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The Professional Competence Analysis of Chemistry Teacher of Senior High School in Merauke

Jesi Jecsen Pongkendek[a,*], Dewi Natalia Marpaung[b], Dewi Satria Ahmar[c], Sitti Rahmatia[d]

[a]*Faculty Teacher Training and Education, Universitas Musamus, Merauke, Indonesia, pongkendek@unmus.ac.id*
[b]*Faculty Teacher Training and Education, Universitas Musamus, Merauke, Indonesia, marpaung_fkip@unmus.ac.id*
[c]*Department of Chemistry Education, Universitas Tadulako, Palu, Indonesia, dewisatriaahmar@gmail.com*
[d]*SMA Negeri 2 Merauke, Merauke, Indonesia*

Abstract

Teacher competence is the roundness of knowledge, skills and attitudes that manifest smart and responsible actions in carrying out tasks as agents of learning. Teacher competencies consist of pedagogic competencies, social competencies, personality competencies, and professional competencies. This research focuses on teacher professional competence. Teachers' professional competencies are examined in 3 aspects namely mastering the material, mastering basic competencies, and developing learning materials that are creatively influenced. This research is a descriptive study to get a picture of the professional competence of Senior High School chemistry teachers in Merauke District. The study was conducted in 3 schools, namely SMAN 1 Merauke, SMAN 2 Merauke and SMAS YPK Merauke. Data obtained through observation, interviews, and documentation. The data obtained were analyzed by means of data reduction, data presentation and conclusion drawing. Through descriptive data analysis the results are obtained: (a) mastering material with an average value of 1.6 being in the category of very competent; (b) mastering basic competencies with an average value of 1.5 very competent categories; and (c) developing learning materials that are creatively influenced by an average value of 1.25 competent categories. Average overall aspects of professional competence 1.45 competent categories. The results of the analysis indicate the professional competence of chemistry teachers in Merauke District is quite good, although there are things that need to be developed so as to improve the professional competence of teachers who have.

Keywords: Professional competence, chemistry teacher, senior high school.

1. Introduction

Quality human resources is very important for the development of a nation with the availability of quality human resources is the main key to the success of development. In realizing quality people and society, the world of education, especially schools, is required to play an active role in improving the quality of human resources [1]. The

* Corresponding author.
E-mail address: pongkendek@unmus.ac.id (Jesi Jecsen Pongkendek)

learning process is expected to produce high quality and highly competitive human resources to face competition in the current era [2]. The effectiveness of a learning process is shown by the results of the learning process and shows the quality of the learning process that has taken place [3]. Quality education will improve the quality of human resources.

Education has a very important role in the progress of a nation so it is necessary to create good skills for students to deal with changes, especially in the era of globalization [4]. Education is a system that includes input, process, and output. Inputs are students who will be involved in the learning process, the process is learning and teaching activities, and the output is the results obtained after participating in the education process [5]. The education process must be prepared in a planned, mature, clear and systematic manner, so that students are able to adapt to the environment that is constantly changing [6].

The Government of Indonesia has made various improvements to maximize the results achieved by education, such as curriculum revisions on an ongoing basis, the Teacher Subject Discussion Program, Teacher Working Groups, partnership programs between schools and Educational Workforce Education Institutions, teacher and lecturer qualification improvement projects, and many other programs are carried out to improve the educational outcomes [7]. One of the improvements made by the government in terms of curriculum is by changing the curriculum from KTSP to 2013 curriculum. 2013 curriculum does not eliminate KTSP, but there are components that have a new concept in it which is an improvement of the KTSP curriculum [8]. Implementation of quality education is influenced by many things that are incorporated in the education system itself, one of which is from the teacher factor.

The teacher is the main component in the learning process at school to determine the learning success of students so that students can develop their potential through guidance from the teacher [9]. In the implementation of learning the teacher must be able to create an atmosphere of learning that is conducive and fun to direct students to be able to achieve their learning goals optimally [10]. The teacher is a learning agent so that the learning process can take place well in the classroom [11]. The role of the teacher in education is as a teacher and as an educator. The role of the teacher as a teacher is to provide ways to learn learning material to students. The role of the teacher as an educator is more interpreted that the teacher's task is to provide an example and direct that students do the same thing [12]. The teacher is not only responsible for delivering learning material to students, but also forms spirituality, noble character, personality, and skills. In addition, teachers must also prepare learning administration such as teaching materials, evaluation tools, learning implementation plans, quizzes, reports on student learning outcomes, and develop their abilities through upgrading, training, seminars, workshops or discussions, reading books or other information media [13].

Teachers as professional educators have a good image, become role models and role models of the surrounding community. Being a role model and role model is one of the main roles of the teacher both for himself and for his students because the teacher is the person who directly shapes and directs the future of the students [14][15]. The teacher is the component that most determines the quality of education, because the teacher is responsible for developing and applying the curriculum, and makes learning meaningful for students [16]. However, in recent years, teachers have experienced a decline in professional image and low competency test results [17]. This is an interesting discourse to be studied and researched, so that teachers can restore their professional image and experience increased competence.

Teacher competence is mastery of a task (teaching and educating), skills, attitudes, and appreciation needed to support success in the learning process undertaken [18]. At present it is very necessary to develop teacher competence as a very important element in the learning process. With the development of science and technology both in the field of education / learning and those directly related to the material being taught, the knowledge and technology controlled by teachers must continue to be developed [19]. Teachers are not enough to just use textbooks in teaching students, it is also necessary to use supporting tools / media in learning [20]. Competence is the expertise or ability possessed by teachers in the mastery of knowledge, skills, values and attitudes in carrying out their duties and responsibilities which include professional, pedagogical, personal and social competencies [21][22]. Competency development possessed by teachers will be able to improve student learning outcomes.

Professional competence is the ability of teachers to deepen learning material and guide students so that competency in national education standards can be achieved [1]. According to Samana [23] aspects of teacher professional competence include (a) teachers mastering teaching materials, (b) teachers are able to process teaching and learning programs, (c) teachers are able to manage classes, (d) teachers are able use media and learning resources, (e) teachers master the foundations of education, (f) teachers are able to manage the interactions of teaching and learning, (g) teachers are able to assess student achievement, (h) teachers are familiar with counseling guidance services and services, (i) the teacher knows and is able to carry out school administration and collaborate in an organized manner in classroom management, (j) the teacher is able to carry out educational research.

Previous research conducted by Rahmawati and Astuti [24] concluded that the chemistry teacher's professional competence affects student laboratory learning skills, the better the teacher's professional competence, the higher the student's laboratory learning skills. The results of other studies from Nurjanati et. all [25] concluded that professional competence had a direct positive effect on teacher professionalism. Seeing the importance of professional competence possessed by a teacher, both to improve teacher professionalism and to improve student learning outcomes, this research needs to be carried out.

Merauke is the city at the eastern end of Indonesia, the largest district in Indonesia with 20 districts, one of which is the Merauke district. Some schools in the Merauke District have only implemented the 2013 Curriculum so that an analysis of the professional competencies of the chemistry teachers in Merauke District needs to be carried out in carrying out the 2013 curriculum so that it can be a reference for developing teacher professionalism in carrying out classroom learning and making student learn meaningfully.

2. Methods

This research is a descriptive study that aims to shows of the professional competence of high school chemistry teachers in Merauke District. The research was conducted in three schools, namely SMAN 1 Merauke, SMAN 2 Merauke, and SMAS YPK Merauke. Chemistry teachers at the three schools were the subject of this study, where the research process was carried out during the learning process in the classroom. The aspects studied in this study consisted of three aspects, namely aspects of mastery of the material, mastery of basic competencies, and development of learning materials that were creatively influenced.

Research data collected in the form of activities carried out in class during learning takes place. Data analysis conducted was descriptive data analysis which was carried out continuously, both during data collection and in the time span of the study. The stages of data analysis are data reduction, data presentation and conclusion drawing [26].
The data collection process carried out are: (1) Observation, namely the observation process carried out by the researcher directly to the teacher's activities in the implementation of learning guided by the observation sheet; (2) Interviews conducted in a structured manner using interview guidelines arranged systematically and structured so as to obtain in-depth information about the professional competence of teachers, interviews conducted after the learning process ends; (3) Documentation in the form of teacher learning tools and video recordings in carrying out learning in class.

Data analysis used in this research is qualitative data analysis which is done interactively and takes place continuously. There are three stages in qualitative analysis: data reduction, data presentation, and conclusion or verification. Data deemed unnecessary is reduced from processing. Then the qualitative data is presented in the form of a brief description, narration, chart or story so that it can provide an overview in the process of drawing conclusions to be able to present data that has been collected through observation sheets in the form of assessment scores [6]. After obtaining the data on the implementation of the teacher's professional competence, then analyzed descriptively with the criteria. The criteria used in the analysis phase are measured in the range 0-2 [27] presented in table 1.

Table 1. The teacher professional competency category

Score	Category
$1,5 \leq M \leq 2,0$	Very competent
$0,5 \leq M \leq 1,5$	Competent
$M \leq 0,5$	Less competent

3. Result and Discussion

This research was carried out in Merauke District to get a shows of the professional competence of senior high school chemistry teachers. There are 3 schools that become the location of the research implementation, namely SMAN 1 Merauke, SMAN 2 Merauke, and SMAS YPK Merauke. There are three aspects of teacher professional competence analyzed, namely aspects of mastery of the material, mastery of basic competencies, and development of learning materials that are creatively influenced.

Analysis of teacher professional competence in mastering the material carried out in three schools, namely in school A the average value is 2 included in the category of very competent, at school B and C an average of 1.4 is in the competent category. The average professional competency of teachers in mastering material in all three schools is 1.6 in the very competent category. The results of the analysis of teacher professional competence in mastering the material can be seen in table 2

Table 2. Teacher competence in mastering material

School	Average teacher competence in mastering the material
A	2
B	1,4
C	1,4
Average	1,6

Based on table 2, it can be seen that teachers at school A are very competent in mastering the material, while teachers at school B and C are in the competent category. The average competency of teachers in mastering the material in the three schools is in the category of very competent. This shows that the teacher's mastery of learning materials is very good so that this is a good thing to be able to convey learning material to students, because it is difficult for students to understand the learning material, if the teacher himself is not able to master the learning material.

Analysis of teacher professional competence in mastering basic competencies conducted in three schools can be seen from the average competency of teachers in mastering basic competencies that are in the category of very competent with an average value of teachers in all three schools 1.5. The results of the analysis of teacher professional competence in mastering basic competencies can be seen in table 3.

Table 3. Teacher competence in mastering basic competencies

School	Average teacher competence in mastering basic competencies
A	1,5
B	1,5
C	1,5
Average	1,5

Based on table 3 it appears that teachers in all three schools are very competent in mastering basic competencies. This shows that the teacher's mastery of basic competencies is very good so this is a good thing to be able to design learning well. If the teacher can master the basic competencies expected, the teacher will be able to design learning well and achieve the expected goals.

Teacher professional competency analysis in the development of learning materials that are creatively carried out in three schools, namely in school A the average value is 1.75 included in the category of highly competent, at school B and C an average of 1 is in the competent category. The average professional competence of teachers in developing

learning materials that are creatively influenced at all three schools is 1.25 in the competent category. The results of the analysis of teacher professional competence in mastering the material can be seen in table 4

Table 4. Teacher competence in developing learning materials that are creatively influenced

School	Average teacher competence in developing learning materials that are creatively influenced
A	1,75
B	1
C	1
Average	1,25

Based on table 4, it can be seen that teachers at school A are very competent in developing learning materials that are creatively influenced, while teachers at schools B and C are in the competent category. The average competency of teachers in developing learning materials that are creatively influenced by the three schools is in the competent category. The development of creative learning materials is good enough, but it still needs to be improved, especially in teachers in schools B and C. It is different from the competency in mastering the material and basic competencies that are in the category of very competent. This shows, teachers are still unable to creatively design learning based on material and basic competencies that have been mastered. Therefore, teachers need to make improvements in the development of learning materials so that students can learn well and achieve learning goals to the maximum.

Teacher professional competency analysis of the three aspects of competency, namely the aspect of mastery of the material, the average score is 1.6, included in the category of very competent, the aspects of mastery of basic competencies, the average value of 1.5 is in the competent category, and the aspect of developing learning material is achieved. creatively the average value of 1.25 is in the competent category. The average professional competency of teachers is 1.45 in the competent category. The results of the analysis of teacher professional competence in mastering the material can be seen in table 5.

Table 5. Teacher professional competence

Aspects of professional competence	Average teacher professional competence
Mastery of the material	1,6
Mastery of basic competence	1,5
Development of learning material that is creatively influenced	1,25
Average	1,45

Based on table 5, it can be seen that the teacher in the mastery aspect of the material is in the highly competent category, the mastery aspect in basic competencies is in the very competent category, and the aspect of developing learning material that is creatively influenced is in the competent category. The average professional competence of teachers in all three schools is in the competent category. Teacher professional competence is good, but development needs to be done so that teachers can become increasingly competent in professional competence. Seeing the importance of professional competence that must be possessed by teachers to guide students to achieve their learning goals.

The results of this study are in line with research conducted by Irmawati [1] in analyzing professional competence possessed by Makassar Al-Azhar 24 Junior High School teachers, it is concluded that in the aspect of developing school-based curriculum it has met standards, aspects of mastery of material have met standards, aspects learning management has been implemented well, aspects of classroom management have been implemented well, and aspects of the media and learning resources are used properly and as needed.

Analysis of teacher professional competence is very much needed to help teachers to reflect on the extent of professional competency possessed. The results showed that teachers already have good professional competence although there are still some things that need to be improved. The things that need to be improved by the teacher in professional competence are (1) understanding of the learning ability of students, (2) the ability of teachers to respond to questions raised by students, (3) explain the learning objectives, (4) allocation of time in the delivery of each material, (5) development and optimal use of learning media, (6) use of varied methods and approaches, and (7) use of the internet in supporting learning. Teachers must make good preparations before carrying out learning in class so that students can learn well.

4. Conclusion

Based on the results of the descriptive data analysis conducted, it shows that the professional competence of high school chemistry teachers in Merauke District with a total average value of 1.45 is in the competent category. For each aspect of professional competence, namely (1) aspects of mastery of the material with an average value of 1.6 are in the category of very competent, (2) aspects of mastery of basic competencies with an average value of 1.5 are in the category of very competent, and (3) aspects of developing learning materials that are creatively influenced with an average value of 1.25 in the competent category. Teachers must continue to develop their professional competencies in order to be able to guide students to achieve their learning goals to the maximum.

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