Role of Forum on Professional Development (MGMP) in Increasing Chemistry Knowledge for Chemistry Teachers

R. Usman Rery¹, Jimmi Copriady²*, Syofni³, Masnaini⁴, Sri widia Albeta⁵

¹,²,⁴,⁵Chemistry Education Department, Faculty of Teacher Training and Education Science, Universitas Riau, Indonesia
³Mathematic Education Department, Faculty of Teacher Training and Education Science, Universitas Riau, Indonesia

r.usman@lecturer.unri.ac.id, jimmi.c@lecturer.unri.ac.id

* Corresponding author

Abstract: The study was carried out to identify the role of Forum on Professional Development (MGMP) in increasing the understanding of chemistry content knowledge for chemistry teachers in Pekanbaru. The participants are 121 chemistry teachers from secondary schools and vocational schools. Collection of data used questionnaire on perception on teachers’ training following MGMP and non-MGMP approach. Then, the data analysis was done using SPSS 22.0. From the analysis, it is shown better understanding in training for teachers under MGMP rather than teachers without MGMP (workshop and seminar). Teachers from regular secondary schools show higher perception level than teachers from vocational schools in training under MGMP. Meanwhile, teachers from vocational schools show higher perception level than teachers from regular secondary schools in training (workshop and seminar) without MGMP. There is no significant difference in perception of training under MGMP and without MGMP (workshop and seminar) between teachers from secondary schools and vocational schools. The study implies that training at MGMP provides additional chemistry content knowledge and the findings can be reference for relevant parties to develop and expand teachers’ training under MGMP for strengthening the knowledge of teachers, old and new alike in the district or national level to expand.

Keywords: MGMP, training, teachers, chemistry.

1. Introduction

Under Government Policy No 19 Year 2005 (Government Regulation No.19 Year 2005), in general teachers must have 4 competencies: pedagogy, personality, social and professional. Republic of Indonesia Rule No 14 Year 2005 about teachers and lecturers Chapter I article I item 4: professional means job or activities done by individuals and becomes source of income that requires membership, abilities or skills which meet the standard or certain norms and require professional education. A teacher is considered professional if he meets the professional principles like having the abilities, having commitment to increase quality of education, having educational qualification and background suitable with job scope, having suitable competencies with job scope, having responsibilities to execute professional duties and achieving set income according to work performance.

MGMP is a forum or professional discussion body for subject teachers at department level or even at schools with two main elements: discussion and subject teachers. Discussion here means to reflect activities from, by and for teachers. Subject teachers are teachers at state schools or private schools who teach and responsible to handle certain subjects as set in the curriculum. According to Yunusshofa (2008), MGMP is the platform for subject teachers to meet and it is non-structure with levels from provincial side, district to school level [14].

Thus, with the existence of MGMP as professional platform for the teachers, it is hoped that similar vision and perception can be achieved in deciding on attitude and action for various problems until the right and effective solution is in hand. Moreover, through MGMP the teachers are able to improve their techniques in handling the subjects under their responsibility. MGMP that is carried out systematically can be the drive to expand quality professionalism, independence and sustainability among teachers [3]. Professional teachers are those with required competencies to do their teaching and educational works. The competencies are knowledge, attitude, professional skills, good personality socially or academically [8].
According to Hardjanto (2012) training is part of the education [5]. A good training is specific, practical and immediate. Hasibuan (2000) mentioned that training is an effort to increase knowledge and expertise of an officer to carry out certain jobs [6]. This is parallel with Sudiro (2009) who said: one of the ways to increase quality of human resources in organization is through educational program and training which are done well and systematically [12]. In other words, it is vital to have education and training in an organization with the aim to improve the performance of the officers or teachers covering supporting knowledge and skills, character building for teachers in improving their professionalism. Thus, the study will look at training of teachers under MGMP for secondary school teachers at Pekanbaru in the effort to look at issues regarding professionalism and excellence among chemistry teachers.

Chemistry is one of the branches under knowledge of nature and a vital knowledge to be learnt [11]. For teachers who are teaching chemistry, they must have good understanding of the subject. There are difficult concepts to be understood and become a difficulty for teachers to teach them such as atomic structure and abstract nature of hydrocarbon. According to Tasker and Dalton (2006), there are three levels of learning chemistry: macroscopic, microscopic and symbolic [13]. All these three levels must be presented well by the teachers so there will not be any misinterpretation. Johnstone (2006) stated that these levels in teaching are important in chemistry education because they help to ease the difficulties in learning chemistry along with learning model or strategies to explain causes and avoid misconception in chemistry [7]. Therefore, this study will explain how far teachers’ perception on understanding of chemistry content knowledge under MGMP training. Teachers as the instructors have the opportunity to increase their understanding in training like MGMP.

2. Methodology

The research is quantitative in design with a survey to identify the role of MGMP training in Pekanbaru in the effort to increase chemistry content knowledge among chemistry teachers. The research instrument used in the study is adapted one from past related studies and modified by the researcher to meet the objectives and answer the research questions.

The samples of the study are 121 chemistry teachers in Pekanbaru. A questionnaire is used as research instrument to collect data on teachers’ perception about their content knowledge after training under MGMP and without MGMP. In the questionnaire, there are 12 items on teachers’ knowledge and understanding under MGMP and another 12 items on the perception for knowledge and understanding through workshop and seminar without MGMP training. Data analysis was carried out using SPSS 22.0 with the aim to look at teachers’ perception under descriptive and inferential analysis using t-test.

3. Findings and discussion

3.1 Level with MGMP and non-MGMP

Teachers’ training in increasing the understanding in chemistry is one of the aims to see how far is the influence of training for understanding chemistry topics in upgrading quality among teachers. Table 1 shows perception level of teachers who went for such training in order to improve their understanding of chemistry.

<table>
<thead>
<tr>
<th>No</th>
<th>variable</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MGMP</td>
<td>4.28</td>
<td>0.46</td>
</tr>
<tr>
<td>2</td>
<td>Workshop</td>
<td>3.80</td>
<td>0.45</td>
</tr>
<tr>
<td>3</td>
<td>Seminar</td>
<td>3.90</td>
<td>0.54</td>
</tr>
</tbody>
</table>

Based on Table 1, perception of teachers under training with MGMP has mean 4.28 (SD: 0.46) which means their perception is high, while those under seminar have mean 3.90 (SD: 0.54) and those under workshop have mean 3.80 (SD: 0.45). As overall, teachers’ perception on training under MGMP shows high level towards helping them in understanding chemistry materials.
Based on the analysis, it shows that through training with MGMP the teachers able to improve their knowledge and understanding chemistry materials. Teachers’ knowledge is a component under professionalism and efficiency which requires more than mere knowledge [4]. In addition, skills, attitude and motivation also contribute to the mastery of teaching and learning. Such professionalism is needed in contributing towards improved professionalism among teachers [9]. In addition, based on the research conducted, MGMP is guided by instructors who are experts in chemical content and able to motivate teachers to improve the content knowledge of chemistry. The instructor presented in accordance with the needs of the school curriculum. The teacher discusses is considered in difficult topic with the instructor's guidance. Besides, the time of MGMP program was scheduled by teachers that can be followed by teachers without disturbing the activities of teachers in teaching. Moreover, the place of MGMP is a place that has been known to all teachers so that teachers are not awkward to attend the MGMP.

3.2 MGMP training based on schools

Inferential analysis for t-test was carried out to look at the difference in perception of teachers who are teaching in secondary schools and vocational schools. Table 2 shows mean of teachers’ perception based on training under MGMP based on schools.

Table 2. Mean of perception on MGMP training based on schools

<table>
<thead>
<tr>
<th>Type of school</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary school</td>
<td>78</td>
<td>4.29</td>
<td>.46451</td>
</tr>
<tr>
<td>Vocational school</td>
<td>43</td>
<td>4.27</td>
<td>.47776</td>
</tr>
</tbody>
</table>

Table 2 indicates that teachers from secondary schools have higher mean of perception for training at MGMP compared to those from vocational schools. Based on the analysis, there is no significant difference, other than higher mean. Researcher did homogeneity test for the t-test analysis. The analysis shows that significant level (sig: 0.336 > p: 0.05) with homogenous data under t-test analysis.

Table 3 shows t-test analysis with t value = 0.155; sig = 0.877 which means there is no significant difference in perception on the aspect of increasing content knowledge at MGMP based on the teachers from secondary and vocational schools. This indicates that teachers at both schools have the same perception of MGMP training helps to improve chemistry content knowledge for them.

Table 3 t-test on perception of MGMP training based on schools

<table>
<thead>
<tr>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
<th>Mean Difference</th>
<th>Std. Error Difference</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.155</td>
<td>119</td>
<td>0.877</td>
<td>.01380</td>
<td>.08912</td>
<td>-.16267 - .19028</td>
</tr>
</tbody>
</table>

3.3 Non-MGMP training based on schools

T-test analysis was carried out to identify difference in perception of training through workshop and seminar based on secondary and vocational schools. Table 4 below explains the mean perception of non-MGMP training through workshop and seminar.

Table 4. Mean perception of non-MGMP training based on schools

<table>
<thead>
<tr>
<th>Type of school</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary school</td>
<td>78</td>
<td>3.77</td>
<td>0.498</td>
<td>.05639</td>
</tr>
<tr>
<td>Vocational school</td>
<td>43</td>
<td>3.85</td>
<td>0.350</td>
<td>.05342</td>
</tr>
</tbody>
</table>

Table 4 shows that teachers from secondary schools have lower mean perception (mean = 3.77, SD: 0.498) on non-MGMP training if compared to teachers from vocational schools with mean (mean =3.85; SD =0.350). Based on the analysis, there is no significant difference except higher mean.
Homogeneity test was carried out for the t-test analysis. The analysis indicates that the significant level is (sig:0.054 > p:0.05) and the data is homogeneous and proceed with t-test analysis.

Table 5. t-test perception of non-MGMP training based on schools

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>Sig. (2-tailed)</th>
<th>Mean Difference</th>
<th>Std. Error Difference</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
<td>.901</td>
<td>119</td>
<td>.369</td>
<td>-.07725</td>
<td>.08575</td>
</tr>
</tbody>
</table>

Table 5 shows that t value t = -0.901 ; sig = 0.369 with no significant difference on perception of training from the aspect of increasing content knowledge at non-MGMP training (workshop and seminar) based on teachers from secondary and vocational schools. This means that teachers from both types of schools have the same perception that non-MGMP training (workshop and seminar) increases chemistry content knowledge.

Based on the findings of the study, there is no difference in teachers’ perception towards seeking knowledge from training under MGMP or without MGMP. The accepted education and behavior in content knowledge are the same. This was agreed by Dantes (2011) who said that in educational context there was equal right for everyone so they could get the highest and the best education regardless of race, economic background and gender [1]. Thus, the findings are also at par with the objectives of MGMP that stated MGMP as a platform for professional activities for teachers [2]. In addition, MGMP is the professional body for teachers with professional programs and specifically established for expanding standardized concept and subject assessment at national level [10].

4. Conclusion

The study has proven that training under MGMP plays its role in increasing chemistry knowledge among secondary school teachers. Continuous training needs to be planned involving chemistry teachers whether they are certified or not in the effort to improve the quality of teaching and mastery of chemistry. The importance of MGMP training should be highlighted among teachers. All parties must be involved in the effort to increase mastery of teachers in chemistry. Besides schools, the ministry and the private sector must be involved in this matter.

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REFERENCES