

# Planning and Practice Teaching of High School Math Teachers in Central Dumoga District and North Dumoga

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**Abstract:** Based on data from the results of the competency test for high school, MA and vocational mathematics teachers conducted in May 2015, the majority of mathematics teachers in the country have less competencies, which are 76,881 high school, MA and vocational schools. Mathematics teachers who take mathematics teacher competency tests only reach an average value of 50.86. Of these, 36,923 (48.03%) teachers scored below 50, 17,829 (23.19%) teachers scored between 50 and 60 and only 22,129 (28.78%) teachers scored above 60. Research objectives is to obtain a description of: (1) The quality of learning planning developed by high school mathematics teachers in the Districts of Dumoga Tengah and Dumoga Utara, (2) The quality of mathematics teaching practices carried out by high school mathematics teachers in the Districts of Dumoga Tengah and Dumoga Utara, (3) the factors that influence the quality of planning, the quality of teaching practices and the quality of the level of mathematics learning implementation carried out by high school mathematics teachers in the Districts of Central Dumoga and North Dumoga. The sample in this study, for Central Dumoga District is Ni Nyoman Puspadihayu from Swadharma Werdhi Agung High School while for North Dumoga District is I Made Darmawan from Swadharma Mopugad High School. Both have: age, educational background, teaching experience, employment status, training, teaching hours, facilities and infrastructure, principal leadership and the role of school supervisors are also relatively similar. The results showed that: (1) The quality of learning planning developed by mathematics teacher Ni Nyoman Puspadihayu and I Made Darmawan was the same, (2) The quality of mathematics teaching practices undertaken by Ni Nyoman Puspadihayu and I Made Darmawan were relatively similar, (3) factors affecting the quality of planning, the quality of teaching practices and the quality of the level of mathematics learning carried out by Ni Nyoman Puspadihayu and I Made Darmawan are also the same. Research Conclusions: (1) There are influences of internal factors (ie age, educational background, teaching experience, teacher status, training, and teaching load) with pedagogical and professional competence of Swadharma Werdhi Agung High School teachers and Swoparma Mopugad High Schools, (2) There are influences external factors (ie facilities, principal leadership, and the role of school supervisors) with pedagogical and professional competence in mathematics teachers in Swadharma Werdhi Agung High School and Swadharma Mopugad High School.

**Keywords:** Teacher Planning, teaching practice, implementation of learning

## 1. Preliminary

Our country has experienced several changes or improvements to the school curriculum. The main motivation for change is that the implementation of learning according to the old curriculum has too many weaknesses. The new curriculum is predicted to be more successful in guiding students to learn. The description of the school's mathematical abilities of the students during the refinement of several curricula was not so much influenced.

Most high school mathematics teachers in Dumoga Tengah and North Dumoga Subdistricts have earned bachelor's degrees in mathematics education, but some of them even have masters degrees in education management or other fields. With the quality of teachers like this it is certainly predictable that the implementation and quality of special school graduates in the field of mathematics studies are also of good average quality. The search results of researchers on high school graduates from the Districts of Central Dumoga and North Dumoga who studied at the Department of Mathematics Unima showed that the school's mathematical knowledge possessed an average of relatively low.

The results of an international survey of the Program for International Student Assessment (PISA) in 2012 placed 16-year-old Indonesian students from 65 countries namely 64th

position for mathematics, 62 for reading, and 64 for science from 65 countries.

The low quality of Indonesian education can also be seen from the 2011 Trends in International Mathematics and Science Study (TIMSS) data, Indonesia is still far behind from neighboring Singapore, Malaysia, and Thailand. In 2011, Singapore was ranked 2, Malaysia 26, Thailand 28, while Indonesia ranked 42. The data stated that Indonesian education still produced low-quality graduates including education in the Districts of Central Dumoga and North Dumoga.

Many factors affect the quality of formal education, one of which is the quality of the organization of learning. The quality of the organization of learning is determined by the factor of teacher quality, including teacher competence. Teacher competence is a set of knowledge, skills and behaviors that must be possessed, internalized, and mastered by the teacher in carrying out professional tasks.

Minister of National Education Regulation Number 16 Year 2007 (in Aryan, 2015) concerning teachers, states that teacher competence consists of pedagogical, personality, social, and professional competencies. Pedagogical competence is the ability of teachers in managing student learning.

Teacher's personal competence is the ability of personality that is steady, noble, wise, and authoritative as well as being an example for students. Social competence is the ability of teachers to communicate and interact effectively with students, fellow educators, educational staff, parents / guardians of students, and surrounding communities. The teacher's professional competence is the ability to master the subject matter which he broadly and profoundly influences. In the Ministry of National Education (2012) it is stated that teacher competencies that are only measured are professional competencies and Pedagogical competencies. Related to the contribution of teacher competence to the quality of learning and its results, the following are given some research results. The contribution of teacher competency to teacher performance states that teacher professional competence with teacher performance has a significant positive relationship with an effective contribution of 23% (Mulyanto 2008).

Teacher competency significantly affects the professional behavior of high school (SMA) teachers in Demak Regency (in Qosim 2008). Professional competence has a greater influence (75.8%) on students' learning motivation compared to pedagogical competence / teaching skills 68.3%, (Widoyoko, 2012). Teacher professional competence has a greater influence on teacher performance than teacher motivation (Hidayat 2009). Teacher professional competence has a significant effect on student learning outcomes (Auliah 2011).

Teacher professional competence has a greater influence of 30.5% on student learning outcomes compared to pedagogical competence 25.6% (Widiarsa, 2013). Principal's leadership can improve teacher's pedagogical competence in the learning process (Efendi, 2014). Teacher competence affects student achievement by 61.6%.

Many studies have shown that the mathematical achievements of high school students in the Districts of Central Dumoga and North Dumoga are generally low. Through a number of sources such as PLPG and the results of an analysis of learning tools compiled by high school mathematics teachers in the Districts of Dumoga Tengah and Dumoga Utara show that pedagogic abilities and the ability to master mathematical material are low.

Therefore, researchers are motivated to conduct a study of the quality of planning, the quality of teaching practices and the quality of the level of implementation of mathematics learning from high school mathematics teachers in Dumoga Tengah and Du.

## 2. Formulation of the Problem

- What is the quality of learning planning developed by high school mathematics teachers in Dumoga Tengah and Dumoga Utara Districts?
- What is the quality of mathematics teaching practices carried out by high school mathematics teachers in Dumoga Tengah and North Dumoga Districts?
- What factors influence the quality of planning, the quality of teaching practices and the quality of the level of implementation of mathematics learning carried out by

high school mathematics teachers in the Districts of Central Dumoga and North Dumoga?

## 3. Research Methods

To answer the research questions that have been formulated, the research design used is descriptive analysis, which is the method used to explore, express, and describe, analytically, factually, and accurately various aspects relating to the variables in this study.

The research method used is the census method, the type of research that is designed is explanatory research in which the researcher tries to explain the research conducted.

## 4. Research Result

The research locations were Swadharma Werdhi Agung High School and Swoparma Mopugad High School, Bolaang Mongondow Regency, North Sulawesi Province. Determination of the location of this study was conducted purposively with the consideration that in these high schools, the average management of school management and school infrastructure was better than other schools in Dumoga Tengah Subdistrict and East Dumoga Subdistrict, Bolaang Mongondow District, North Sulawesi Province.

Research data shows that: (1) The quality of learning planning developed by mathematics teacher Ni Nioman Puspadihayu, S.Pd and I Made Darmawan, S.Pd is the same, (2) The quality of mathematics teaching practice implemented by Ni Nyoman Puspadihayu, S .Pd and I Made Darmawan, S.Pd are relatively similar, (3) the factors that influence the quality of planning, the quality of teaching practices and the quality of the level of mathematics learning implementation carried out by mathematics teacher Ni Nyoman Puspadihayu, S.Pd and I Made Darmawan , S.Pd is also the same.

## 5. Discussion of Research Results

The results of data analysis in this study, found that: (1) There is an influence of internal factors that have been collected from schools in the Districts of Central Dumoga and East Dumoga namely found that: in terms of age still adrift 1 year between Ni NyomanPuspadihayu, S.Pd and I Made Darmawan, S.Pd, in terms of teaching experience there is still 6 months adrift between Ni Nyoman Puspadihayu, S.Pd and I Made Darmawan, S.Pd, in terms of training between Ni NyomanPuspadihayu, S.Pd more than one times from I Made Darmawan, S.Pd, and from the teaching load there are still 3 JP changes between Ni NyomanPuspadihayu, S.Pd and I Made Darmawan, S.Pd because I Made Darmawan, S.Pd served as Deputy Principal for Field Curriculum, (2) There are influences of external factors which are found that: the existing infrastructure in SwadharmaWerdhiAgung High School is more complete, especially the Mathematics laboratory and the leadership of school principals, especially SwadharmaWerdhiAgung High School is more often in delasikan to the deputy headmaster, because he often left as a result of serving as the Chairperson of the Hindu Council; with pedagogical competence and professional competence of mathematics

teachers at SwadharmaAgung High School and SwadharmaMopugad High School.

## 6. Research Findings

The findings in this study are the mathematics learning tools of SwadharmaWerdhiAgung High School and Swadharma Mopugad High School that teachers who apply ethnomatematics approach are set in a particular learning model. Through this research produced examples of conceptualization in the form of certain mathematics learning materials and procedures by utilizing games in the daily lives of students as material for learning mathematics in schools.

Learning products serve as examples of the use of the surrounding environment for learning mathematics in the research area and can be adapted elsewhere as appropriate. The material and methods and outcomes of this study contributed to the continued strategic research plan, particularly in the field of mathematics education.

Strategic issues related to this research are the building of school mathematics science, with research topics as follows: (1) mapping of mathematical study objects at each level and type of educational unit, (2) identification of contextual problems related to mathematics.

This research material serves as an example or reference to mathematical conceptualization of the facts that are around students in their environment, so that it becomes the basis in the development of material and the implementation of learning activities, based on observation, measurement, and mathematical process skills.

The material and research activities can also be a reference for students and students in improving the quality and relevance of academic experience, especially in developing mathematics learning sourced from the environment of the community in their domicile.

## 7. Conclusion Research

- There are influences of internal factors (age, educational background, teaching experience, teacher status, training, and teaching hours or teaching load) with pedagogical competence and professional competence of mathematics teachers in SwadharmaWerdhiAgung High School and SwadharmaMopugad High School;
- There is an influence of external factors (infrastructure, leadership of school principals and the role of school supervisors) with pedagogical and professional competence of mathematics teachers in Swadharma Werdhi Agung High School and Swadharma Mopugad High School.

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