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THE DEVELOPMENT OF LECTURE MODEL OF CHEMICAL EDUCATION MANAGEMENT BASED ON LESSON STUDY TO IMPROVE CHEMISTRY TEACHER CANDIDATES' PROFESIONALISM

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ABSTRACT

The purpose of this research is to produce a lecture model of chemical education management based on lesson study as an effort to improve chemistry teacher candidates' professionalism. This study used a model of ADDIE (Analysis-Design-Implement-Develop-Evaluate). Based on the results of the reflection, lecturer and team can arrange the post-presentation activities (discussing material theoretically) with a variety of management practices in the field. Activities will be carried out by presenting a real problem in the field to find the solution, thus the students' curiosity about management implementation will be fulfilled. Lecture Model of Chemical Education Management Based on Lesson Study can improve the chemistry teacher candidates' professionalism, primarily in preparing, presenting and being responsible of their work by learning from their learning experience.

Keywords: Chemistry Learning Management; Lesson Study; Professional Teacher

INTRODUCTION

In order to train the chemistry teacher candidates to have managerial abilities and be professional teacher, since academic year 2012/2013 Chemical Education Program Unnes has offered one optional course of Chemical Education Management. This course is intended to provide material of managerial competence to chemistry teacher candidates students. In the first year, only 3 students who took this course, but in the second year it was increasing to 33 students. The course of Chemical Education Management is reviewing educational management include: management understanding, education management, and chemical education management, and their elements of educational institution organization, human resources education, education infrastructure, and community participation in education and chemical laboratory management to support the achievement of educational goals.

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The learning process in the first and second year of Chemical Education Management course was implemented based in lesson plan, by implementing the method of seminars, structured tasks, independent tasks and examinations. Learning materials have been provided by lecturers in the form of books, articles and teaching power point (ppt) media. Students were assigned to search for learning materials from a variety of sources in the internet for fulfilling structured and independent tasks. Structured task groups are presented in the form of seminars, individual independent in the form of articles was evaluated by the lecturer. The average of student learning outcomes of Chemical Education Management was still dominated by cognitive aspect of AB (grades 81-85). Although the student learning outcomes was AB, but to improve the professionalism of teacher candidates, the appropriate learning model for the development of Chemical Education Management lectures needs to be formulated.

Lesson study is teacher profession training model through learning analysis conducted col-

laboratively and continually based on collegiality principles and mutual learning to develop learning community (Rustono, 2008). Lesson Study is an activity where teachers should collaborate to design their long-term learning for students, and realize that design in real life and by collaborating of doing observation, discussion and learning improvement (Murtiani and Wulan, 2012). Meanwhile, according to In'am (2009) teacher profession training model through learning analysis conducted collaboratively and continually based on collegiality principles and mutual learning to develop learning community. In'am (2009) revealed that the lesson study is an effective way to improve the learning quality of teacher and students learning activities. Marsigit (2007) also found that the lesson study activities can improve students' enthusiasm, motivation, activities, and performance.

Lesson Study supports the Law No. 14 year 2005 of teachers and lecturers should enhance the pedagogical, professional, personal, and social competencies. Lesson Study also supports the implementation of Government Regulation No. 19 year 2005 on National Education Standards chapter 19: "Learning process should be interactive, inspiring, fun, challenging, and motivating students' activeness, creativity, independency, talent, interest, and physical and psychological development". There is not perfect learning, so there will be a gap to make improvement and innovation. Lesson Study makes teachers to be more receptive to get feedback to the improvement of learning.

This is also supported by research result of Winarsih (2012) that showed the lesson study can improve the professionalism of junior high school science teacher, students' activity and learning outcomes. This is consistent with the objectives of lesson study activity of improving the professionalism of teachers through improving teaching style and knowledge (Cerbin and Kopp, 2006). Lesson Study can improve the academic culture, collaboration ability, self-evaluation, and teachers' motivate in doing learning innovation. Through lesson study, it is also possible for teachers to produce textbooks and scientific paper based on classroom research.

METHOD

This study used ADDIE (Analysis-Design-Implement-Develop-Evaluate) model. ADDIE was first used in 1990s, developed by Reiser and Mollenda. One of the functions is as guidance to build set and infrastructure of effective, dynamic and supportive learning programs and learning performance itself.

This research consisted of: 1) Analysis. Steps in the analysis stage are analyzing students' need; determining teaching materials; determining the standard competency (goal) to be achieved; and determining media to be used; 2) Design. Steps in this stage are choosing the standard competency (goal); determining the basic competencies (objective); determining the indicators of achievement; choosing form of assessment; determining the source or learning materials; implementing learning strategies; creating a storyboard; designing interface; 3) Development. Steps in this stage are: creating learning objects such as text documents, animations, images, videos and so on; creating additional supporting documents; 4) Implementation. Activities consisted to preparing and marketing it to the students; 5) Evaluation. Questions that can be asked in the evaluation stage are: Was the purpose of learning achieved by the students? How did students' feel during the learning process? Did they like or dislike it; Did the elements of learning work well or not? What should need to be improved? Was the information or messages conveyed clear and understandable? Was the learning activity interesting, important, and motivating?

Research subject was 28 students taking Chemical Education Management course academic year 2014/2015.

RESULT AND DISCUSSION

In the planning stage, research team, lecturer of Chemical Education Management course and Lecturer of the PBM Expertise Group joining Lesson Study collaborated to analyze the needs and problems faced in learning.

Chemical Education Management course is selective course of 2 credits that can be taken by students in odd semester. The description of the course is the course examines the Chemical Education Management analyzes education management consisting of management understanding, education management, and chemical education management, and their elements of educational institution organization, human resources education, education infrastructure, and community participation in education and chemical laboratory management to support the achievement of educational goals..

In the implementation stage, there are two main activities of (1) the implementation of the learning activity of lecturers to implement the lesson plan SAP practice that was composed

collaboratively, and (2) the observation activities conducted by the researcher members who acted as observers.

Lectures held on Friday at 10:00 to 11:40 in Room D4-127. This room is Micro Teaching room where observers is connected with one-way glass room, so the observer can observe from outside the classroom, students were expected to do learning process in a reasonable and natural setting, not in under pressure condition caused by Lesson Study program.

Chemical Education Management course participants were 28 students grouped into 7 groups, consisting of 4 students per group, each group was assigned to write a paper and media presentations (ppt) to be presented at the presentation session. The seventh title of the paper was, (1) Organization Management, (2) Education Management, (3) Education Unit Management, (4) Human Resource Education Management, (5) Quality Management Education, (6) Laboratory Management, and (7) Facilities and Infrastructure Education Management.

The point of observed activity is the presentation, to observe the interactions activity that occurred between lecturer-students, students-students and student-learning resources. Lecturer applied designed learning, while the problem found was the course time was close to Friday prayer so it made students "felt anxious" to end of discussions, in this case the time management really should be applied. Observers present the results of their observations, they revealed that the first presentation of the activities was done well, all presenters actively presented of sub material, participants also gave good attention, the questions were about the clarification related the material presented so that it can be answered well, the learning source used was good and it was not only from lecturers. Students turned out to be able to collect a variety sources to prepare their paper. After two times of presentation, observers noted that only certain students who always asked question were given but actually it was not only presenters' mistake it was because their speed of raising hand when presenters give question session. This needs to be corrected because it can lead to other students that will feel they were not given the opportunity, it will result to reduce their attention and enthusiasm in participating in the activities, so lecturer should remind them. In the next presentation it did not happen anymore, it indicated that students noticed the lecturer's warning.

Based on the analysis, the main problem found was the time management, so the lectures should design to make effective learning activity to achieve the goal. The materials that should be presented in Chemical Education Management course are, 1) Education Management, 2) Educational Institution Organization, 3) Human Resources Education, 4) Infrastructure Education, 5) Public Participation in Education, 6) School Curriculum, 7) Science -Kimia Laboratory in Education, and 8) Science-Chemistry Laboratory Management.

Designed lesson plan should pay attention to analysis result, objective achievement, time efficiency, students' activeness during lecturing activity in the dimensions of the program, media and learning resources, lecturing model consisting of three learning outcomes aspects based on the activity. Implemented lecturing model emphasizes on workshop of discussion of the types of subject material that was assigned to student groups.

Based on students' question it indicated good enthusiasm of the participants to discuss the subject material, they were interested and feel that it is one part of their "candidates" profession. This makes better interaction of students, but observers noted that there were still students who are less active because only certain questioners and presenters who were actively taking part in discussion while other only act as audience. This needs to be conveyed to lecturer in order to give opportunity to all students in the next discussion activity

The discussion is the main activity in the learning activity so presenters already get used to maintain the time. They already prepared the presentation to maintain time effectively so they can discuss all problems that should be presented. Students' who never asked question were given opportunity to share their opinion.

In the reflection stage, students was also asked to write a reflection related to the implementation of lecture model after the presentation, they should share and suggest what they have already obtained based on the syllabus used. when viewed from the syllabus are presented, and suggestions. Reflection of the students showed that they were interested with the lecturing model although they have to work hard preparing paper and media presentation, present and responsible of their writing. They felt that they can improve their ability to manage the groups, human resources and infrastructures in education. Students still found difficulties to organize their knowledge of chemical education management, so they expected that lecturer can prepare handout that they can use as guidance in preparing for examinations. They also wanted to obtain a lot

of samples about the implementation of management in the field. But it would be answered by giving the example implementation of management in the field material after midterm test.

Based on the result of the reflection, lecturer and team can draft activity after presentation (discussing material theoretically) by using variety of management practices in the field. Activities will be carried out by presenting real problems in the field to find the solution, thus students' curiosity about management practices in the field will be fulfilled. By implementing this the plan that is prepared will be complete so it can be used as guidance for lecturing.

CONCLUSION

Developed lecture model of Chemical Education Management based on lesson study can improve the chemistry teacher candidates' professionalism, primarily in preparing, presenting and being responsible of their task in learning activity.

Therefore further research needs to be conducted in the area of lecture model of Chemical Education Management application for another similar character. Lecture model of Chemical Education Management can be developed to be learning model that can be applied later when students become teacher.

REFERENCES

Cerbin, W., B. Kopp. 2006. *Lesson study* as a Model for Building Pedagogical Knowledge and Improving Teaching. *International Journal of Teaching and Learning in Higher Education.* 18 (3): 250-257.

In'am, A. 2009. Peningkatan Kualitas Pembelajaran melalui *Lesson Study* Berbasis Metakognisi. *Scientific Journal UMM*. 12 (1): 125-135.

Marsigit. 2007. Mathematics Teachers' Professional Development through *Lesson study* in In*d*onesia. *Eurasia Journal of Mathematics, Science & Technology Education.* 3 (2): 141-144.

Murtiani, A.F., Wulan, R. 2012. Penerapan Pendekatan CTL Berbasis Lesson Study Dalam Meningkatkan Kualitas Pembelajaran Fisika di SMP Negeri Kota Padang. *Jurnal Penelitian Pembelajaran Fisika.* 1:1-21.

Rustono. 2010. Meningkatkan Kemampuan Mahasiswa Menerapkan Strategi Pembelajaran Melalui Lesson Study di Sekolah Dasar. *Jurnal Pendidikan Dasar.* 10: 1-7.

Winarsih. 2012, Peningkatan Profesionalisme Guru IPA melalui Lesson Study dalam Pengembangan Model Pembelajaran PBI. *Jurnal Pendidikan IPA Indonesia*. 1 (1): 43-50.