

Description Verbal Mathematics Communication of Students Prospective Mathematics Teacher in Teaching Practice

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Abstract: *This study aims to describe: (1) the communication of mathematics verbal male student of prospective teacher in teaching mathematics and (2) the communication of mathematics verbal a female student of prospective mathematics teachers in teaching practice. This research is exploratory research with a qualitative approach. Subjects in this study are 2 students consisting of one male student mathematics of prospective teacher and 1 female student mathematics of prospective teacher who meet the criteria set by the researcher. The researcher is as the main instrument to make observations and interviews directly to the subject. The data was obtained by the observation of the subject teaching practice 3 times, followed by interviews. Criterion validity of the data was done by using credibility, transferability, dependability, and conformability. Based on the results of the study, the researchers can conclude that 1) a description of mathematical communication verbal male student prospective teachers of mathematics in teaching practice is correct and clear when pronouncing the name / term mathematical objects relating to the material sense conveyed, but wrong in saying the reduction operation with the notation "negatives" that should be pronounced "reduced" but pronounced "negative", and this is because custom made by the subject, giving a different intonation when saying the name / term mathematical objects are given priority. The subjects are underlined while giving emphasis when pronouncing the name / term preferred mathematical objects, and sounds can be heard by all students in the classroom; (2) a description of mathematical communication verbal of female student of prospective mathematics teachers in teaching practice is to pronounce the name / term mathematical objects correctly and clearly, intonation flat course, there is no emphasis on the name / term mathematical objects that take precedence over teaching practice, because the subject thinks that students already understand the things that are important in the materials provided, and the sound can be heard by all students who are in class*

Keywords: *mathematical verbal communication, student teachers of mathematics, teaching practice*

I. Pendahuluan

Teachers need the communication skills to convey abstract mathematical objects to students. Mathematics is a language, not just a means of mathematical thinking tools, tools to find patterns, but mathematics as well as a vehicle for communication between students and communication between teachers and students. Communication in mathematics and mathematics learning into something are needed. Mathematics is a language and that language as the best in the community, then it is easy to understand that communication is essential in teaching, learning, and accessing to mathematics ([1] Rbaryans 2007) verbal communication in mathematics to be observed is focused on the pronunciation of the name / term object mathematics, volume, and intonation. Why should student's mathematics verbal communication skills teachers possess? In mathematics, it is not uncommon misconceptions about concepts that are presented to the student teacher. It is as a result of the abstract mathematical characteristics. Therefore, pre student teachers of teaching mathematics in practice may not only explain the material without regard to the communication aspect. Without regard to the communication is not necessarily acceptable material presented students properly.

II. Theoretical Review

1.1. Mathematical Verbal Communication

According to ([2] Armiati, 2009), to be able to communicate needs the necessary tools. The main tool in their communication is language. Mathematics is a language that can be used in communication. Mathematics is a universal language, which for one symbol in mathematics can be understood by any persons with any language in the world, for example in mathematics to express the amount of use the symbol of Σ , and everybody understands that the emblem is declared the total of quantity. Mathematics as a tool for other sciences is well known and is not in doubt. Mathematics is not just a tool for science, but more than that mathematics is the language. Mathematics is a language that symbolizes the range of meaning of the statement that we want to convey. The symbols which are artificial new mathematics has meaning after a meaning given to it, without it just a collection of mathematics formulas is functionless. As a language, mathematics is a way of expressing or explaining a certain way. In this case that is used by the language of mathematics is by using symbols

The symbol "8" and the word "eight" convey the same message, only the shape is different. Reading mathematic texts should be able to read the special mathematic symbols related to the text. When we pronounce the mathematical objects, the voice that came from the lips we must pay attention to how the tone, clarity, and stressing . According to ([3] Borg, 2010), we communicate via voice (tone, speed, and stressing) .When a concept of mathematical information is given by a teacher to the student or students to get themselves through reading, then when it is going transformation of mathematical information from the communicator to the communicant. The response given communicant an interpretation of that information. In mathematics , the quality of interpretation and the response were often a special problem. It is as a result of the characteristics of the mathematics itself is loaded with terms and symbols. Therefore, communication skills of teachers in teaching mathematics becomes into special demands. Mathematical verbal communication skills are skills that can enclose and contain a variety of opportunities to communicate in the form: reflect the real objects, images, or ideas of mathematics ; creating a model situation or problem using oral methods; using the term reading skills, as well as mathematical information; responding to a statement or problem in the form of a convincing argument. Cockroft 1986 ([4] Shadiq, 2004) states that “We believe that all these perceptions of the usefulness of mathematics arise from the fact that mathematics provides a means of communication which is powerful, concise, and unambiguous.” This statement shows that how is very essential for students to learn mathematics because mathematics is a tool of communication which is very strong, clear, and accurate. Communications related mathematics as part of interpersonal skills aspects to be observed is the pronunciation of the mathematical objects, the sound volume in utter mathematics ematical objects, and intonation given to mathematical objects are given priority. Therefore, teachers in communication also should pay attention to intonation, but it also notice the volume of sound, speech intelligibility as well. Based on the above, the researcher defined the mathematical verbal communication is the process of delivering ideas / thoughts mathematics in oral form in the form of utterances .

2.2. Interwoven Communication Verbal Math Students Prospective Teachers of Mathematics in Practice Teaching

Teaching requires good communication between teachers and students, and between students and other students. ([5] National Council of Teachers of Mathematics NCTM 2000), describes ".... many of mathematics educators believe communication is a crucial part of mathematics ". That is, many teachers of mathematics believe that communication is an important part of mathematics. According to ([6] NCTM 2003), an aspiring mathematics teacher should be able to communicate ideas mind mathematical orally and in writing to his friends, teachers, and to the others, with the indicators, capable of: (1) to communicate thoughts mathematical basis coherent and clear to his friends, teachers, and for others; (2) using mathematical language to express an idea / ideas accurately; (3) manage the mathematical thinking through communication; and (4) analyze and evaluate the mathematical thinking and strategies of others. In general, the main task of a mathematics teacher is to guide students on how to study the real and how to solve each of the problems facing her so that guidance can be used and exploited their future.

Therefore, the long-term goal is to improve the competence of learning allowing students to leave school when it will be able to develop themselves and be able to solve problems as they arise. According to ([7] Kusumah, 2008) states that communication is a very important part in the learning of mathematics . Communication through mathematical ideas can be exploited in a variety of perspectives; the way of thinking of students can be sharpened; understanding the growth can be measured; students' thinking can be consolidated and organized; mathematical knowledge and the development of students' problems could be improved; and communication of mathematics can be done. One of the important factors that influences student learning activities is communication skill. Teachers should be able to speak and choose a style of speaking, using language as a tool to communicate. According to communication theory, intonation affects 38% of communication. According to ([8] Sari, 2011), "volume and intonationof voice teachers in the learning process must be heard well by learners ".So it is clear that the mathematical verbal communication skills in teaching mathematics is a fundamental capability that must be held by teachers and users of mathematics for learning , teaching, and assessing the mathematics .

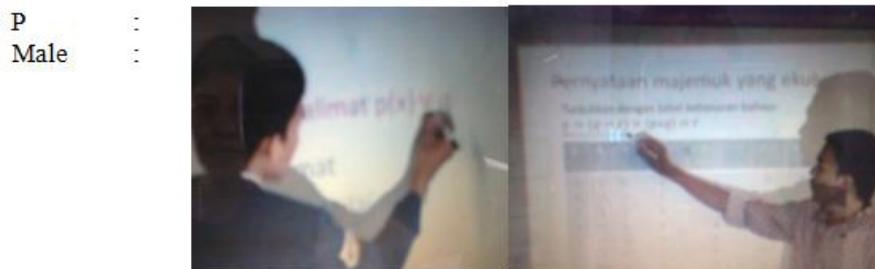
III. Research Methodology

This research is exploratory research with a qualitative approach. The subjects in this study are students in mathematics education study program who are taking courses Pre Teacher Experience Program (PPL). The criteria for selection based on the subject of equality either half or cumulative grade point (GPA) is 1st semester to semester 6, then randomly selected to obtain one of male subjects and one female subjects. The main instrument is the researcher herself and the supporting instruments are observation sheet verbal communication skills and a recorder. The validity of the data is using a triangulation, then the data is analyzed to get a credible description of verbal communication skills student teachers in teaching practice.

IV. Finding and Discussion

When the subject male and female are practice teaching, the researcher was recorded the subjects' activity from start to finish. This following of male subject exposure to the data and the subject of female when the teaching practice as well as interviews with researchers who have credible. The male data was credible after three times of teaching practice and interviews. Likewise, the female data was credible after 3 times the practice of teaching and interviews. The following data had already been credible on the male subject. Mathematical objects was pronounced correctly. Among conjunction, disjunction, implication and bimplication, negation, complex sentences, the statement, 5 is prime, but the subject is wrong in saying $x^2 - 4$, x squared is negative 4

- P : Do You feel something is mispronounce when you were teach last time?
 Male : Hopefully not Miss
 How to pronounce $x^2 - 4$?
 P : x squared negative 4
 You can distinguish between negative and reduced
 P : Same thing Mom, I'm used to saying negative if no sign is reduced.
 Male : Why did you give the bottom line when describing the exclusive disjunction?
 P : I used to emphasize the things that are important to the way of underlining the word or phrase that I write or I show on the LCD.
 Why did you do it?
 Male : In order for students to understand that I explain, Mom.



Based on the observations of the researcher, the subject indeed underlined the mathematical objects which were emphasized, while pronouncing the name of an exclusive disjunction notation with a different intonation on the word exclusive disjunction.

Based on the observations of the researcher and recording, male subject voice can be heard by all students in the classroom practice.

The following data is already credible on the subject of female :



The female pronounces correctly all mathematical objects that exist in the material Logic, Suitable with interviews and observations were conducted by the researcher.

- P : What about are your utterances related to name / term mathematical objects that you say?
- Female : I think I am not wrong in speech, and also clear, Mom .
- P : In your opinion, is it important to have different intonation in terms of mathematical objects that emphasized, for example, when you explain about Conjunction, disjunction, implication, bimplikasion ?
- Female : I think the students have already understood the things that are important Mom
- P : Do you currently deliver material earlier, you have given emphasis on things that are important, for example, related to the concept of a conjunction?
- Female : I was not giving emphasis Mom . because I am sure the students have understood the things they consider important.
- P : Are you sure that the volume of your voice heard by all students in the class?
- Femle : Yes ma'am, I'm sure, even before I had time to ask students if my voice is clear, and answered by the students are very clear.

.Based on the observation and recording of the researcher, sound of the subject can indeed be heard by all students who were in class.

V. Conclusion

Based on the results of the study, the researcher can conclude that 1) a description of mathematical communication verbal male students of prospective mathematics teachers in teaching practice is correct and clear when pronouncing the name / term mathematics ematical objects relating to the material sense conveyed, but wrong in saying the reduction operation with the notation "negatives" that should be pronounced "reduced" but pronounced "negative", and this is because custom made by the subject, giving a different intonation when saying the name / term mathematical objects are given priority. The subject underlined while giving emphasis when pronouncing the name / term preferred mathematical objects, and sounds can be heard by all students in the classroom; (2) a description of mathematical communication verbal female students prospective of mathematics teachers in teaching practice is to pronounce the name / term mathematical objects correctly and clearly, intonation flat course, there is no emphasis on the name / term mathematics ematical objects that take precedence over teaching practice, because the subject thinks that students already understand the things that are important in the materials provided, and the sound can be heard by all students who are in class.

Reference

- [1]. Rbaryans, *Komunikasi dalam matematika*(<http://rbaryans.wordpress.com/2007/05/30/komunikasi-dalam-matematika/>), diakses tanggal 7 Sept 2011)
- [2]. Armiati, *Komunikasi Matematis Dan Kecerdasan Emosional. Seminar Nasional Matematika dan Pendidikan Matematika Jurusan Pendidikan Matematika FMIPA UNY.2009*
- [3]. Borg, *Buku Pintar Memahami Bahasa Tubuh*. (Yogyakarta: Think, 2010)
- [4]. Shadiq, *Pemecahan Masalah, Penalaran dan Komunikasi. Diklat Instruktur/Pengembang Matematika SMA Jenjang Dasar*, (Yogyakarta, 2004)
- [5]. NationalCouncil of Teachers of Mathematics, *Principles and standards for school mathematics*. (Reston, VA: Author, 2000)
- [6]. NationalCouncil of Teachers of Mathematics, *Programs for Initial Preparation of Mathematics Teachers. Standards for Secondary Mathematics Teachers*(http://www.nctm.org/uploadedFiles/Math_Standards/diakses tanggal 3 Oktober 2011)
- [7]. Mulyasa, *Menjadi Guru Profesional Menciptakan Pembelajaran Kreatif dan Menyenangkan*. (Bandung : Remaja Rosdakarya, 2005)
- [8]. Sari, *Penentuan Kegiatan Belajar Mengajar*, (<http://staff.uny.ac.id/sites/default/files/pendidikan/Annisa%20Ratna%20Sari,%20M.S.Ed./PPA-KBM.pdf>), diakses tanggal 19 September 2011)