



## EFFORTS IN IMPROVING TEACHERS' COMPETENCIES THROUGH COLLABORATION BETWEEN TEACHER FORUM ON SUBJECT MATTER (MGMP) AND PRE-SERVICE TEACHER TRAINING INSTITUTION (LPTK)

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### ABSTRACT

The goal of this study is to improve high school chemistry teacher's competency in terms of classroom instruction. This goal is achieved through the workshop and continuous assistance activities that enable teachers to improve their knowledge and skills in developing learning scenarios that reflect scientific methods (brain-based learning) in the classroom instruction. The effect of teachers' competence improvement was measured by a survey of student's perception on the classroom teaching-learning process, using Likert-scale questionnaire. The first poll was conducted before the program was started, and the second one was after the program completion. The first observation shows that only 18% of students perceive that the chemistry learning process in the classroom are "good," while the rest (82%) say that it is "fair". However, the second poll shows that there are 45% of students who perceive that the learning process is "good"; interestingly, there are 35%, and 20% of respondents say "excellent" and "fair," respectively. Furthermore, data analyses using chi-square test conclude that the continuous teacher assistance activity significantly improves teachers' competencies. This article describes detailed of collaboration program and the results of improvement of chemistry teachers' competence in north Lombok regency.

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**Keywords:** teachers' competences; students' satisfaction; continuous collaboration; pre-service teacher training institution; teacher forum on subject matter

### INTRODUCTION

Indonesian Law No. 14 the year 2005 on Teachers and Lecturers states that teachers are professional educators and must have competencies that include pedagogical competence, professional competence, personal competence, and social competence. Teacher's competence is related to performing duties as a professional educator. It means that a competent teacher is a teacher who has characteristics such as mastering the scientific

substance of his/her study field and able to carry out attracting learning activities for the students to trigger their learning spirit and motivation. Therefore, there is a close relationship between teacher's competence and student's learning satisfaction.

Until nowadays, student's learning satisfaction is still being discussed as an important issue among various learning problems at school. For example, based on the observations of class activity, especially chemistry, in numerous schools shows that there are many students who are not interested / bored / dissatisfied with the learning

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activities which one of the indications is that they are delighted when the chemistry lesson at a certain time is canceled for reasons such as teacher has a meeting, attends a certain ceremony outside school and so on.

According to Kotler, as quoted by Isnaini *et al.* (2016), there are two indicators of satisfaction: (a) Expectations (related to students' perception regarding what they want to achieve), and (b) Performance (related to students' perception of what they have achieved). In the context of the partnership activities, the indicator of students' satisfaction is the performance of teachers as the students have achieved (get involved) the learning activities well so that they have built a perception of the activities.

Numerous empirical studies related to the relationship between teachers' competence and students' satisfaction have been conducted. Panjaitan (2013) reported that 53.30% of students' satisfaction is influenced by the teachers' competence. Furthermore, Puspayani (2012) found that the contribution of professional competence of teachers to students' satisfaction is 39.40%. Other studies related to the same issues have also been reported (Long *et al.*, 2014; Fernandez, 2013; Suarman, 2015). At high education level, it has been reported that lecturers' competence has positive and significant effects on students' satisfaction (Sahin, 2014; Seng, 2013; Winahyuningsih & Edris, 2012; Rahmawati 2013; Lee, 2008; Wu *et al.*, 2010). Of course, there are other factors that influence students' satisfaction in learning that go hand in hand with teachers' competence factors (Widoyoko and Rinawati, 2012; Asto, 2012; Machali, 2011; Wahjanto, 2007; Sutardi and Sugiharsono, 2016; Al-Ajami and Soeharto, 2014; Pan, 2014).

It is further known that various strategies have been used to improve teachers' competence. For example, Winarsih & Mulyani (2012) reported that pedagogical competence, professional competence, social competence, and personal competence could be improved through lesson study. Similarly, workshops and mentoring in the PPG program (Professional Teacher Education Program) are able to improve the pedagogical competence of prospective teachers (Anwar, *et al.*, 2012). In addition, the model of lesson study is also used to improve the performance and level of future teacher students' satisfaction (Sumarti, *et al.*, 2015).

From the above description, it can be summarized that to improve students' learning satisfaction, a teacher must have good competencies. Ministry of national education's regulation

16/2007 as quoted by Mulyasa (2012) states that one of the pedagogical sub-competencies is to determine learning strategies based on the characteristics of students, the competence to be achieved, and teaching materials. The last mentioned is much related to professional sub-competence. Therefore, it can be concluded that it is necessary to improve aspects of pedagogical competence and professional competence in order to improve students' learning satisfaction. This is realized in the activities of improving teachers' competence through a partnership between Chemistry Education Study Program of Faculty of Teacher Training and Education of University of Mataram (LPTK) and Teacher Forum on Subject Matter (MGMP) of Chemistry of North Lombok Regency.

## METHODS

This study aims to illustrate the results of collaborative activities between LPTK and MGMP of Chemistry and its impact on teachers' competence improvement, especially related to professional competence and pedagogical competence. The improvement of teachers' competence is measured by students' polls regarding the learning activities of chemistry (learning satisfaction) in the classroom.

The research is conducted in all public SMA / SMK (9 schools) in North Lombok Regency. The activity begins with students' polling through questionnaires, followed by teachers' assistance in developing lesson plan (learning scenarios and supporting instruments) followed by practices, and ending with a second students' polling. The time span between first and second polling is five months. The teacher counseling program is conducted either face-to-face or online, in the form of syllabus analysis of chemistry subject matter; in particular looking at Basic Competencies (KD) relevant to Core Competencies 3 and 4, which are further developed into learning scenarios and supporting media (practical / demonstration instructions, student discussion sheets, project implementation manuals, etc.). The lesson plan describes student learning activities employing inquiry and discovery models that incorporate a scientific approach. At the end of the advisory phase, learning activities in each class were conducted using the lesson plan the teacher had arranged.

The respondents are 524 students from 17 classes (first poll) and 647 students from 20 classes (second poll). Meanwhile, the numbers of chemistry teachers involved in this research are

14 people from 9 public SMA / SMK in north Lombok regency. The results of the polls are then tabulated in the form of contingency tables that include the frequency of occurrence (observed frequency) and estimated expected frequency. The difference between the frequency of occurrence and the estimated expected frequency is then analyzed by chi-square test to see the effect of the partnership program on teachers' competence.

## RESULTS AND DISCUSSION

Improving teachers' competence, which is the objective of this program, was dug out through students' polls about their learning activities in chemistry class. The meaning of "improving competence" is measured by analyzing the difference of the first poll results (before the implementation of partnership program), and the result of the second poll (after the implementation of the program).

Questionnaires used to collect poll data consist of 19 questions with four answer choices. The options are (a) agree, (b) tend to agree, (c) tend to disagree, and (d) disagree. The statement points in the questionnaire are positive statements interspersed with negative statements. Every seven positive statements are followed by a negative one. It is planned to avoid the boredom of respondents in filling in the questionnaire and keep their concentration in reading and understanding the statement points.

Each respondent's answer is given a score and then summed to obtain the total score of each questionnaire. The 19 statement points will be generated a minimum score of 19, and the maximum score 76. The range between minimum score and the maximum score is then grouped into four categories. They are (a) very good, (b) good, (c) fair, and (d) poor. Furthermore, the total score of each class (obtained from the sum of each respondent scores of each class) is calculated to find the average score and categorized. This category is considered as the result of students' polling in each class (the frequency of occurrence or observed frequency). The results of the students' poll are shown in Table 1.

As shown in Table 1 above, there are only 3 out of 17 classes in the first poll (or 18%) surveyed stated that the chemistry learning activity was "good." It implies that 18% of students stated that chemistry teachers "succeed" in teaching them as indicated by their satisfaction in learning chemistry at school. However, it should be noted that students in 14 other classes (or 82%) stated

"fair" or that they felt "less satisfied" with the chemistry learning activity they had.

**Table 1.** The frequency of occurrence (observed frequency) and estimated expected of students' poll about chemistry learning activities at school

Category	Before the Program	After the Program
Very Good	0 (3,22)	7 (3,78)
Good	3 (5,51)	9 (6,49)
Fair	14 (8,27)	4 (9,73)
Poor	0 (0)	0 (0)

\*\*The numbers in parentheses indicate the estimated expected frequency

The result of the preliminary survey indicates that the level of students' learning satisfaction is still low. Therefore, it is necessary to make efforts to improve the performance of chemistry teachers in north Lombok regency. In this case, the teachers need training in pedagogical competence as well as professional competence (understanding the basic concepts of chemistry). Strategies to improve teacher competence should be planned with few "disruption" to the teaching implementation and learning activities in schools. The implementation of learning activities in the classroom is the first priority task of teachers to do.

By considering "the disturbance," the research team did a mentoring to teachers continuously for approximately five months (one semester). Teacher's assistance programs are intended to improve teachers' knowledge and skills in planning learning scenarios and putting them into practice in the classroom. As the mentoring activities need to involve teachers from nine schools, the research team teamed up with teachers' forum (MGMP) in north Lombok regency as partners. Assistance is conducted by face-to-face and non-face-to-face or online (facilitation via electronic mail).

The mentoring begins with a discussion involving all the teachers at the MGMP meeting. From the discussion, the team acquired a picture of the difficulties or obstacles of teachers in implementing teaching plan in schools that related to the lack of learning facilities and infrastructure, the teachers' administration duties, etc. In addition, an agreement was achieved to develop learning scenarios derived from basic competence (KD) in the syllabus of Chemistry Lesson of MIPA (Mathematic and Natural Science) specialization. The compiled scenarios are selected in

accordance with the basic competence to be delivered in each class, either basic competence for class X, class XI, or class XII. In the discussion activities, the development principles of learning scenarios that utilize the scientific method are also discussed. These principles are to be put into operation in the students' class activities plan.

The final session of the meeting is used to practice the design of teaching materials, such as practical instructions, students' discussion sheets, and instruction of learning manuals outside the class and so on. Teaching materials finalizing activity is conducted after the MGMP meeting which includes e-mail and face-to-face meetings at schools (small-scale meetings involving 2-3 schools only; these meetings were held in three areas). Lastly, these final teaching materials are implemented in each classroom that involve teachers' colleagues in the school as observers who record and pay attention to students' learning activities (lesson study model). Classroom observation results were used for learning reflection in each school.

During teacher assistance activity it is found that, generally speaking, the teachers: (a) are not yet accustomed to preparing the lesson plan independently, (b) are less able to analyze the contents of basic competence (KD), and (c) carry out the learning activities based on the materials in certain chapter of a chemistry textbook. The last mentioned results in that teachers experience the materials to be taught are very inflexible. It seems that they have a perception that all material descriptions of a chapter should be taught in the classroom. Of course, this kind of learning is content-oriented and emphasizes more on explanations / lectures, classical questions and answers, and problem exercises.

Content-oriented learning results in the higher burden of teachers who feel rigid and students are less interested in chemistry lessons ending in their dissatisfaction with the learning activities in the class. The results of the first students' poll and of the discussions at the MGMP meeting provides evidence supporting this condition which reports that 82% of the students were unsatisfied with chemistry lessons at school and the teachers say that the subject is very inflexible.

Teacher assistance activity in developing learning scenarios has successfully changed the conditions of the learning activities of chemistry to betterment. It can be seen in the results of a second students' poll which report 7 out of 20 classes (35%) state the learning activity in chemistry class is excellent, and 9 classes (45%) state good, whereas only 5 classes (20%) state fair (see table

1). Thus, teacher assistance activity has successfully: (a) reduced the number of students' dissatisfaction to chemistry learning from 14 classes to 4 classes, (b) increased students' satisfaction from 0 to 7 classes which express very satisfied, and (c) increased the number of satisfied students from 4 classes to 9 classes.

Furthermore, the influence of this partnership program on teachers' competence is quantitatively calculated from the contingency table analysis (Table 1) by chi-square test comparing the difference between the frequency of occurrence ( $f_{ij}$ ) and estimated expected frequency by using formula  $V_{hit}$ . It is obtained a  $V_{hit}$  of 14,00 with  $\chi^2_{tabel}$  and  $d_f = (4-1)(2-1) = 3$  is 11,345 with significant level  $\alpha = 0,01$ . Thus, it has been statistically proven that there is a relationship between the partnership program and teachers' competence meaning that teacher assistance program to develop lesson plan is able to significantly improve teachers' competence (pedagogical and professional). The enhance teacher's competence may also be seen from the products of learning scenarios prepared by the teacher who will have practice in class. In such scenarios, the student's activity is obviously described that encloses steps of scientific methods such as observing, measuring and collecting data, analyzing data and making inferences. To design such scenarios, it is necessary to adequately master the basic concepts of science (professional competence) and to find creative and interesting strategies that match to the local condition (pedagogical competence). Finally, the implications of improving teacher's competence are increasing students' satisfaction in learning chemistry. It means that students become more interested and more passionate in keeping to the learning activities in chemistry class.

## CONCLUSION

The partnership program between MGMP (Teacher Forum) and LPTK (Pre-service Teacher Training Institution) is able to improve the professional competence and pedagogical competence of chemistry teachers in north Lombok regency. This conclusion is derived from the teachers' ability in developing learning scenarios oriented to students' learning activities based on principles of scientific methods. Thus, the learning activities become more attractive for the students as they engage in class activities. The impact is students' satisfaction in keeping to the learning activities increased significantly at the end of the program than before the program implemented. The statistical test of the students' poll results confidently



supports this conclusion. Thus, the outcomes of this partnership program can be beneficial to local governments (especially education and cultural office) as a basis for consideration in formulating policies to improve teachers' competence in cities / districts throughout the province of West Nusa Tenggara.

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