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The Role of Empowerment of Dumai Science Teachers Association (MGMP IPA) in improving the Professional Competency of Junior High School Science Teacher

Yulvisriani*[1,2], Evi Suryawati[2], Fitra Suzanti[2]

[1] SMP Negeri 13 Kota Dumai, 28882, Indonesia
[2] Faculty of Teacher Training and Education, Universitas Riau, Pekanbaru, 28293, Indonsia

ABSTRACT

This study aims to look at the role of empowerment Science Teachers Association (MGMP IPA) in improving the Professional competence of science teachers in the city of Dumai, Indonsia. This type of research was descriptive qualitative. The population of this study were all teachers in MGMP IPA Dumai. The research sample was 70 teachers who were members of the MGMP IPA Dumai. Data collection technique were using questionaires and test. The result showed that average professional ability of the teachers was 74 in good categories, pedagogical average was 61 in the moderate category and PCK was 56 in the moderate category. This shows that MGMP IPA Dumai has not fully played a role in increasing the professional competence of teachrers.

1. Introduction

Education is an important sector in Government policy, this is in accordance with the Law of the Republic of Indonesia Number 20 of 2003 Article 39 states that "Educators are Professionals who are tasked with planning and implementing the learning process, conducting guidance and training and doing community service, especially educators. in Higher Education ". Achieving high quality education requires teachers who are professional, qualified and meet the required competencies (Supardi, 2013).

Teacher professionalism is a must and demands that must be met. The competencies that must be possessed by a teacher according to Law Number 14 of 2005 concerning Teachers and Lecturers article 10 paragraph (1) are 1) pedagogical competence, namely the ability to manage students, 2) personality competence, namely a strong personality ability, noble character , wise and authoritative as well as an example of students, 3) social competence, namely the ability of teachers to communicate and Interact effectively and efficiently with

students, sesame teachers, parents and the surrounding community, 4) professional competence, which is broad mastery of material (Haloman, 2013).

Professional competency of teachers can be interpreted as the ability and authority of the teacher in carrying out his profession of knowledge with high ability. Furthermore (Sulaiman, 2015) said professional development is an ongoing improvement to professional knowledge and skills during one's career. In carrying out professional duties, teachers are obliged to enhance and develop their academic qualifications and competencies in a sustainable manner in line with the development of science, technology and the arts

Professional teachers will produce quality education processes and outcomes in order to realize the intelligent and competitive human beings that are people who believe and obey God Almighty, noble, healthy, knowledgeable, proficient, Creative, independent and be a democratic and responsible citizen (Suryawati, 2018).

Teacher competence at all times must be developed, one of them by deliberation teacher subjects (MGMP). MGMP is a professional activity for teachers of the same subjects at SMP/MTs/SMPLB, SMA/MA/SMALB, and SMK/MAK at the District/city level consisting of several teachers in a number of schools (Depdiknas, 2009). The field of study of natural Sciences (IPA) for junior High School (SMP) consisting of biology and physics subjects formed a group called MGMP IPA Integrated

Seeing the reality in the field of MGMP is still many limitations. These limitations can be seen from: (1) Human resources, managers involvement and members have not been optimal (2) the preparation of programs that are less based on real needs, (3) inadequate facilities and infrastructure, (4) frequency and length of face-to-face That Sangkat a little, (5) The limited operational funds (6) managers and MGMP members have not yet identified their own needs.

Currently required real steps that can be done in order to support MGMP, among others: (1) the aid of operational funds MGMP DAI Local government and central government should be more enlarged, along with 20% allocation of funds for education from the central government. (2) There is a routine meeting of two or three not once between the education Office, Supervisors, MKKS and MGMP administrators to report the program that has been implemented and evaluate it jointly, (3) The connection and good communication between the MGMP Manager at the district/city and province so that together to cooperate with each other to overcome the limitation of MGMP, (4) The construction of the district education Office/city, LPMP, Dinas Pendidikan Propinsii, P4TK and others Continuously and sustainably to MGMP, (5) Increase MGMP involvement in activities with local education department and MKKS in improving the quality of education resources, (6) to develop MGMP program according to the needs of teachers.

The results of questionnaires tests and review of MGMP IPA Dumai City, document found several problems, namely the low ability of administrators to compile the MGMP IPA Dumai City program with an average of 68 sufficient categories wich resulted in low role of MGMP in improving teacher professionalism. Based on these problems, a MGMP IPA program is needed that can improve professional competence, pedagogy and PCK. This study aims to determine the role of MGMP in improving teacher professionalism in MGMP IPA Dumai City.

2. Methodology

The type of research was descriptive qualitative. The research was carried out at MGMP IPA Dumai City. The research design used a test. According to Sugiyono (2017) the studi design consist of randomly selected group. The ability of teachers to be tested with professional, pedagogy and PCK. While the research location was conduted at MGMP IPA Dumai City from January to March 2019.

The population used is all members of MGMP IPA Dumai City. The sample of this study consisted of 70 science teachers in MGMP IPA Dumai City. The sampling technique was done randomly. The parameter used in this research is the professional ability of the teacher using the test sheet. Analisis of the result of questionnaire sheet of implementasion of prossesional teachers was done by giving a score to each item the gird in the following table 1.

Table 1. Professional teacher implementation professional

No	Aspect	Number of statement Items	Item Number
1.	The ability to plan the teaching and learning process	2	1-2
2.	Master the lesson material	2	3-4
3.	Carry out the teaching learning process	7	5-11
4.	Delevop sustainable professionalism	7	12-19
5.	Use it for self-develpoment	2	19-20

Filling out questionnaire sheet of implementasion of prossesional teachers was based on the spitulated answer scor provision consist of 5 categories with range score of scores in 1-5 in the Table 2

Table 2. Scoring answer out questionnaire sheet of implementasion of prossesional teachers

Rating Score	Answer
1	Totally Disadrr
2	Disagree
3	Don't Agree
4	Agree
5	Strongly Agree

Data analysis was professional by determing the average pentage of aspect of professional, pedagogy dan PCK using the formula : $P = \dfrac{K}{M} \times 100$

The percentage of the professional, pedagogy dan PCK was analyzed with the criteria the following table 3.

Table 3. Percentage Criteria for prossesional teachers

Rating Score	Answer
>4,20 - 5,00	Very Good
>3,40 – 4,20	Good
>2,60 – 3,40	Enough
>1,80 – 2,60	Not Good
1,00 – 1,80	Not Very Good

Criteria for professional, pedagogy and PCK can be seen Table 4

Table 4. Criteria for professional, pedagogy and PCK

Interval	Category
$86 \leq x \leq 100$	Very Good
$71 \leq x \leq 85$	Good
$56 \leq x \leq 70$	Enough
≤ 55	Not Good

The test result w of preference for question were analyzed using SPSS version 23 windows and the result of thetest were 0,714 with a hig index, the difference between the questions was 0,20-0,40 with good criteria and the level of preference for question was 0,30-0,70 with a moderate index.

3.   Results and Discussion

1. Implementation of Professional Competencies

To see the implementation of professional competence in the MGMP, a closed questionnaire consisting of 20 statements and 5 indicators and interviews was used.

The results of the assessment of the implementation of the MGMP IPA teacher's professional competence in Dumai City are presented in Table 5.

Table 5. Results of Analysis of the Implementation of the Competenc of Science Teachers in the City of Dumai

No	Indicator	Sub Indicators	Statement	
			Average (%)	Criteria
1.	Ability to plan teaching and learning programs	The teacher can make a lesson plan implementation	4.45	Very Good
		The teacher can formulate learning objectives	4.50	Very Good
2	Master the lesson	The teacher can explain the	4.32	Very Good

		material	lesson well		
			The teacher can delver the material sequentially	4.50	Very Good
3	Carry out the management of the teaching and learning process		Teacher can make simple learning tools	4.18	Good
			Theacher can us the media in learning	4.27	Very Good
			Teacher can design student worksheet	4.18	Good
			Teachers an desaign authentic assessments	4.50	Very Good
			The teacher can make an assessment	4.32	Very Good
			Teachers can make leraning remedial	4.36	Very Good
			Teac learninghers can procure	4.34	Good
4	Develop your professionalism in a sustainable manner by taking reflective actions		Teachers can do educational research	4.05	Good
			Teachers cn attend seminars	3.91	Good
			Teacherc publicationscan make scientifi	4.18	Good
			Teachers can follow teacher performacompetenciesnce	4.09	Good
			Teachers can follow treaning	4.36	Very Good
			The teacher can write a learning journal	3,68	Good
			Teachers can be resource persons in training	3.86	Good
5.	Untilize information technology and co		Utilize information technology and commissioners for self development	4.55	Very Good
			The teacher can take advantage of the learning of TIK in the learning Process	4.45	Very Good
			Total Average	4.34	Very Good

Table 5. shows that the value of the implementation of the Professional competency of science teachers in Dumai City from 20 assessment sub-indicators ranged from 3.68 (good criteria) to 4.45 (very good criteria) with a total average score of 4.24 (very good criteria). Judging from the 5 assessment indicators, it is known that the indicators of the ability to plan teaching and learning programs, mastering subject matter, and utilizing information and communication technology for self-development have very good scores on all sub-indicators of the assessment (Firmansyah et al., 2020). Sub indicators designing lesson plans with a value of 4.45 categories are very good, this is in accordance with research conducted by Prasetyo et al (2016) which states that teachers are able to design lesson plans in accordance with school needs and teachers can integrate learning material with good classroom management. Sub-indicators deliver the material sequentially with a score of 4.50 categories very well, this is in accordance with Aydin et al (2012), said most teachers have high PCK skills because they have mastered the material and used good learning strategies.

Furthermore, the learning media sub-indicator with a value of 4.27 is very good category. In this case the teacher has been able to choose and collaborate media according to the lesson, but in making creative and innovative media has not been able to, the teacher only uses available media (Mahnun, 2012). This is supported by research Fitriani et al (2017) that mentions in the learning process of teachers, learning tools media, student worksheets are done after each subject matter is completed so that teachers must be able to create learning media (Zahara et al. 2020). The sub-indicators do the assessment with a value of 4.32 very good category, this is in accordance with research Rahmat et al (2014) which says the teacher has been able to design an evaluation according to the material, techniques and evaluation questions are also good.

While the indicators carry out the management of the teaching and learning process, and develop professionalism in a sustainable manner by taking reflective actions, there are several subindicators that are classified as good

Sub indicators that have good criteria on the indicators of the management of teaching and learning processes are: (1) teachers can make simple learning tools with a value of 4.18; (2) the teacher can design student worksheets with a value of 4.18; and (3) teachers can enrich themselves with a value of 4.14. The low competency score on the indicator is due to the fact that there are some teachers who do not have the ability of teachers to make simple learning tools and student worksheets well. In addition, there are some teachers who often do remedial but rarely do enrichment because of limited time in learning.

The results of the assessment on indicators to develop professionalism in a sustainable manner by taking reflective actions there is only 1 subindicator that has a very good value that is the teacher can follow training with a value of 4.36, while other sub-indicators only have good criteria. The sub-indicators include: (1) Teachers can conduct educational research with a value of 4.05, (2) Teachers can take seminars with a value of 3.91, (3) Teachers can make scientific publications with a value of 4.18, (4) Teachers can take part in teacher performance competitions with value 4.09, (5) The teacher can write a learning journal with a value of 3.68; and (6) The teacher can be a resource in training with a value of 3.86.

The value of each indicator has not been maximally developed in a professional manner in a sustainable manner by taking reflective action due to the limited ability and time possessed by the teacher in carrying out all the demands of professional competence. So that not all teachers are able to carry out research, attend seminars, and make scientific publications. There are still some teachers who do not want to take part in teacher performance competitions on the grounds that it is difficult to arrange a portfolio for the requirements to participate in teacher competitions. In addition, there are teachers who do not write journals on the grounds that they do not have enough time to write learning journals. As a result, not all teachers can be educational sources because to become a resource must go through a series of tests and have good professional competency
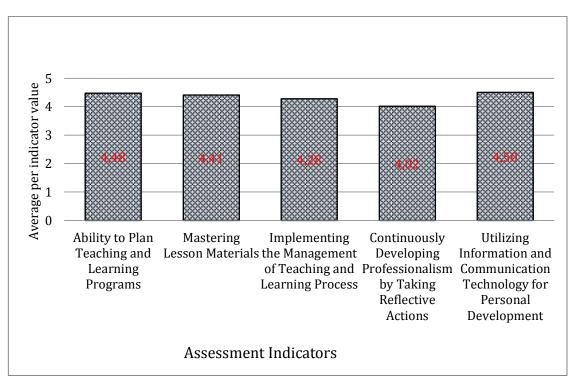
Figure 1: Figure The Results of Analysis of the Value Distribution of the Implementation of Professional Competence of Science Teachers in Dumai City

The results of the analysis as a whole are known that the distribution of the values of the implementation of the professional competence of natural science teachers in Dumai City is still classified as good to very good with a value of 4.02-4.50 (Figure 1). The average value of the total questionnaire for the MGMP Teacher Professional Competency per indicator was 4.34 with a very good category.

The average value of the total indicators of the ability to plan teaching and learning programs (4.48), mastering subject matter (4.41), implementing the management of teaching and learning (4.28), and utilizing information and communication technology for self-development (4,50) with very good criteria. The ability to design learning programs, master study materials, implement learning and the use of technology information in learning is a basic ability that every teacher must have. The smooth learning process is very much determined by the readiness of the lesson plan and the teacher's understanding of the subject matter. The higher the teacher's ability to develop learning tools that can be carried out in class the better the learning outcomes.

Indicators of developing professionalism in a sustainable manner by taking reflective action are indicators with the lowest achievement compared to other indicators with a value of 4.02 (good criteria). Professional indicators are determined by the level of activeness of teachers in participating in various professional programs such as: research activities, seminars, scientific publications, education and training (education and training) and as an educational resource. The low participation of the Mathematics MGMP teacher in Dumai City in research activities and scientific publications causes the level of

professionalism to be lower than other professionalism indicators. This is in accordance with the research of Akuntono (2012) which said that there has not been an even distribution of teacher training activities, the availability of funds to conduct training, types and fields of training in accordance with the areas of teacher expertise, training models, teacher reluctance to attend training, low motivation of teachers to participate in training and the lack of the use of instructional media in training triggers low professional competence.

The results of interviews conducted with the head of the MGMP IPA of Dumai City, Mr. Landra Iswandi, S.Si at the MGMP of IPA in Dumai City, out of the 10 questions raised, it turns out that the MGMP IPA of Dumai City has carried out routine activity programs such as discussion of learning problems, syllabus preparation, programs semester and lesson plans, curriculum analysis, preparation of teaching evaluations and discussion of material and stabilization to face national exams.

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While for the implementation of the development program it is still a little level of implementation. This is in accordance with a questionnaire distributed to teachers in the MGMP Science City in Dumai who said that professional development on an ongoing basis by taking reflective actions was still of little use such as education and training (10%), seminars (5%), teacher performance competition (3 %), scientific work (5%) and journal publishing (3%) and research (3%).

Education and training have a little implementation because not all teachers get the same opportunity to attend education and training. Boyded et al (2009) said one way to improve the ability of teachers is to participate through education and training. Teachers who are trained through deiklat can set learning goals well and can arrange learning plans to actualize the learning goals that they have compiled (Dhawan, 2014). Thus also with the seminar not all teachers get the opportunity to attend the seminar.

Teacher performance competition is also still a little bit done because it is related to teacher performance in participating in teacher contests such as outstanding teachers, National Teachers Olympiad (OGN). The low score in teacher competition based on interviews is caused by the teachers not bothering to develop portfolio and best practice / PTK papers, written tests and presentations as one of the requirements for the teacher competition. This is a very big obstacle for teachers, including writing scientific papers and journal making. This is caused by lack of knowledge and opportunities to attend training both at school and in the education office.

2. Teacher Professional Competency Assessment based on the Study of the Mathematics MGMP Documents of Dumai City Junior High School

Evaluation of document review is carried out to determine the level of professionalism: Organization, Programming, Human Resources, Facilities and Infrastructure, Management, Financing, and Monitoring that have been carried out at MGMP IPA SMP Dumai City. The results of the assessment showed that the average value of document readiness in each aspect was 68 with a sufficient category (Table 4.5). This shows that MGMP document compilation is not yet in accordance with the development of the GFC and needs to be developed (Mone, 2008).

Table 6. Assessment Results of the MGMP Science Natural Sciences Document Study in Dumai City Junior High School

No	Statement	Value	Category
1	Organization	70	Enough
2	Programming	75	Enough
3	Human Resources	75	Enough
4	Infrastructure	50	Less
5	Management	75	Enough
6.	Financing	40	Less
7	Monitoring	83	Good
	Total Average	68	Enough

Source: Processed Data 2019

Overall the average value of documents in each category is dominated by enough categories, except: (1) Human resources have a value of 83 (Good); (2) facilities and infrastructure with a value of 50 (less); and (3) financing with a value of 40 (less). The high value in the monitoring aspect is due to the MGMP in Dumai City having instructors at both Husnal Hayati and Azahan Daulay), provincial (Bambang) and national (Supirman) levels. Besides that, the MGMP of Natural Sciences in Dumai City was also supervised by 2 school principals in the field of natural sciences, namely Suriasmi, M.Pd and Mr. Supiman, S.Pd.

The Science MGMP in Dumai City is also directly developed under the leadership of the Head of the Education and Culture Office in Dumai City. While the low aspect of facilities and infrastructure is caused by the overall condition of the facilities owned is still limited. While the low aspect of financing is due to the lack of cooperation and financial support in the implementation of the MGMP IPA SMP Dumai City

The results based on the observations of researchers in the field of the lack of funds obtained by the MGMP IPA Dumai City because MGMP did not get assistance from the education office so that the funds obtained only from monthly membership fees. MGMP IPA of Dumai City very rarely gets help from the government. The lack of funding received by the City Science MGMP has

resulted in the lack of activities that can be carried out which will certainly affect the professional competence of teachers.

Funds for MGMP needs are only obtained through membership fees, and do not yet have a non-binding donor. MGMP does not yet have a production unit as a source of input and the MGMP IPA of Dumai City also does not have a non-binding sponsor as a source of MGMP funding. From the limited funds obtained by the MGMP IPA Dumai City, of course, is an obstacle, especially for the head of teachers who are in MGMP to carry out activities that are able to develop teacher professionalism.

3. Increasing of Science Professional Competency through Professional, Pedagogical and PCK Tests for Dumai City Science Teachers.

Pedagogic and professional level assessment of Natural Science Teachers in Dumai City Junior High School was carried out with cognitive tests using objective test instruments in the form of multiple choice with five multiple choices. The selection of objective tests is based on the considerations of the test takers. With the large number of test takers, the use of the description test becomes less effective and efficient, especially in terms of the time needed to correct (Sudijono, 2012). This is in accordance with Ambiyar (2012) said that with a multiple choice test the score is easier, objective and reliable. The complete Professional, Pedagogic and PCK test results can be seen in Table 7.
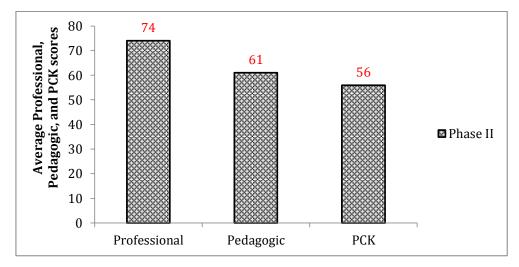
Table 7. Professional, Pedagogic and PCK Test Results

Value Criteria	Number of teacher based on ability tests		
	Profesional	Pedagogic	PCK
86-100	8(11%)	4(5%)	6(9%)
71-85	35(50%)	6(8%)	3(4%)
56-70	26(37%)	21(30%)	36(51%)
≤ 55	1(2%)	19(27%)	25(36%)

Source: Processed Data 2019

Based on the results of the Professional, Pedagogic and PCK tests it can be seen that 35 people get good grades at intervals of 71-35 this shows that the ability of teachers in the field of professional teachers is good and there are even 8 teachers who have received very good grades at intervals of 86-100. While for pedagogical mastery the average teacher is in the sufficient category with an interval of grades 56-70. And the average PCK of the teacher is in the sufficient category with a value interval of 56-70.

From the implementation of the Professional, Pedagogical and PCK tests we can see that the professional abilities of teachers are in the good category, and the teacher's pedagogical abilities are sufficient and the PCK abilities are in the sufficient category (Figure 2.).

Picture 2. The average Professional, Pedagogic and PCK scores

From the table it can be seen that the teacher's pedagogical ability is in the sufficient category (61). In item no. 55 is the item that is at least correct which is 15, this is because the teacher does not understand the flip charter method, the SAVI method, the comparative method and the quarter. And for question no. 66 is the problem most answered correctly by the teacher regarding the relationship creating a reciprocal relationship between the teacher and students that is easily analyzed by the teacher

4. Conclusion

Based on data analysis, it can be concluded as follows:
a) The implementation of the Professional Competency Program in the MGMP IPA in Dumai City is dominated by routine activities such as discussion of learning problems, syllabus preparation, semester program and lesson plans, curriculum analysis, compilation of learning instruments and discussion of the material for strengthening the National Examination. Therefore, the implementation of the MGMP Science Program in Dumai City is more directed to the Development Program.

b) The ability of the Professional Competence of Science Teachers in Dumai City is still low, therefore it is necessary to increase teacher competence through development program activities such as seminars, research, education and training, teacher performance competition, scientific publications and journal publications.

c) Empowerment of the Subject Teachers' Working Group MGMP members in Dumai City have not been able to arrange programs according to the needs of the science teacher. Therefore, management is needed to be able to plan the program according to the needs of its members so that the MGMP IPA of Dumai City really plays a role in increasing Teacher Professionalism.

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