Mathematics Teachers' Performance In Teaching Using English At Secondary National Plus Schools

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Abstract

The purpose of this research was to see correlation between self-efficacy for content mastery and teacher's performance, as well as correlation between English mastery and teacher's performance in using English at national plus schools. The sampling technique was purposely random sampling. Data were collected using questionnaires that were given to the teachers to test self-efficacy for content mastery and performance. The English ability was collected through documents such as TOEFL and other equivalent documents. Using SPSS, the results showed that mathematics teachers had high self-efficacy in mastering the contents, more than sufficient English ability, and high performance. There was a positive correlation between self-efficacy in mastering the contents and teacher's performance. Furthermore, it had been obtained also a positive correlation between English ability and teachers' performance.

Key words: self-efficacy, mathematics, English, content, teacher, performance

I. INTRODUCTION

1. Background

Awareness of the importance of education, especially of high quality education, has increased in Indonesia. This case can be seen in parents' interest to enroll their children in International schools or in the so called "National Plus" schools.

According to Decree No. 20/2003 about national education system and as what Napitupulu wrote in Kompas reported on 17 April 2008, the government was preparing 200 senior high schools to become International standard schools. In year 2000, National-Plus school association formulated national plus schools criteria. One of those criteria is the deliverance of the lesson that should be done in English, especially for Mathematics and Sciences subjects.

A research done by M. Ikhsan, Syahjusar, and Tuti Zubaidah (Ikhsan et.al., 2000) about the mastery of triangle teaching materials by mathematics teachers found that teachers generally found difficulties in understanding triangle. Considering that teachers should have no difficulties in math contents, the researcher presumed other factors which might affect the learning processes. In this research, the researcher planned to review efficacy factor towards the three dimension materials and teachers'

ability in communicating with English and its relationship with teacher performance.

Based on the background above, the researcher raised issues as follows:

1. Was there any relationship between self-efficacy in mastery of materials and teachers' teaching performance?

2. Was there any relationship between English language skills and teachers' teaching performance?

2. Self-Efficacy

The Decree No. 14/2005 about Teacher and Lecturer Chapter IV Verse (1) and Government's Regulation number 19/2005 about National Education Standards, Chapter 28 Verse (3) writes that there are 4 competences for teachers:

1. Pedagogical Competence, which means the ability to manage students' learning which covers understanding towards the students, learning design and implementation, evaluation of learning outcomes, and development of the students to actualize their various potentials.

2. Personality Competence, which means the ability to have steady, stable, mature, wise, and charismatic personalities; become role models for the students; and noble.

3. Professional Competence, which means self-efficacy ability in widely and deeply mastery of teaching materials that enables to guide the students for fulfilling competency standards which has been set in National Education Standards.

4. Social Competence, which means the teachers' ability, as part of community, in communicating and socializing effectively with the students, their teachers, educational staffs, students' parents, and surrounding communities.

These four competences become the basic development for teachers to become professional teachers in accordance with the regulations of education. Even though becoming a good teacher is not only having those four competences, but also having wider dimension.

Self-efficacy shows the individual about self-ability that can be expressed through action. Bandura also stated that if high self-efficacy is supported by responsive

environment, most of the actions will lead to success. (Feist 2006, 478)

After doing many researches, Shell, Colvin, and Bruning in Ryckman concluded that

Such a trend is consistent with Bandura's argument that increases in perceived self-efficacy are associated directly with improvement in actual cognitive and behavioral skills. (Ryckman 2004, 594).

3. English Language Skills

One of the social competence components that teachers should have is communication. Communication is an essential part in Mathematics (Tumudi 2008, 55). Communication is a way of sharing concepts or thoughts, development of ideas, and also classification of meaning. Mathematics is communicated in three major ways which are symbols of communication, writing communication, and oral communication.

In order to reach better communication in teaching Mathematics with English language, it is very important to notice the structure of English language and also the Mathematical terms. Communication skills in English is divided into 4 (four) components (Rizaali 2009, 109) which are Reading, Listening, Writing, and Speaking.

One of many ways to measure English Language skills for non-native speakers is using Test of English for Foreign Language (TOEFL). TOEFL consists of three parts, which are (1) *Listening Comprehension*, (2) *Structure and Written Expression*, and (3) *Reading Comprehension (Roell n.d)*. TOEFL fulfills three out of four English skills components. The fourth component, which is the Speaking, can be ignored in this research, as the research will only observe teacher performance in form of teachers' preparation, reading the materials, and making Lesson Plan in English.

4. Teachers' Performance

According to Mangkunegara (2001, 67), performance is a qualitatively and quantitatively work which is achieved by an employee in doing his/her duties in accordance with his/her responsibilities. Three basic abilities in achieving teachers' performance are listed as follows:

1. Personal ability covering physical things such as vice, eye-contact, health, clothing, hearing, and psychological things such as humorous, friendly,

intellect, patient, polite, diligent, creative, self confident, optimistic, critical, objective, and rational.

2. Social Ability such as open-minded, discipline, dedicated, responsible, helpful, constructive, orderly, fair, forgiving, honest, democratic, and love the students.

3. Professional Ability covering mastery of subjects in school curriculum and master the deepening and implementation of subjects, manage the learning program, manage the classroom, use the media and source, master the educational basics, and manage learning interaction.

According to Medley and Soar in Anwar (2006), the appraisal to teacher's performance is not just only seeing the work quantity, but also seeing the quality of that work.

II. RESEARCH METHOD

1. Population and Sample

Population of this research was Senior High School Mathematics teachers who used English in their teaching in area surrounding Tangerang and Jakarta. The teachers in this case were Mathematics teachers who are Indonesian people (non-native speakers).

The sample was taken using purposed random sampling. From the respond of the questionnaire, there were two Senior High Schools whose teachers were willing to become sample. The total number of sample was 11 Mathematics teachers from two National Plus Senior High School in Tangerang.

2. Instrumen

Self-efficacy in mastering three dimensional materials was carried out by measuring the respondents' attitude and opinion about the question. The scale used was semantic comparison scales (Sugiyono 2009, 27). Instrument of self-efficacy in mastering the material was divided into 16 models of questions which were arranged based on three dimension materials. The contents of the materials were (1) determine the position of point, line, and area in three-dimensional space, (2) determine the distance of point to line and point to area, (3) determine the angle between line and area and between two areas.

The range of the scale was 1-10. The scale of 1 was when the respondents thought that they were able to do the question with help from others or from reading the

references previously. The scale of 10 was when the respondents thought that they were able to do the question directly and quickly. The maximum point was 160 while the minimum point was 16. The tryout of this instrument produced Alpha Cronbach reliability value of 0.794.

For English language skill variable was measured by the TOEFL score that the teachers got previously. The TOEFL score was obtained from the documents at school HRD (Human Resource Department).

The instrument for measuring the teachers' performance consisted of two kinds of themes which are: lesson plan and learning process. Lesson plan instrument has three main parts as Gagne and Briggs said in Majid (Majid 2005, 21), which are: goals, materials, approaches and media, and also evaluation. While the learning process instrument consisted of eight components which should be noted which were opening the lesson, using methods and media, giving motivation, concluding, effective communicating, delivering the materials as planned, providing assessment, and using time appropriately.

Each of lesson plan and learning process questionnaire consisted of 20 points and 26 points of statement. The instrument was arranged based on 1-5 *Likert* scale which 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neutral (N), 4 = Agree (A), 5 = Strongly Agree (SA). The tryout of this instrument shows that Alpha Cronbach coefficient is 0.702 and 0.713 respectively for lesson plan and learning process instruments.

Both instruments were filled by the teacher himself and the teacher's partner. So, there were 4 questionnaires which showed the performance of the samples. Lesson plan and learning process score was obtained from the average self-assessed and peer scores. In order to get the performance score, weighting was used, 2 for the lesson plan and 3 for the learning process. That provision was appropriate to the format of teachers' performance scoring, which is published by Directorate General of Raising the Education and Educational Staffs Quality, Department of National Education.

3. Analysis

The data was analyzed descriptively by looking at the average scores of each variable. Spearman Rank Correlation was also used in order to know the relationships between self-efficacy with the teachers' performance and English Language skills with

teachers' performance.

III. RESULT AND DISCUSSION

3.1   Data Analysis of Each Variable

From the data analysis result, it was showed that mean of the self-efficacy in mastering the materials was 131.18, which was 82% from the maximum score of 160. This thing showed that self-efficacy score was in the high level. This result could also be interpreted that the teachers showed no difficulties in understanding the three dimension materials, even they felt confident enough to teach the materials in English.

The minimum TOEFL score was 446 and the maximum score was 620. The average of the TOEFL score from eleven sample members was 532. Generally, the teachers have sufficient skill to planning the lesson in English. National Plus schools generally put 500 points minimum TOEFL score as their standard in recruiting Mathematics and Science teachers. With that standard, it could be said that Mathematics teachers had more than enough English language skills.

Based on the data collection result, the mean score of teachers' performance was 99.78 out of the maximum 160 (85%). It means that Mathematics teacher in National Plus School had high performance in general. Furthermore, it could be said that they showed optimal performance, both in preparing the lesson and in the lesson process itself.

3.2 Self-Efficacy in Mastering Materials and Performance

The calculation got the correlation coefficient of 0.69 with the significant level of 0.05. The correlation between self-efficacy in mastering materials and teachers' performance had positive value which means the higher self-efficacy in mastering the materials, the higher teacher's performance.

This result supported the government policy that force teachers to have professional competence which is comprehension of materials so that the teachers can do the learning process as well. The end of this learning process will help students reaching competency standards which have been stated by the national curriculum.

3.3 English Language Skills and Teachers' performance

Based on the calculation, the correlation coefficient between English language skills and teachers' performance was 0.64 with significant level of 0.05. It could be concluded that there was significant relationship between English language skills and

teachers' performance. Because the correlation coefficient is positive then it implies that the higher the English language skills, the higher the teachers' performance.

The ability to communicate is part of the social competence that should be possessed by teachers. Because the working language in lesson is English, then the teacher is expected to be able to communicate in English. Looking the reality that there is positive correlation between English language skills and teachers' performance, then the Mathematics teachers in national plus schools is expected to always improve their English language skills to improve the quality of their performance.

IV. CONCLUSION AND SUGGESTION

4.1 Conclusion

Mathematics teachers in national plus schools had high self-efficacy in mastering the materials to teach Mathematics in English. It could be concluded that English language skills of the Mathematics teachers in national plus schools was more than sufficient in planning, teaching and learning process. This research showed that Mathematics teachers in national plus schools generally had high level of teachers' performance.

Self-efficacy towards mastering the materials and teachers' performance had positive or direct correlation, which means for Mathematics teachers in national plus schools, the higher their self-efficacy towards mastering the materials, the higher their performance would be. The same thing was also shown in the result of correlation between English language skills and teachers' performance. In other words, the higher the English language skills of the Mathematics teachers in national plus schools, the higher their performance would be.

4.2 Suggestion

The limited sample in two schools with eleven teachers was relatively small to generalize the result in population of Mathematics teachers in national plus schools. In order to overcome the bias possibility of generalization process, it is suggested to take larger and prevalent sample in all areas.

The use of TOEFL to measure teaching skills could not detect speaking part, so it is needed to design more accurate instrument. In order to get better result in the research, the instrument should also cover the skills of teaching in English.

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