksheet and evaluation tools, the teacher is more skillful in creating real media in the school environment, creating students' worksheet that is relevant to the method of learning and make an evaluation tool tailored to the lattice question which has been compiled before. This evaluation forms cover two different types of task or question levels. They are 'shared task' and 'jumping task'. These two types of tasks in the learning process is not only as an evaluation tool but also as a tool triggering the implementation of the teaching procedures to deliver real results that makes the students understand and learn the actual learning.

While in the implementation of Do with one teacher become model teacher and 3 other teachers become observer, the implementation of learning goes more active than before lesson study activity. Because the learning media used are more interesting and involves almost all students in the classroom, the learning is more student-centered. Students are active in expressing opinions, but teachers have not been able to manage their time well. The average implementation of learning does not match the time already specified.

The reflection activity is carried out after the implementation, the model teacher conveys the obstacles experienced in the implementation of learning, and then the observer conveys the findings during the learning process. These results can be discussed and found for solutions to subsequent learning improvements.

Finally, during the lesson study process that has been implemented for 3 cycles, starting from the Plan, Do and See, it can be concluded that;

1. *Lesson Study* can be one of the ways of professional educator development through collaborative learning and continuous learning based on the principles of collegiality that help each other in learning to build learning communities. Its implementation can be done by teachers collaboratively by forming groups of expertise, i.e the exact, social, religious, language, sports and arts groups. The group can consist of 4 to 5 teachers and each group is accompanied by one member of the devotional team according to their area of expertise.

2. Through the assistance of lesson study activities, it appears that teacher competence can increase, in particular the pedagogic competence. Pedagogic competencies include learning planning, learning implementation and learning evaluation implementation.
3. Lesson study assistance activities can be started by conducting workshops related to understanding of lesson study, principles in implementing lesson study, understanding of the curriculum, and strengthening the content or concept.

Above all, based on the results of this community service which centralizes on educational aspects on teaching learning process employing Lesson Study activity, some suggestions can be drawn as follows:

1. Disseminate this program of dedication to other schools in remote areas.
2. Implement this continuous service.
3. Implementing this devotion program focuses on competencies other than pedagogical competence, i.e. professional competence, social and personality.

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APPENDIX

Data collection instruments
1.   Instrument for Teaching Implementation
Filled in by Observer
Instruction:
1   Read and answer the questions below correctly and precisely.
2   Give score in each items in the 'score' column referring to the following score criteria:
1   : Very Poor
2   : Poor
3   : Fair
4   : Good
5   : Excellent
Teacher Identity:
N a m e   :…………………………………………………….
Schhol Name :…………………………………………………….

No	Indicator	Score	Note
I	**Pre teaching**		
1	Preparing student to learn		
2	Declaring teaching objectives		
3	Doing apperception activity		
4	Doing activity to motivate students		
II	**Whilst Teaching**		
A.	**Mastering teaching material**		
5	Showing mastering teaching material		
6	Relating topic of the material to relevant material		
7	Presenting clearly the material based on students' characteristics		
8	Relating the material to the real life condition		
B.	**Teaching strategy**		
9	Implementing teaching referring to the teaching objectives and students' characteristics		
10	Implementing teaching chronologically		
11	Managing the class very well (classroom management)		
12	Implementing teaching contextually		
13	Creating teaching atmosphere positively for students		
14	Implementing teaching based on provided time allotment		
C.	**Utilizing teaching media**		
15	Using media effectively and efficiently		
16	Providing good messages		
17	Involving students in using media		
D.	**Teaching and Learning Process involving students**		
18	Creating students active learning		
19	Showing open attitude toward students		
20	Creating enthusiasm		

E.	**Process and achievement assessment**		
21	Monitoring students' learning progress referring to the goal of teaching		
22	Evaluating students' competence		
F.	Language competence		
23	Using correct and clear language both written and spoken form		
III	**Closing**		
24	Doing reflective teaching and summarizing or reviewing material involving students		
25	Closing the teaching by keeping the students on task		
Total score			

Score =……………………………
Gresik, ...
Name of Observer
(......................)

2.   Instrument for Constructing Teaching Evaluation
Filled by observer
Instruction:
1.   Read and answer the questions below correctly and precisely.
2.   Give score in each items in the 'score' column referring to the following score criteria:
   1   : Very Poor
   2   : Poor
   3   : Fair
   4   : Good
   5   : Excellent
Teacher Identity:
N a m e   :…………………………………………………………….
School Name   :…………………………………………………………….
Teacher Subject   :…………………………………………………………….

No	Indicator/Observable aspect	score	Note
1	Items presentation relevant to syllabus		
2	Every item correspond indicator stated		
3	Each items of presentation has clear score		
4	Each item is constructed very well with simple language usage		
5	Items difficulty of the test item is well accepted		
6	Key answer is provided		
7	Scoring guide is also included		
Total Score			

Score =……………………………
Gresik, ...
Name of Observer
(......................)

3. Instrument for Teaching Preparation
Filled by Observer
Instruction:
1.   Read and answer the questions below correctly and precisely.
2.   Give score in each items in the 'score' column referring to the following score criteria:
   1   : Very Poor
   2   : Poor
   3   : Fair
   4   : Good
   5   : Excellent

Teacher Identity:
N a m e   :…………………………………………………….
School Name :…………………………………………………….
Teacher Subject   :……………………………………………………

No.	Scoring Aspect	Score	Note
	Syllabus		
1	Identity is clearly stated		
2	Relevancy of standard competence and curriculum		
3	Relevancy of Basic Competence to standard competence		
4	Teaching indicator fulfilled Basic competence		
5	Teaching activity and learning sources stated clearly		
	Lesson Plan		
6	Teaching indicator is relevant to syllabus		
7	Teaching objective clarity provided learning outcome		
8	Classifying teaching material in accordance to teaching indicators		
9	Teaching Method relevant to teaching material that may involve students active learning		
10	Teaching scenario is clear and relevance to the procedures of teaching in teaching method		
11	Each teaching step reflects clear teaching activity		
12	Students can construct concept from the use of teaching media		
13	Relevancy of assessment technique to the teaching objective (authentic assessment or other forms)		
14	The availability of teaching evaluation (the test, key answer and scoring guide)		
	Teaching Material		
15	Teaching material relevant to teaching indicator		
16	The availability of teaching material		
17	Presenting teaching material referring to the use of IT		
18	The availability of students' worksheet to build students' construct		
19	The students worksheet relevant to the material		
20	Teaching media relevant to teaching indicator		
Total score			

Score   =……………………………
Gresik, ...
Name of Observer
(..................)

4. Interview Guide (Teacher Pedagogical Competence)
Name   :.
Subject   :.
School   :.

NO	PERTANYAAN INTERVIEW
	Teacher competence in constructing teaching tools
1	Do you pay attention on the syllabus basic competence stating in curriculum when constructing syllabus?
2	Is Basic Competence in the syllabus in accordance to the standard competence?
3	Is indicator of learning outcome in accordance to basic competence?
4	Is teaching method in lesson plan relevant to material characteristics?
5	Is teaching material relevant to indicator of learning outcome?
6	Is teaching procedures in accordance to the method employed?
7	Does the lesson plan state explicitly teaching media used?
8	Apakah dalam RPP dilengkapi dengan instrumen penilaian?
	Teacher's competence in Implementing teaching
1	Does teacher assure students' readiness in pre teaching activity?
2	Does teacher tell the teaching objective to students?

3	Does teacher provide apperception and give motivation to students in pre teaching activity?
4	Does teacher correlate the issue of learning to the other relevant material?
5	Does teacher present the material chronologically?
6	Dose the teacher use the media of teaching effectively
7	Could teacher create positive atmosphere to students?
8	Does teacher provide feedback?

Teacher competence in composing test

1	Does teacher create items presentation on table to implement evaluation?
2	Is each item measurable?
3	Does teacher provide assessment score for every item?
4	Is assessment instrument able to measure cognitive aspect of the students?
5	Does teacher consider level of difficulty of each item?
6	Does teacher make scoring guide and key answer for the assessment?