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# The Identification of Productive Teacher Competencies: to Support the Development of Learning Quality in Vocational High Schools

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**Abstract**—This study is the evaluation of productive teacher competence of a vocational high school in Makassar City specifically for the Department of Computer and Network Engineering. The questionnaire distributed to 40 productive teachers in many vocational high schools in Makassar. The results of this study illustrate the best competency of the teacher is the ability to conducted assessment and evaluation of learning processes and results. While the lowest competency is the teachers' ability to utilize the information and communication technology the potential readiness of productive teacher competencies in improving the quality of learning. The pedagogic competencies of teachers are enough category, and most productive teachers do not have sufficient ability to implement the lesson plan.

**Keywords**—*competence, pedagogic, lesson plan*

## I. INTRODUCTION

The Workforce Education Institution (*LPTK*) is a teacher-producing institution in Indonesia, which is very instrumental in improving the quality of human resources. Universitas Negeri Makassar is an institution that organizes the educational workforce staff foster several study programs, both in the Postgraduate Program and in the Faculty of Engineering. The programs aim to create teachers at Vocational High School Teachers (*SMK*).

The role of the university in producing professional teachers is by Government Regulation about the Teacher and Lecturer Law Number 14 of 2005. The regulation stated that: The teacher should have three pillars: qualifications, competence, and certificates. Moreover, as the professional educator, the teachers have the primary task of educating, teaching, guiding, directing, training, assessing and evaluating students on the path of formal education.

The role of the *LPTK* as a human resource development has not only goals for the management of human resources in the industrial world, but the institution also responsible for printing professional teachers, in educational institutions consist of five elements, namely: (1) students, (2) teachers, (3) administrative staff, (4) school principals and (5) education supervisors.

The teacher should communicate effectively, carry out the process and assessment of learning outcomes and evaluate actions to improve the quality of learning. Therefore, the competency of the teacher is a primary

characteristic related to its performance. Referring to Law No. 14 of 2005 concerning Teachers and Lecturers of article 10, Teacher competencies include pedagogic competencies, personality competencies, social competencies, and professional competencies obtained through professional education that is implemented daily by an educator.

The professional teacher should have pedagogic competence, personal competence, social competence, and professional competence. Each competency is interpreted as follows: (a) pedagogical competence, ability to manage learning, design and implement learning, evaluation; (b) competence personality, abilities in terms of attitude and personality; (c) social competence that focuses on the ability to interact with the work environment and (d) professional competence, is the ability to carry out work.

Further elaboration of the indicators of teacher competency standards is regulated in the National Minister Regulation No. 16 of 2007 concerning the Standards of Qualification and Competence of Teachers, namely the competency of the teacher which underlines 10 pedagogical competencies as follows: (a) master the characteristics of students; (b) mastering learning theory and learning principles; (c) develop curriculum and develop learning tools; (d) organize learning; (e) utilizing information and communication technology; (f) facilitate the development of potential students in actualizing their potential; (g) communicate effectively and politely; (h) conduct assessment and evaluation of learning processes and results; (i) utilize the results of the assessment and evaluation; (j) take reflective action in improving the quality of learning. Teachers' competencies, will show professionalism in terms of the teaching process. Thus the competence of productive teachers should be realized in the form of mastery of the material and able to innovate in carrying out its functions as a productive teacher.

The measurement of teacher's pedagogical competence is a difficult and complex matter. The main difficulties come from many pedagogic indicators and the evaluation of the development of self-confidence and attitudes of teacher [1]. Furthermore, the main pedagogical competence of the teacher is the ability to design the learning process well according to the needs of students and to plan learning strategies carefully [2]. The teacher's ability to design learning can be measured in the Learning Implementation Plan document. This document outlines the procedures and

10 organization of learning to achieve a basic competency specified in the Content Standards and described in the syllabus.

They are referring to the criteria; the teacher must have pedagogical competence about the task to produce graduates who can interact with the environment and society. It is supported by the Government Regulation of the Republic of Indonesia Number 19 of 2017 that concerning the implementation of vocational education by presenting subjects classified into subjects: normative, adaptive and productive. Therefore, vocational high schools divide teachers into three groups, namely normative subject teachers, adaptive teacher subjects and productive subject teachers. The grouping of these subjects means that the competence of teachers in each group must be tailored to the expertise of the teacher.

This study reviews the 1 competence of productive teachers in the Department of Computer and Network Engineering. The Teachers of Computer and Network Engineering (CNE) must have ICT competencies. The various problems that arise in Vocational Schools in Makassar City are productive teachers in ICT subjects. Most teachers do not have ICT competencies and consequence the teachers do not meet the qualifications as teachers or experts in teaching materials for Computer and Network Engineering. Based on these problems, this study discusses the competence of teacher competencies and the ability to implement learning plans.

II. RESEARCH METHOD

This is descriptive quantitative research and uses the questionnaire as an instrument. The research involved 40 teachers of Computer and Network Engineering (CNE) in many vocational High School in Makassar City. Furthermore, the validity and feasibility of instruments through educational judgment practitioners at two validators who are experts in their fields. Suggestions from the validator are reviewed to be a reference material in revising the instrument. The instrument's reliable test was analyzed with the help of SPSS Cohen's Kappa Coefficient statistical analysis program, with its reliability coefficient (r) ≥ 0.70. The results of the feasibility assessment of the validated instruments are presented in Table 1.

TABLE I. SUMMARY OF INSTRUMENT ASSESSMENT RESULTS

No	Instrument Name	Average Score (M)	Good (3.6 ≤ M ≤ 4.0)	Conclusion
			Reliable (r ≥ 0.70)	
1	Pedagogic Competency Questionnaire	3.79	Good	Proper to use
			Reliable	
2	Lesson Plan Implementation Assessment Sheet	3.77	Good	Proper to use
			Reliable	

Next, to determine the score in the instrument, each item has an alternative answer and score. Alternative answers are given a score and using a Likert scale with four categories as for scoring each point as shown in Table 2.

TABLE II. SCORING INSTRUMENTS

No	Alternative Answers	Scoring
1	Always	4
2	Often	3
3	Sometimes	2
4	Never	1

The data analysis used descriptive statistical techniques to describe the score characteristics of the research sample. Data that has been collected, clarified into quantitative data in the form of numbers. As for categorization using 4 limit reference norms as follows:

TABLE III. CATEGORY FORMULAS

No	Category Formula	Category
1	> M + 1.5 SD	Very Good
2	M + 0.5 SD ≤ X < M + 1.5 SD	Good
3	M - 0.5 SD ≤ X < M + 0.5 SD	Enough
4	M - 1.5 SD < X < M - 0.5 SD	Poor

Information:

- M = Mean Count
- SD = Standard Deviation

III. RESULT AND DISCUSSION

A. Pedagogic Competency Analysis Results

The analysis of teacher competencies based on the respondent's answer to the questionnaire. The productive teacher competencies in the Computer and Network Engineering Study Program at Vocational High School in Makassar are presented in Table 4.

TABLE IV. SCORES OF PEDAGOGIC COMPETENCY

No	Competencies	Average Score
1	Mastering the characteristic of student	3.4
2	Mastering learning theory and learning principle	2.6
3	Develop curriculum and learning tools	3.2
4	Organize learning	3.1
11	Utilizing information and communication technology	2.4
8	Facilitate the development of potential students in actualizing their potential	3.2
7	Communicate effectively and politely	3.4
8	Conduct assessment and evaluation of learning processes and results	3.6
9	Utilize the results of the assessment and evaluation	3.4
10	Take reflective action in improving the quality of learning.	3.4

20 Table 1 shows the best competency of the teacher is the ability to conduct assessment and evaluation of learning processes and results. While the lowest competency is the teachers' ability to utilize information and communication technology. Moreover, the answer of informants for questionnaire with 18 items and score range between 1-4 resulted in an ideal score range of 18 - 72. The analysis was obtained. minimum = 46, maximum score = 69, mean (M) = 57.5 and Standard Deviation (SD) = 7.56.



The description of the level of competence of productive teachers is presented in Figure 1.

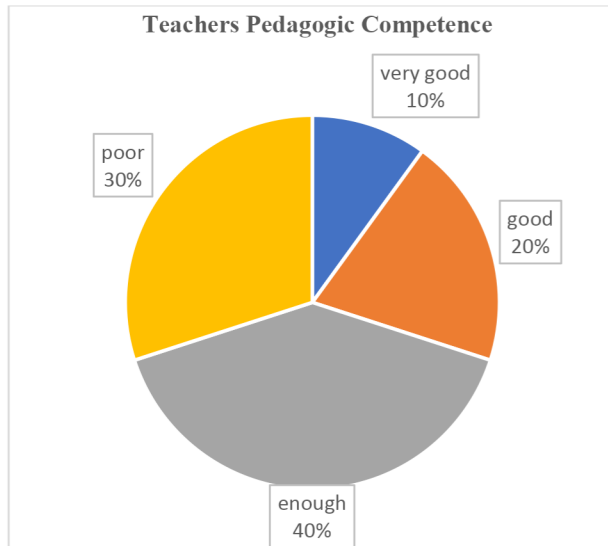


Fig. 1. Distribution of Teacher's Pedagogic competencies

Figure 1 shows that productive teacher competencies are mostly in enough categories or with a value between 53.72 and 61.28. Even there are still teachers with poor levels of competence (46.16 - 53.72) as much as 30%.

*B. Analysis of Lesson Plan Implementation*

The measurement of the lesson plan assessment instrument resulted that a minimum score of = 39, maximum score = 58, mean (M) = 49.2 and standard deviation (SD) = 6.75. The instrument amounted to 15 items with a score of 1-4, obtained an ideal score range of 15-60. The description of the results of the lesson plan implementation can be seen in the following Table 6:

TABLE V. ASSESSMENT OF LESSON PLAN

No	Interval	Category	Freq	%
1	> 59.3	Very High	0	0
2	52.6 ≤ x ≤ 59.3	High	15	37.5
3	45.8 ≤ x ≤ 52.6	Low	19	47.5
4	39.1 ≤ x ≤ 45.8	Poor	6	15
	Total		40	100

The results of lesson plan implementation analysis indicated that most productive teachers do not have sufficient ability to implement the lesson plan. There are even 15% of teachers with category poor.

Pedagogical competence productive teachers of Computer and Network Engineering (CNE) in designing the learning process is still low. This description indicated the need for efforts to improve teacher competence Along with the opinion, Arista et al. [3] states the position of productive Vocational Teachers is very strategic in educating the life of the nation, explained that the availability of the number and quality of competent, productive teachers would have a

synergistic effect in realizing quality vocational education. Supported by research results [4], pedagogic competence is the basis of teachers in carrying out their duties to achieve learning objectives. The results of the analysis of the correlation between pedagogic competencies and teacher work motivation show a very strong correlation. This shows that there is a partial contribution of pedagogic competence to teacher work motivation.

To become professional teaching in performing their duties, it is required to have the competence and ability to transfer knowledge in accordance with the substance of science the scientific field and supported by the results of the study [5] that the professional knowledge of early years reading development and pedagogy of the participating teachers was based upon their own professional experiences, their own learning from other teachers and from networking with other professionals working in the field of education.

The productive teacher should be able to develop learning strategy, plan and implement learning according to the standard of student competencies and the needs of students to actualize various potentials they have. Supported by [6], the special procedure of teachers' professional advancement was introduced in Poland, which defines four categories of teachers: (1) Trainee teacher; (2) Contract teacher; (3) Appointed teacher; (4) Certified teacher. Thus every teacher is obliged to have pedagogical training acquired either during higher education studies or in the form of postgraduate studies, or in the form of a special qualification course organized by schools of higher education or in-service teacher training centers.

IV. CONCLUSION

The best competency of the teacher is the ability to conduct assessment and evaluation of learning processes and results. While the lowest competency is the teachers' ability to utilize the information and communication technology the potential readiness of productive teacher competencies in improving the quality of learning. The pedagogic competencies of teachers are enough category, and most productive teachers do not have sufficient ability to implement the lesson plan.

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