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RESEARCH ARTICLE

THE IMPLEMENTATION OF LESSON STUDY-LEARNING COMMUNITY FOR PROSPECTIVE BIOLOGY TEACHERS.

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Key words:-
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Abstract

This current study aimed at describing the implementation of Lesson Study-Learning Community for prospective teachers attending Biology Instructional Activity Management course. This study was conducted by means of descriptive design. The recruited subjects were students majoring in Biology Education in University of Muhammadiyah Malang. They were in total 25 participants and in their 6th semester when participating in this study. Working in 5 groups, each group was taking turn to be model teachers and observers. They were all to teach biology materials for senior high school. Lesson Study-Learning Community was implemented by going through plan, do, and see stages. During the 'plan' stage, the student teachers were working on chapter design and lesson design. During 'do' stage, they were all conducting instructional activities. 'See' stage was done to reflect all activities of the model teachers and observers. The data analysis was descriptive-quantitative. This study has arrived at the findings that 90% of the student teachers were eager to implement lesson study-learning community, especially during the micro-teaching sessions. Lesson Study-Learning Community in Biology Instructional Activity Management course has succeeded in equipping the prospective teachers with the necessary experiences before they have undertaken any teaching.

Introduction:-

Teachers' and prospective teachers' competences determine the quality of instructional activities. This has been in line with the Regulations Number 14 Year 2005 concerning on Teachers and Lecturers. It is required that teachers master 4 competences, among others: pedagogic, professional, social, and personality competences. Higher education programs preparing prospective teachers are to equip their graduates with the required competences pursuant to the enacted Regulations concerning on Teachers and Lecturers. Prospective Biology teachers (college students) are trained to be professional by attending Biology Instructional Activity Management course that goes along with micro-teaching sessions. Teachers in the 21ts century are not only competent in those 4 aspects as mentioned by the Regulations, but they are required to master some other competences, to name: creative, innovative, critical, collaborative, and communicative aspects as well.

The recurring issue is on teachers' competences in teaching. Instructional activities constitute complex and complicated matters. To achieve the goal of quality teaching, teachers are required to choose proper materials and

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design lesson plans, as well as taking into account students' ways of thinking and reactions towards the class. Failing to do so, teachers' content mastery and pedagogic competences especially in lesson design are at question, let alone creating quality and highly-innovative learning environments for their students (Masaaki, 2014).

Instructional activity is a possible arena where teachers, students, and teaching media interact one another. By means of that interaction, students are actively developing their skills and thinking patterns. It is expected that interactive, inspiring, joyful, challenging, as well as motivating learning atmospheres are evident so as to facilitate students in achieving the targeted competences (Susilo et. Al., 2009).

Joyful, innovative, and challenging learning environments are portraying the model of schools in the 21st century. Modern schools are established by considering the basic principles of achieving simultaneous quality and equality (Sato, 2014).

In moving towards the 21st century, reformation in schools and instructional activities is of urgency. School reformation sets vision and philosophy, in the form of learning community. The missions of the learning community at schools are assuring students' rights to study without any exception and improving the quality of learning (Sato, 2014; Sato & Atendo, 2015). Learning community is there with 3 major activities, namely: collaborative teaching and learning in class, the establishment of professional and collegial learning community, and the participation of parents and local society (Wahyuningtyas, et. al, 2015).

Collaborative teaching comprises 3 main aspects: 1) authentic learning (in line with the characteristics of particular subjects); 2) reciprocal learning (reciprocal listening); 3) jumping moments upon learning (challenging and creative learning environment) (Sato, 2014).

Teachers in every school are obliged to develop their interactive, inspiring, joyful, challenging, and motivating instructional activities that encourage students to actively participate in class, as well as be given ample rooms for experimenting, being creative, and being independent. Students are also to be facilitated based on their different interests, talents, psychical development, and psychological conditions. Senior high school teachers, as required by pedagogic and professional standards, are to design instructional activities that are in line with their students' characteristics.

Lesson study (LS) is training for professional educators by emphasizing on collaborative and continuous learning, based on collegial, mutual benefit, and mutual learning principles. Lesson Study constitutes learning society that consistently and systematically seeks for self-improvement on managerial skill. By means of collaborative and continuous teaching, teachers are to plan, implement, observe, and report their own learning (Gutierez, 2015; Hendayana et. At., 2010; Syamsuri and Ibrohim, 2010).

Lesson Study is conducted by implementing the following stages, namely: plan, do, and see (reflection). It is important that prospective teachers are trained to be involved in Lesson Study, as they are the prepared generations for professional and quality teachings. LS has projected the following purposes: 1) activating students that may affect teachers' performance, 2) review for teachers, 3) the development of academic and critical thinking of students, and 4) growing students' carefulness and responsibility upon their own learning.

One of the ways to improve the quality and competences of prospective Biology teachers is by implementing Lesson Study. This is postulated by Sa'adah (2010) stating that Lesson Study improves prospective teachers' quality in Indonesia. Riski (2014) further asserts that Lesson Study allows teachers to design more structured instructional activities, improve teachers' creativity and innovation, as well as upgrade teachers' pedagogic competence among those doing teaching internship in Mathematics subject at schools.

This has been supported by Widodo et. al. (2007) stating that Lesson Study has proven to improve Biology student teachers' competences in conducting teaching internship in senior high schools. Aryulina (2010) further asserts that Lesson Study for prospective Biology teachers has been improving teaching competences, especially their skills of questioning, explaining, opening and closing the class during micro-teaching course. The above-mentioned previous studies have not described thoroughly the implementation of Lesson Study-Learning Community that focuses on learning community particularly for students majoring in Biology Education.

Equipping prospective teachers with the background of Lesson Study-based instructional activities is expected to contribute considerably to their professional, pedagogic, social, and personality competences. In addition to those competences, prospective teachers are trained to own creativity, innovation, critical thinking, collaborative, and communication skills. This current study aimed at describing the implementation of Lesson Study- Learning Community of prospective Biology teachers.

Methodology:-

This current study was conducted by employing descriptive design. The subjects involved in this study were students majoring in Biology Education, Faculty of Teacher Training and Education, University of Muhammadiyah Malang. There were in total 25 students and those of whom were in their 6th semester when participating in this study. Working in 5 groups, each group was taking turn to be model teachers and observers. They were all to teach Biology materials for senior high school. While having one model teacher group, the other four groups were acting as senior high school students. The prospective Biology teachers implemented Lesson Study-Learning Community, following the stages of plan, do, and see. During 'plan' stage, the student teachers prepared chapter design and lesson design based on the given topic outside the class hours. Chapter design and lesson design were made collectively within the groups. The model teachers prepared instructional media, worksheet, and evaluation instruments. During 'do' stage, there were two student teachers chosen as the model teachers. The allotted time for their teaching was 50 minutes with different topics of discussion. The other three students were working as observers. 'See' stage was implemented by the following scenario: there were a reflection involving the model teachers (2 persons) and observers (3 persons).

The data were collected during the plan, do, and see stages. At the end of the course, the student teachers were given questionnaires to fill in related to their responses on the plan, do, and see stages. The descriptors of the questionnaire are like and dislike. The data were processed by means of descriptive qualitative and quantitative analyses. Qualitative analysis was conducted on the data about the description of plan, do, and see stages. Quantitative analysis was conducted for the responses of 25 student teachers, calculating their like and dislike preferences. These sorts of data were then represented in percentages.

Results And Discussion:-

The Implementation of Lesson study of the Prospective Biology Teachers during "Plan" Stage:-

This section elaborates the process of planning the chapter design, teaching materials, and lesson design or lesson plans. It has been shown that each group was working collaboratively to plan the chapter design. It was aimed at connecting the design to the basic competences required by the syllabus of 2013 Curriculum. Chapter design was made based on the materials for senior high school students. In this stage, all student teachers were contributing ideas for better materials to be used in class, to be specific for 'do' stage. This has enabled the student teachers to form learning community with the principles of collegial and mutual collaborations. It has been noted that each group was equipped with textbooks for senior high school. Some others were detected to be busy accessing the materials available on the Internet before jotting down some points into a wide blank paper. Chapter design has been practiced together within groups, as shown in Figure 1, 2, 3, and 4.

Figure 1:- Plan Stage: Discussing Materials

Figure 2:- Plan Stage: Chapter Design

Figure 3:- Plan Stage: Chapter Design

Figure 4:- Plan Stage: Discussion of Chapter Design

Figure 1 above shows that the student teachers as the model teachers were discussing the materials to be taught. They were preparing various Biology literatures/textbooks for 10^{th}, 11^{th}, and 12^{th} graders. Figure 2, 3, 4 and 5 show that the student teachers were making chapter design on the wide blank paper. They were discussing and sharing their ideas by implementing collegial principle. They were detected to be enthusiastic during the 'plan' stage, trained to learn from one another, collaborate, and respect the others' arguments. As a result, they were forming the so-called learning community to best prepare their teaching in 'do' stage (as shown in Figure 5). One of the sample works on chapter design is presented in Figure 6. It has been derived from group work particularly discussing ecosystem.

The chapter design on ecosystem to be discussed covered the following topics: the components and kinds of ecosystem; as well as the patterns of ecosystem: food chain, food web, and food pyramid.

Figure 5:- Class Situation during 'Plan' Stage

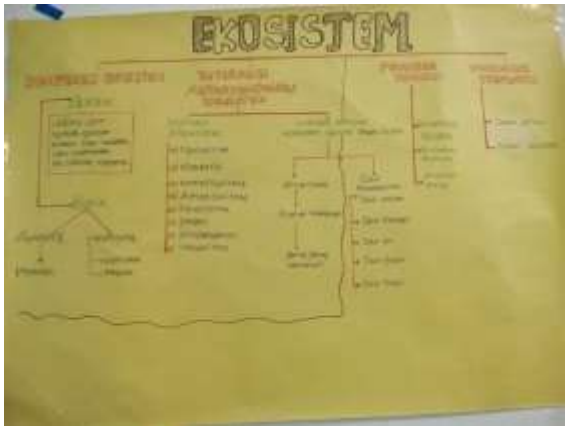

Figure 6:- Chapter Design on Ecosystem

Figure 7:- Lesson Design on Ecosystem

During Lesson Design, the model teacher was to design the instructional activities. Things to pay closer attention to during Lesson Design were: the model teacher set the columns for pre-, whilst-, and jumping activities; the model teacher was required to design the teacher's and students' class activities; and the model teacher described the wave of classroom condition and the achieved goals of learning. At the end of the teaching session, it was expected that the students fell happy, smile, and enjoy Biology class. The result of the student teachers' Lesson Design, particularly on the ecosystem materials, is presented in Figure 7. In addition to the above activities, the model teacher along with the other group members arranged the students' seat, teaching media, worksheets, and evaluation.

The Implementation of Lesson study of the Prospective Biology Teachers during "Do" Stage

During 'do' stage (teaching implementation), the model teacher checked the students' readiness to start the lesson. The model teacher conducted the instructional activities by practicing the acquired teaching skills. The other group members were the observers. The main duty of the observers was observing what the students learned in class. In this session, the students were assigned to observe biotic and abiotic components outside the class (in campus environment). They were discussing what they found in their observation (Figure 9).

The model teacher guided the students to work in groups (Figure 8). The students presented their findings on biotic and abiotic components. As for the biotic components, they were then drawing food chain. The biotic and abiotic components of each group were displayed on the white board (Figure 10). Finally, the students drew food web (Figure 11).

Figure 8:- The model teacher guiding the students

Figure 9:- The students discussing their observation results

Figure 10:- The students drawing on the white board

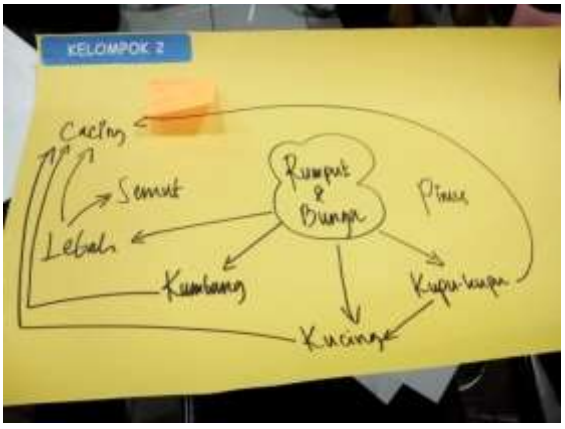

Figure 11:- The students' food web

In Figure 9, the student in red veil explained the data findings on biotic and abiotic components to determine the ones that were suitable to be put into food web. The other students were listening attentively to their friend. They were then designing food web as shown in Figure 11.

In group 2, the biotic components were grass and flowers. The first level consumers were butterflies, cats, and bees. The second level consumers were worms and ants. It was because when those butterflies, cats, and bees died, they would be consumed by ants and worms.

Picture 12 shows that the observer was observing the students' activities. 1 student group was observed by 1 observer. The observer noted down any media used by the students, including the students' talk and discussion. It was found that one student was misusing the cell-phone for some purposes other than searching for learning materials and additional literatures.

Figure 12:- The classroom observation

The Implementation of Lesson study of the Prospective Biology Teachers during "See" Stage:-
During 'see' stage (reflection), the model teacher expressed how the instructional activities were conducted and running. The model teacher confessed of being nervous for having the first teaching experience. As a consequence, the model teacher found the first teaching a mess. This finding has been supported by the statements of observer 1, 2, and 3. The tendency was that the observers stated their complaints and criticisms towards the model teacher, instead of what were to be learnt from the activities. Lesson Study, by design, is not intended to criticize a model teacher, but more on observing students' behaviors, eye-contacts, teaching media, classroom interactions, and students' talks.

The Student Teachers' Responses to the Implementation of Lesson Study at the End of the Course:-
At the end of the course, the student teachers were given questionnaires tapping their responses related to the implementation of Lesson Study covering plan, do, and see stages. The results of the questionnaires have revealed that 23 student teachers were satisfied with the implementation of Lesson Study-Learning Community particularly in Biology Instructional Activity Management course. Most of the eager student teachers stated that it is necessary that teachers are to be innovative and creative in designing their instructional activities. Prospective teachers are to actively interact with their peers, professional and senior teachers, and students. Communication is the key.

In contrary to those who were happy with the implementation of Lesson Study, 2 student teachers criticized the complicatedness of Lesson Study. A series of chapter design and lesson design were what sent them into tediousness and boredom. The following bar chart displays the student teachers' responses (Figure 13).

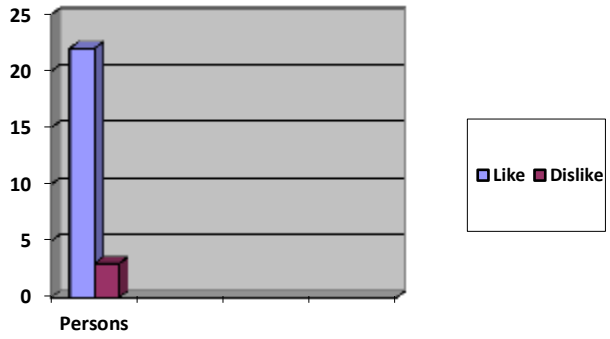

Figure 13:- Bar Chart displaying the student teachers' responses to the implementation of Lesson Study

Departing from the findings during plan, do, and see stages, the student teachers have been trained to form their own learning community, enabling them to collaboratively design innovative, creative, and joyful instructional activities, as well as peer learning. This is in line with the basic requirement of teachers in the 21st century. It is required that teachers become life-long learners and continuously work and learn with and from their colleagues. In addition, they are demanded to have direct and indirect communication skills, as well as master technology to improve their teaching quality (Hargreaves, 2000; Darling, 2006). Professional teachers are not merely teaching, but learning (Andriani, 2010). Lesson Study is not merely a forum where teachers meet, but it is a teacher professionalism program through collaborative and continuous learning that is collegial and mutual by nature (Riyati, 2007).

Collaborative learning is based on Vygotsky's zone of proximal development theory and Dewey's communication theory. During the discussion session, it is necessary that the student teachers 'learn from one another'. Lesson Study-Learning Community emphasizes on learning from one another (listening to one another), authentic learning (in line with the characteristics of the subjects/courses), learning with jumping activities, and creative and challenging instructional activities (Sato, 2014). The above elaboration is represented in Figure 14.

Figure 14:- The requirements for developing instructional activities

Conclusion:-

The implementation of Lesson Study-Learning Community has equipped the prospective Biology teachers with the necessary skills for better teaching. During the 'plan' stage, they have been trained to make chapter design and lesson design. During the 'do' stage, the student teachers as the prospective Biology teachers were trained to learn from one another, to design the instructional activities based on the characteristics of their students and the taught subject, and to create innovative, creative, and joyful instructional activities. All are devoted to result in professional teachers.

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