Professional Competence , Pedagogical Competence and the Performance of Junior High School of Science Teachers

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Abstract
Professional competence is competence related to the ability to master the knowledge . Teachers' pedagogical competence is the ability to manage learning , which includes planning , implementation and evaluation of learning outcomes of learners . These competencies should be owned by every teacher in order to achieve success in learning and teaching . This study aims to determine the effect of professional competence and pedagogical competence against the performance of Junior High School science teacher in Ternate . The method used in this study is a quantitative correlation method . This study was conducted in 9 Junior High School in Ternate . The samples in this study were taken from 61 science teacher of 72 science teachers using proportional stratified random sampling . The data were then analyzed using simple linear regression . The results of this study concluded that professional and pedagogical competence give positive effect on the performance of Junior High School science teacher in Ternate . To improve the professional competence and pedagogical competence of junior high science teacher in Ternate , the efforts that need to be done include : educatiing and training on a regular basis , activatig thr MGMPs (the teachers' forum) , preparing science textbooks , continuing education , optimizing the supervision of principals , training in the use of various science teaching strategies , using of laboratory science training tool , training of IT -based media design and conducting action research.
Keywords : pedagogical competence , teacher performance

INTRODUCTION

Improving the quality of education in the city of Ternate is done by improving the competence of teachers , which provides scholarships to outstanding teachers to continue their studies in accordance with the needs of the development of quality education in the area . This is particularly done to improve the good teacher's competence in developing professional competence and pedagogic competence . Performance of teachers especially science teachers in Ternate is not optimal and this is is evidenced by the results of teacher competency tests which are still below 50 % . Teachers in Ternate still needs to be developed on a regular basis to improve their performance .

Development of professional and pedagogical competence is done by providing opportunities for teachers improve their knowledge and skills to develop teaching materials and use various methods of learning in the learning process , provides the opportunity for teachers to take the initiative and creativity in working to develop insight knowledge (payu , 2011) . Achievement motivation of teachers tends to be low due to the facilities and the lack of instructional media . Achievement motivation must be supported by the principal to provide the opportunity for teachers to conduct research and perform a variety of activities aimed at improving teacher activity (Ridwan , 2008) . The study explains that the pedagogical gives effect on performance, so to improve the performance of teachers, teacher needs to improve his or her pedagogic competency (Marthen Wonseke , 2011 ; Eko Pujiastuti , Tri Joko Raharjo , A. Tri Widodo , 2012). Thus, it can be said that to improve the performance of teachers, there is a need to improve pedagogical competence and motivation of teachers .

Previous studies on the effect of teacher's competence toward teacher's performance is always considered as separate subject as it concerns on investigating only pedagogical competence or professional competence . The results of these studies mention that the average competence of the teachers need to be developed with a variety of efforts that is by offering instructional media that complement and, enhancing the achievement motivation of teachers by improving the principals supervision , and fostering teachers to do research . The deelopment of lesson plan as the main task of the teacher in the learning process is not optimally done (teachers are still lazy) , which resulted in teachers who are not ready to implement good things in the learning process (Nunuh , 2012; payu, 2011; Ayu Ngurah NM , et al , 2011) .

Studies reviewed in this paper is a study which is evaluating jointly the influence of the professional competence and pedagogical competence of the teacher's performance , especially science teachers in Ternate . This study differs from previous studies because the writer simultaneously see the teacher 's ability in mastering the learning material between the substance and methodology of other subjects , as well as the structure , content , and organization of teaching science curriculum . The ability is focused on the ability to design learning , implement learning and the ability to implement the evaluation of student learning outcomes as well as the follow-up of learner assessment . Another difference is that the author highlights the use on the use of instrument to obtain research data . The instrument used is a testing of the competency test . This is done so that

the teacher does not give subjective answers as in the questionnair. The problem of pedagogical competence test covers all indicators of pedagogical competence assessment as stated in Decree No. . 16 of 2007 on Teacher Competency Standards . As for questions about the use of professional competence tests is issued by the Ministry of Education and Culture, which has been tested nationally .

This study expects that a science teacher should have a correct understanding of science teaching materials that can be integrated into the lives of young people , to understand the science curriculum , understand the limits of material science and scientific skills that should be possessed by learners . Science teacher should have the ability to develop a national curriculum on science learning into the school -based curriculum that is more contextual for learners . The translation of the curriculum into the learning syllabus in accordance with the existing resources , will be able to create meaningful learning situations and interpreted learners . With regard to the implementation of the curriculum , a teacher must be able to develop a curriculum for the education level of each unit and adapted to local needs . Teachers should be able to optimize the potential of learners to actualize the abilities in the classroom , and should be able to perform an assessment of the activities in the learning activities that have been carried out .

METHOD
This study aims to describe and influence of professional competence and pedagogical competence toward the performance of Junior High School science teacher in Ternate . The approach used in connection with the essence of the problem is the quantitative approach , namely to obtain and use quantitative data . The instrument used in this study is a professional competence test about the pedagogical competence of teachers , while the data related to the performance of teachers were obtained through a questionnaire . The test item of professional competence of teachers adopted test about junior high science teacher competency test of the Ministry of Education and Culture , so the question is no longer tested . While for the self-made instruments, it is tested before using in the research and the test results showed that all items are made for each variable declared valid and reliable (rhitung > rtable) .

This research was conducted at the Junior High School in Ternate and implemented from March 2012 until January 2013. The population in this study is a science teacher who were in the 9 (nine) Junior High School in the city of Ternate in 2012 . Based on observations in the Office of Education and Culture of Ternate, it is stated that members of population science teacher at SMP Negeri 9 numbered 72 people . The samples in this study were using a stratified sampling technique or proportional stratified random sampling . This is done with the assumption that the populations have a member who is not homogeneous and stratified proportionally . Sampling using the formula equation Taro Yamne , but Riduwan explained that before using proportional allocation formula, we must first use the formula for determining the sample population according to each stratum . In this study, the writer was using a precision level of 5 % with the provisions of the obtained total sample of 61 science teachers .

The data were obtained by using a test and questionnaire . Test given to science teachers to test the professional competence and pedagogical competence . A questionnaire was used to obtain performance data for a science teacher . The data obtained in this study were processed and analyzed by descriptive statistics and inferential statistics . Descriptive data analysis was carried out to analyze the collected data in order to obtain a picture of the characteristics of the spread of values of variables studied . Descriptive analysis is used in terms of data presentation made by the steps of: calculating an average score (mean) , mode , standard deviation , variance , minimum and maximum scores . Inferential data analysis was conducted to test the hypothesis by using linear regression analysis . But before testing the first hypothesis, it was held an analysis of test requirements of normality and linearity test . Once the data is said to be eligible for normality and linearity, it was then followed by a test of the hypothesis . Hypothesis testing was conducted by implementing linear regression analysis .

RESULTS
From the result of the analysis of the research data of Junior High School science teacher performance in Ternate, it was then obtained that the lowest score is 144 , and the highest score is 215 with a range of values 71 . From the results of the data analysis obtained an average value of 19.52 and standard deviation 180.98 381.12 variance with the number of class 7 and class intervals 10 . The data concerning the science teacher professional competence of Junior High School in Ternate were obtained through tests . The results showed scores range from 15 to 38 . The result of the calculation showed that the average professional competence of teachers of Junior High School in Ternate at 25.34 , standard deviation 6.48 , and the variance 41.996 . The data were obtained through the pedagogical competence tests and obtained the lowest score 15 , the highest score of 39 , with a score range of 24 . The result of converting the average calculation of pedagogical competence of Junior High School science teacher in Ternate is 29.28 ; standard deviation of 6.13 , and variance 37.57 .

Processing of the data in this study was done by using inferential statistical tests by linear regression .

To use inferential statistics first we have to test the requirement analysis , with the aim that the results can be used to draw conclusions . The requirements of the test is the test of normality and linearity . The test results of normality and linearity requirements can be concluded that the data are normally distributed , and the linear regression equation obtained .

The processing of the data in this study was also done by using simple linear regression statistical test . From the analysis of the simple linear regression equation , it was obtained the following results 1) . professional competence has a positive effect on the performance of a science teacher . 2 . pedagogical competence has a positive effect on the performance of Junior High School science teacher in Ternate , and 3) both professional and pedagogical competence give positive effect on the performance of junior high school science teacher in Ternate .

DISCUSSION

The result of the study states that the professional competence has a positive effect on teacher's performance . The result of the study is in line with the opinion stated by Sembiring (2002) who states that that teachers are the key actors and have a strategic role in teaching and learning in schools . Teacher's quality can be seen from teacher's mastery in his or her subject field and his or her ability in managing the substance academic learning and develop his or her potential .The role of a teacher is very strategic in terms of teaching and learning process as he or she will bring consequences in carrying out his or her duties in a professional manner . Professional competence of a teacher determines the quality of education . Teachers who have a science competency are highly required to master the material in depth , in both structure , concepts , and methods of science which are coherent with the teaching materials. They should be able to relate the concept of related subjects , and are able to apply the concepts of science in everyday life , because by mastering what is mentioned it will affect its performance as educators.

Science teacher performance is quite good if the science teacher has the ability to match the characteristics of the science material . Professional Science teacher should have professional competency standards which include the ability to master science content , and the nature of science . Science teacher competence in science content is the ability of teachers to understand the science concepts and then extend that concept systematic concepts that one can connect with other science concepts . While science teacher professional competency standards in terms of understanding the nature of science can be seen from teacher's ability to present science learning in accordance with the nature of students or in other words it is about how a teacher can put science into learning in daily life as a science is a product of forming attitudes. Competence of teachers teaching science in SMP / MTs is stated in Decree No. . 16 In 2007 , which include ,: a) Understand the concepts , laws , and theories of science and its applications in a flexible way , b) Understand the thought process and the process of science in the study of natural phenomena , c) Apply the concepts , laws , and science theory to explain various natural phenomena ; d) Understand the scope and depth of science at school ; e) apply Creative and innovative teaching in the application and development of science ; f) Design experiments for science teaching or research purposes ; g) Use the measuring tools , props , calculators , and computer software to improve science learning in the classroom , laboratory , and field ; h) Carry out experimental science in the right way .

The results are consistent with research conducted by Ayu Ngurah NM , Susilawati , Siti Patonah (2011) which says that the professional competence of junior high school science teacher in Semarang city is included in the category of good enough which means that the professional competence of teachers in the city of Semarang still requires quality improvement . Thus it can be said that the significant difference of the study is there is a significant difference between the performance of the professional competence of teachers but teachers should improve their ability to master the material so they can teach well to students .

Results of research on pedagogical competence and performance of the Junior High School science teacher Ternate state that there is a positive effect between these two variables . Pedagogical competence should absolutely be owned by each teacher in order to carry out the learning tasks so that they cando all the things well . In addition, in the learning implementation a teacher should master teaching materials presented in a way that a teacher must also master a variety of teaching methods so that what is delivered can be well understood by the students . According to Akhmad Sudrajat (2012) pedagogical competence is distinctive competencies , which will differentiate teachers to other professions and will determine the level of success of the process and learning outcomes learners . Teachers who have the pedagogical competence of teachers are those who are able to manage learning , as can be seen from the pedagogical ability to plan learning programs , the ability to implement or manage the interaction of the learning process , and the ability to make an assessment . Sardiman A. M. (2004) said that a competent teacher is a teacher who is able to manage the teaching and learning program . Manage here means pertaining to how a teacher is able to master the basic skills of teaching , such as opening and closing a lesson , explaining , making various media , asking , providing reinforcement , and so on , as well as how teachers implement the strategies , theories of learning and teaching , and implementing conducive learning.

Science teacher is said to have pedagogical competence as stated in Decree No. . 16 in 2007 if a science teacher is 1) able to plan science learning program according to the characteristics of learners ; 2) able to master the various theories of learning and develop in the process of learning science ; 3) able to develop appropriate science curriculum according to the needs and development of learners ; 4) able to implement science teaching educational ; 5) able to utilize technology as a medium of learning science ; 6) able to evaluate for learning and when students learn , and 7) able to   participate actively in the planning and development of programs for the advancement of science in school learners . Thus, to improve the performance of the teacher educators should be able to implement the learning process   well especially to the subjects of science content which then constantly strive continuously improve the quality of learning through the development of teaching skills , ranging from planning , implementing , until the assessment of learning . Teacher's performance can be measurd to succeed if learners are easily accept the understanding the subject matter being taught . To transfer his knowledge to the learner teacher then the teacher should be able to plan the learning process using a variety of strategies so that what is given can be accepted by learners .

The results are consistent with research conducted by Fitri Yulianti (2012) which states that the pedagogical aspect contributes significant factor to improve the the quality of student achievement . This means that teachers who have a good pedagogical competence will be able to analyze the learning potential of each learner and identify the development of potential learners through learning programs that support students to actualize their academic potential , personality , and creativity until there is clear evidence that students actualize their potential . Teachers were able to formulate and implement an educational lesson plan which is complete . The teacher is able to carry out learning activities appropriate to the needs of learners . The teacher is able to develop and use a variety of learning materials and learning resources according to the characteristics of learners . If it is relevant , teachers can also utilize information communication technology (ICT) for the sake of learning (Akhmad Sudrajat , 2012) .

Students seemed more active and very enthusiastic during the experiment . In the following study , the majority of students interact with both the teachers , the teaching materials and the peers, and students are able to appreciate the experiment . But in the learning process developed, the resut showed that the implementation has not been able to spur students to express ideas . Then , there should be alternative measures implemented in the classroom management which serve as solutions that need to be done to increase studens' activity both within and among groups . Referring to various studies and the study of learning in designing and implementing learning science, teachers should pay attention to the following matters : a) consider students 'prior knowledge , b) view learning as a process of transformation which led to the conception of conceptual change in students' self , c) engage students in science through experimental activities for conceptual change or knowledge which is constructed through the active participation of students in hands-on activities and mind -on , d) pay attention to social interaction by involving students in the activities of a group or class discussion (Unang Purwana , 2007 , Bill , 1993) .

Teachers need to understand the learner through learners' characteristics primarily on things related to aspects of intellectual , emotional , moral and background of learners. It is intended to smoothen the process of interaction between learners and teachers so that the learning objectives can be well achieved as expected . In the implementation of learning , teachers identify students ' prior knowledge. This activity aims to determine the ability of early learners who have owned both of the material that has been taught and what will be taught which is done by providing preliminary activities such as apperception and motivation (Hasanuddin & Cut Nurmaliah , 2010) . According to Azzet (2011) Teachers who are able to build the spirit of student participants are able to explain the purpose of the material to be studied and being studied . By knowing the purpose of learning , learners will awaken his consciousness to eager to learn .   In addition , every effort should be appreciated by the teacher .

From the above analysis of the data, it was found that the competency of professional , pedagogical , discipline and compensation of work together give positive effect on the performance of the Junior High School science teacher in Ternate . This indicates that in order to strengthen the performance of a teacher, there should be a need to support variables that can encourage teachers to achieve success . Therefore, this study confirms that the success of the Junior High School science teacher performance in Ternate is influenced by various factors including the professional and pedagogical competence .

A teacher who is said to meet professional knowledge and pedagogical skills and knowledge are those who master subject matter in a balanced manner , because the problems that arise in the learning process may not be resolved only with one of these competencies . Professional competence and pedagogical support each other , meaning that teachers will be delivering course material to students which is good and acceptable if the teacher properly designs the learning process according to the needs of students and implement the learning process by using various methods / learning strategies . The ability in mastering the science disciplines for a Science teacher is very important but it will not succeed if the teacher does not have the ability to convey the subject matter .

Professional and pedagogical competence which are not optimal happen because of lack of creative teachers using a variety of sources to support the teaching materials contained in the curriculum. Moreover, the phenomenon is also reflected in the performance of the teacher in the management of learning programs . More teachers prepare learning programs through MGMPs (teachers' forum) rather than developing their own , so it does not develop their creativity . Creativity and innovation in developing teacher learning process that starts from the planning process needs to be done , because the creative teacher will implement a variety of learning process to make the students feel motivated to learn .

CONCLUSION

The conclusion of this study is First : there is a positive influence on the performance of professional competence Junior High School science teacher in Ternate . This means that if the professional competence of teachers is high, it will improve the teachers' performance . Science teachers' performance can be improved by increasing   professional competence of science teachers . Some efforts should be made to improve the professional competence of a science teacher in the form of education and training related to the control of science content of junior high school in a regular basis. Besides, it can be done by optimizing the role of MGMPs(teacher's forum) as a communication medium and it is also done by deepening the materials of science by compiling some science textbooks , making technology work related to the science and provides the opportunity for teachers to continue their education . By continuing the effort to optimize the mastery of teaching materials , the science teacher will have a broad and deep insight so that they can teach their students well .

Second : there is a positive influence on the performance of pedagogical competence Junior High School science teacher in Ternate . This means that the pedagogical competence of a teacher will increase the performance of the teacher , because the teacher has the ability , especially the ability to manage the learning material that will be delivered properly to the students by using a variety of techniques , and a teacher should also be able to select appropriate learning media for the material being taught . Science teacher performance can be improved by increasing the pedagogical aspect of a science teacher . Efforts are being made to improve the pedagogical competence among science teachers to optimize the principal's role as a supervisor and as an educator. Besides, training about learning science is carried out and providing the opportunity for teacher to to try out various innovative learning strategies , the use of laboratory science training , training media -based learning design IT , carry out action research to address issues that arise in the students and optimizing teaching team learning science in an integrated manner .

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