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Non-educational background teachers' knowledge of pedagogical competences

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ABSTRACT

The existence of non-educational background teachers (NEBTs) no doubt contributes to developing the quality of education but seems to lack attention. This research aimed to investigating the knowledge of NEBTs on pedagogical competence. A mixed method with explanatory sequential design was employed. The study was conducted in Central Lombok Regency. The total population was 109 spreading in 12 districts and three participants out of the total population were selected to participate in the interview. The instruments were a test in the form of multiple choice and an interview. The data from the test were analyzed quantitatively while the data obtained from the interview was analyzed qualitatively. The data of the test showed that the scores of four sub-aspects of pedagogical competence were 52.20 for the learning theories, 57.33 for students' characteristics, 61.75 for the nature of education, and 84.30 for curriculum. Thus, the mean score was 63.90. The data from the interview showed that self-development efforts were low and the school supervisors and staffs role contributed only at the practical level. The research concluded that the knowledge of NEBTs was 63.90 in average due to the internal and external factors.

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1. INTRODUCTION

It has been clearly stated in the Indonesian Law number 14 of 2005 that teachers are required to have a competence [1]. The competence then is used to be one consideration in the recruitment process since it is associated with an ideal teacher. The term competence encompasses four aspects namely pedagogical, personal, social, and professional. It refers to a set of knowledge, skills, and behavior needed in teaching in order to ensure a successful teaching and learning process in the classroom [2]. Competence in teaching can be obtained through formal education like universities with education major or department and or a special training held by a licensed institution or organization. However, teachers in Indonesia not only graduate from universities with an education major but also non-education major. Given the importance of pedagogical competence, a question arises towards their competence due to their lack of pedagogical background.

Non-educational background teachers (NEBTs) are typically recruited by private schools. While these private schools have their own regulations, the candidates' educational background should be carefully considered including their majors and universities they earned their degree from but neglecting these might mean excluding pedagogical competence which in turn might affect the quality of teaching and learning

process. However, the other three were supposed to be acquired since they relate to personality, social, and professional. Regarding the personality competence, Siagian *et al.* [3] reported that it could affect the students' moral and attitude and therefore, the teachers should always be aware of their weaknesses [4]. Besides moral and attitude, previous researchers [5], [6] stated that the personality and social as well as the professional competences contributed to the teacher' teaching performance.

The acquisition of pedagogical competence theoretically and practically takes an important role on how teachers' teaching contributes to facilitating learning [7]–[9]. Therefore, in organizing instruction, teachers are required to possess teaching skills acquired from educational theories and concepts. In the context of the teachers' educational background, it is no doubt that education major graduates had been provided with pedagogical competence both theoretically and practically supplemented by their classroom experience as teachers. Meanwhile, even though non education major graduates had not received the same training, they evolved into teachers through their classroom experience. Hence, it contributes to the improvement of teaching quality [10].

Literatures elaborated findings toward the teachers' mastery on the sub-aspects of pedagogical competence for instances students' characteristics, learning theory, and curriculum development. Study by Rosdiana [11] reported that the English teachers in Banda Aceh, well-fulfilled six the sub-aspects of pedagogical competence with good category. The six sub-aspects were the students' characteristics, learning theory, curriculum development, communication, utilizing technology, and evaluation. In line with previous studies [11], [12], English teachers in Enrekang had good quality of pedagogical competence regarding the planning and conducting teaching. Next, the English teachers in Palu well-fulfilled all aspects except technology utilization and students' potential development [13]. Furthermore, Tanjung [13] found that there were three aspects (students' characteristics, curriculum development, and communication) had been well-fulfilled with pretty good category and the other aspects remained low category. In accordance to the reports, several research [13], [14] recommended to apply strategies to enhance knowledge and skill of pedagogical competences due to the pre-school teachers were in category found out in their research.

The elaboration of all research findings were mostly focused on two things (the practical level of pedagogical competence and the teachers being equipped with education background) [11]–[14]. The former focused on how teachers paid attention on planning, implementing and evaluating instruction. Accordingly, pedagogical competence regarding to the theory mastered by the teachers was expectedly very limited. The latter implicitly explored that the teachers of non-education major graduates were excluded even though they contributed to the development of human resources. However, from those findings, it could be noted that even though those teachers with a major in education had been provided with pedagogical competence in terms of theory and practice, they still needed to improve their teaching quality. Hence, if teachers who had received a formal training in education still need to significantly improve their teaching performance, the pedagogical competence of fellow teachers receiving no such training is normally questioned.

Based on a brief interview with the Head of Management Study Program, Mandalika University of Education that he did not provide any subjects and programs relating to educational practices for his students. Another small discussion was also conducted by the researchers with one of NEBT at Private Junior High School of Nurul Ulum, Praya, Lombok Tengah and she stated that she often faced an obstacle when planning the instruction due to she took a center role when teaching. However, she learned a lot about how to design a teaching plan from her school supervisors besides guidance from headmaster and feedbacks from colleagues.

In accordance to the researches literatures and the results of the interviews, this current study aimed to answer a research question "how does the knowledge of pedagogical competence of NEBTs?". In line with this question, this study was intended to describe the NEBT's pedagogical competence in the context of theory. In contrast, the pedagogical competence in the context of practice which encompasses the planning, implementing, and evaluation was not the focus of this study.

We consider our work is significant since it enriches the handful studies on pedagogical competence of NEBTs. That is, this study provides insights into the NEBTs' pedagogical competence at a theoretical level viewed from the four sub-aspects mentioned. Further, it serves as a references and considerations for NEBT to keep maintaining and or to enhance their pedagogical knowledge via self-improvement, development with colleagues, and development by institution [15]. In turn, the results could implicitly figure out the NEBT's teaching quality at the present time and then design for the future plan. The results also could ease universities which have teacher professional education (PPG) program to do reflections toward the materials and methods. In line to Novianti and Nurlaelawati research findings [15], the findings of this current study could be the baseline to developing the NEBT's pedagogical competence development. In other words, these findings were supposed to be NEBT's needs before modules development. The results of this study contributed to reconsidering the materials delivered in PPG program. It was no doubt that this program had given a significance result to improve not only the teachers' performance but also their professional as well as pedagogical competences [16], [17].

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2. RESEARCH METHOD

A mixed method, the combination between qualitative and quantitative, was employed in this research [18]. There were some basic reasons as to why the researchers decided to apply such a method. That is, we believe that a mixed method fits the nature of this research because the procedures of collecting data, the method was rigorous, and the data was integrated. The research data were in the form of number obtained from a distributed online test and in-person test. In addition, the second type of data were in the form of text obtained from note-taking during the interview. Accordingly, this research design utilized explanatory sequential design by which the researchers distributed the test (obtaining quantitative data) followed up by conducting interview (obtaining qualitative data) before interpretation stage.

This current research was conducted at Central Lombok Regency covering only 12 districts. In order to ease data collection, the researchers did a partnership with the teachers' association of Nahdlatul Ulama (PERGUNU), an institution under Nahdlatul Ulama branch in Central Lombok Regency (PCNU). The committee of PERGUNU has been established for the whole districts and therefore the distribution of the research instruments and conducting interview were well-facilitated.

In accordance to data of teachers affiliated to PERGUNU, the total teachers that have been identified for the whole schools are 1,703. However, after having a verification, the teachers whom were categorized as NEBTs were 109 as seen in Table 1. Hence, the population and the samples of this study were 109 NEBTs. Such amount of the participants emerged because of one specific characteristic (NEBTs) which in turn granted to their representation and accuracy [18]. In addition, it was also supposed to contribute to have a greater reliability of the obtained data and reach its representativeness [19]. Regarding the qualitative data which was taken from interview, there were three respondents chosen firstly based on the areas (west, south, and east) and secondly based on the settled criteria: i) NEBTs affiliated to PERGUNU; ii) NEBTs with and without professional certification; iii) NEBT of private school affiliated to PCNU Central Lombok Regency; and iv) the participants who obtained the highest, medium, and the lowest score from the given test.

Table 1. Data of teachers affiliated to PERGUNU in Central Lombok Regency

	Senior high	Junior high	Elementary	Kindergarten	Total
Teachers	550	524	472	157	1,703
NEBTs	55	39	14	1	109

A research instrument was in the form of test that had been administered. The researchers carried out the validity and reliability tests on it prior to the distribution by using SPSS 23. The items of the test which were in the form of multiple choice consisted of 40 questions before being tested for the validity and reliability turned into 37 items afterward. The result of the test showed that the instrument was valid and reliable which indicating the items deserved to be distributed to the research field. Table 2 shows that the result of the validity and reliability tests reached high score due to the variant score was significant and the Cronbach' alpha score was higher than the standard score of 0.70. The distribution of the test to the participants was conducted online via google form and offline by delivering the printed version to the schools affiliated in the PERGUNU. In order to obtain a comprehensive data, the researchers did an interview dealing with the four aspects of pedagogical competence including the knowledge of education, students' characteristics, learning theory, and curriculum. During the interview, the researchers did a note taking which in turn analyzed using descriptive analysis.

Table 2. The result of validity and reliability test

	Validity	Reliability
Variant	8.542	-
Cronbach' alpha score	-	0.857

3. RESULTS AND DISCUSSION

This current research was about measuring and exploring the knowledge, theoretical mastery, of NEBTs affiliated to PERGUNU, Central Lombok Regency towards their pedagogical competence which encompassed four aspects. The four aspects cover: i) understanding the nature of education; ii) understanding the characteristics of students; iii) understanding the learning theories and their implications; and iv) understanding the curriculum. This section elaborates the result of the measurement and interview as the supporting data.

3.1. Measurement of non-educational background teachers knowledge on pedagogical competence

Table 3 shows the quantitative data of NEBTs' knowledge of pedagogical competence based on the test results. The table shows the highest score obtained when measuring the NEBTs' knowledge of pedagogical competence was 84.30. This score was purely about understanding the curriculum as one out of four aspects being measured. There were some sub-aspects being asked to the respondents, namely the knowledge on roles, functions, and components of curriculum, strategies of curriculum implementation, and the basic concepts and principles of curriculum. In addition, the obtained score of correct answers for each of the sub-aspects were 85.67 for the first sub-aspect, 82.75 for the second aspect, and 78.00 for the third sub-aspect. Data in Table 3 also showed that the NEBTs' knowledge of pedagogical competence in term of understanding the nature of education was on the second highest position by which 61.75 in average out of 109 NEBTs that gave their correct answer.

In more details, from three types sub-topics measured, items about the rational of education were correctly answered most (94 correct answer). In other words, knowledge on humanizing students based on the concept and foundation of education had been acquired by most of NEBTs. Opposite from the first sub-topic, the knowledge about the concept of education and its correlation to the existence of human, reached 71 correct answers out of 109. At last, the lowest correct answer by NEBTs was about the foundation of education with 51.6. This last sub-topic mostly covered the philosophy of education as well as juridical, empirical, and religious foundation of education.

Table 3. Test results of NEBTs' knowledge of pedagogical competence

	Aspects of pedagogical competences				
	Understanding the	Understanding the	Understanding the learning	Understanding	Total
	nature of education	characteristics of students	theories and their implications	the curriculum	
Mean score	61.75	57.33	52.20	84.30	63.90

Besides the two points, data in Table 3 further pointed out the correct answer made by 57.33 out of 109 respondents regarding the knowledge about the students' characteristics. This pedagogical competence covered two aspects being measured. First, the concepts of students' background which obtained higher correct answer with 57.5 than knowing the types of their characteristics with 57.29. The former encompassed the ethnics, cultures, and social status. Meanwhile, the latter covered the students' interest, cognitive development, prior knowledge, learning style, motivation, emotional development, social development, moral and spiritual development, as well as psychomotor development. At last, Table 3 showed the learning theories and their implication on the teaching practice obtained the lowest correct answers compared to the three other aspects in which the NEBTs' correct answers were 52.20. This kind of aspect covered two sub-aspects. First, the knowledge of learning theories implication in the context of teaching practice was not highly significance with the mastery of the learning theories. The significance different was only 1.6. In other words, there were 53 in average of NEBTs had the knowledge of learning theories implications and 51.4 in average of NEBTs who had the knowledge of learning theories. Accordingly, it could be summarized that the average score for correct answers was 63.90. This value was the cumulative of the spread of four aspects that had been explained in the two previous paragraphs.

The mean score of the NEBTs' knowledge might represent their teaching competence from planning to evaluating. Susanto *et al.* [20] stated that the pedagogical knowledge (theory) affected the pedagogical competence (practice). This research finding showed that there was a positive influence between knowledge of pedagogical competence and the subject matter knowledge toward pre-service teachers' performance. In more specific, knowledge of pedagogical competence in terms of students' background and characteristics might influence the way the teacher gave treatment in classroom practice. In nowadays era, the aspect of pedagogical competence covers the teachers' ability to integrate technology in classroom and to explore and adjust teaching method and materials suited to targeted needs [21]. Siregar *et al.* [21] outlined a similar suggestion by Suharyadi and Sulistyo [22] and it should always be conducted aiming to adapt to new changes.

Due to the obtained value, NEBTs who gave correct answers should keep developing their cognitive awareness besides having used to do a reflection [23]. Meanwhile, those NEBTs with wrong answers started to plan their own knowledge on pedagogical competence unless low quality of pedagogical competence practice would be achieved. Regarding this context, another study [22] obtained a similar finding to this current research. Suharyadi and Sulistyo [22] concluded that there were some aspects of pedagogical competence the teachers did not know specifically about the teaching profession, English language teaching theories, and researches. Next, Suharyadi and Sulistyo [22] suggested to keep develop such competence by active in scientific meetings like workshops, trainings, and seminars as well as reading and writing activities.

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3.2. Exploration of non-educational background teachers knowledge of pedagogical competence

In order to support such quantitative data, the researchers conducted an unstructured interview. The results of data from the interview were presented in Table 4. The obtained mean score which had been consulted to the criterion reference evaluation seemed in line with the results of the interview in Table 4. A1 informed the first sub-aspect that he did not know about the concept of education. However, he was presented an illustration; he knew the concept of human from the perspective of Islam. He learned about social foundation of education from his experience when he was active in an organization as well as from neighbor visits. In the context of students' characteristics, A1 had no idea before illustration was given. He knew his students' ethnic but the types of students' characteristic including learning styles was null. Regarding the learning theories, the experts, and implications to the teaching practices, he did not have any opinion. An illustration had been given here due to the teaching of faith is like electric, when using behavioristic point of view. At last, dealing with the concept of curriculum, he could mention some components like lesson plan, syllabus, core competence, and basic competence. He designed a lesson plan when a school accreditation's supervisor visited. The A2 gave similar responses to the four sub-aspects but different in one point. He knew better about the students' characteristics because he is one of the vices headmaster in his school. The A3 seemed better than A1 and A2 regarding the knowledge and performance.

Table 4. Interview results about NEBTs' knowledge of pedagogical competence

Aspects of pedagogical competences					
Participant	Knowledge of the nature of education	Knowledge of students' characteristics		Knowledge of curriculum	
AI	Learning resources are the internet, experience, visiting neighbors; learning pedagogy should be in under pressure; educational terminologies seem strange.	No ideas about the students' characteristics theoretically; Students' learning style is conceptually and practically strange; Students' ethnic is well-	Not knowing any learning theory including the name of the experts; Terminologies in education are strange; A good illustration for behavioristic is	Conceptually no ideas about curriculum; Core Competence, basic competence, lesson plan, and syllabus are well-known; No idea about the term hidden	
A2	Theoretically no idea about the nature of education; the philosophy of human like tolerant, respect, and moral is adequate; No ideas about Indonesian law referring to education; the religious foundation about education is not far from Al-Qur'an and Hadits.	interests like Hadrah, Marching Band; the learning types theoretically	Teaching students not only indoor but also outdoor; The up-to-date teaching method is strange; The key point of teaching is seeking for a blessing.	curriculum. No ideas about curriculum theory and its development; School supervisor's help him knowing about lesson plan, syllabus, blueprints, and digital reports; goggling is one way to accomplish lesson plan; the curriculum usage from time to time is fairly known.	
A3	She knows pedagogy through PPG Program; the foundation of education especially the philosophy and law foundation seem weak.	students' characteristics and she usually observe her	She is able to define and gives illustration about the concept of the learning theories including their implication towards the teaching and learning.	She does not know well about the basic concept of curriculum but the components. She is able to design a complete design of the teaching learning like lesson plan, syllabus, evaluation, developing media and materials.	

According to the respondents' information, there were two points that could be elaborated. First, the school supervisors took important position to develop NEBTs' pedagogical competence where they practically gave guidance to provide a set of teaching instruments like designing a good lesson plan, teaching methods, evaluation, and constructing blueprints and items for assessment. By providing such supports, they help improving the teachers' performance [24]. In line with this, Sunaryo [25] reported that such kind of supervision positively and significantly changed the teachers' performance. Next, during the process of supervision, an interpersonal communication occurred which motivated them to develop the quality of learning [26]. These activities administratively aimed to produce a complete set of instruction plan due to a smooth process of accreditation could be achieved. In addition, such activities, besides inspiring them to develop their own teaching, they also could improve to the knowledge of pedagogical competence. Thus, it could be stated that there was only one out of four aspects of pedagogical competence could be covered.

The second point that could be explored from the interview data was about NEBTs' self-development efforts regarding the pedagogical competence for both theoretical and practical. It turned out that the NEBTs did not actively attend a seminar, workshop, and training both online and offline which should have improved their competence in the first place. Dharma *et al.* [27] reported that self-development for pedagogical and professional competencies had a significant influence toward the teachers' professionalism. Furthermore, self-development contributed to the enrichment of information regarding to the knowledge and practical development of pedagogical competence [28].

Technology assisted was necessary for self-development. Dharma *et al.* [27] suggested that beside the information and communications technology (ICT) utilization for learning, the teachers also should attend the ICT training. The optimal usage of the technology for self-development was also necessary especially in the 21st century. Research by Ramaila and Molwele [29] described that the integration of technology facilitated the teaching skills and competencies as well as creating a joyful nuance of the teaching due to the students' achievement and motivation could be enhanced. Thus, the integration between technology and pedagogy could provide advantages for teachers [30]. Due to the challenges found by the teachers, self-development by attending seminar and joining group discussions were paramount. However, these two programs should consider tools: methods, receptions, and ways of receiving in order that the professional pedagogical activity with the greatest effect could be reached [31]. Furthermore, self-development readiness should be considered most since it correlated to the obtained pedagogical competence.

4. CONCLUSION

Investigation on the knowledge, theoretical mastery, of pedagogical competence especially for NEBTs is paramount. This current study aimed at measuring their mastery as well as exploring the factors affected. The findings showed that the average NEBTs' mean score was 63.90 which were spread into four aspects. The obtained mean score seemed in line with the factors outlined in the interview: i) they were not provided with any knowledge in universities; ii) they rarely learned about such competence; iii) they did not know where to start; iv) programs which focused on the theory were still very limited; and v) self-development efforts like attending offline and or online seminars were low. However, the role of school supervisors who focused on the practical pedagogical competence like designing lesson plan, syllabus, blueprints, academic calendar, and analysis test items was very helpful. In addition, the role of social media contributed in giving information regarding the pedagogical competence.

The findings of this research which portrayed the theoretical mastery of NEBTs regarding the pedagogical competence were needed to be considered by all parties. Government which provides PPG Program, seminars, workshops, and trainings needs to consider the teaching materials. School headmasters need to create nuances where the NEBTs could be facilitated to learn pedagogical competence theoretically for the sake of improving the quality of the educational practice. While we aim to use the findings of this current study for further work on the topic, other researchers might start to develop the materials which lead them to acquire the knowledge of pedagogical competence. However, such materials could only be learnt by those who belong to NEBTs. In addition, future researchers are recommended to do further researches about other competencies mentioned in Indonesian Law number 14 of 2005.

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