Mathematics anxiety of grade VII junior high school in East Jakarta

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Abstract - The purpose of this study was to determine the mathematics anxiety in urban areas like Jakarta which is the dominant area one of the advanced cities in Indonesia. This study focuses on how the image of mathematics anxiety of students in one junior high school in East Jakarta. This research used questionnaire design with descriptive analysis of qualitative. This study was conducted on 49 students of grade VII and discuss about 4 main indicators of mathematics anxiety, i.e. 1) Mathematics knowledge/understanding related to the things such as the emergence of a mind that he didn’t know enough about the mathematics; 2) Somatic related to the changes on the state of the individual body for example like sweating or heart beating fast; 3) Cognitive related to the changes in cognitive a person when dealing with mathematics such as unable to think clearly or be forgotten; 4) Attitude related to the attitudes that arise when someone has mathematics anxiety such as not confident to do the things that are asked or do not want to do it. Data were collected based on questionnaire which has been developed based on the 4 indicators.

1. Introduction
Anxiety be one of the drivers that can help to further the spirit of life to achieve their dreams, have mental to be more vigilant, as well as to achieve the goal so that the anxiety should be channeled to uses that are more positive [1]. Anxiety is a normal aspect of human life and has a positive side to it so that everyone who wants to achieve optimal performance must learn how to take control of the anxiety instead of being controlled by anxiety and use it in a positive way to improve his life.

Anxiety can also be a motivator which is needed to change life. For example, when we will face the exam, we will feel afraid of failure in the exam so that we are motivated to study hard or when we got the assignment for the presentation in front of the class then comes a sense of fear of being wrong and embarrassed in front of friends so this motivates us to perform at our best at any time of the material to be delivered. It means that anxiety becomes excessive and tends to be negative when we are not ready with what we will face. Mayer says that anxiety becomes a problem when it causes emotional pain and suffering as well as interfere with the child's ability to function well in school and everyday life [1].

In this study, anxiety majored in math anxiety. Anxiety especially in mathematics lead to student difficulty adapt with the lessons and finally cause low achievement of mathematics students. Low student achievement is cause also of the low thinking ability of students so that the problem of this anxiety should not be ignored by educational practitioners. This is in line with the study conducted by Kargar, Tarmizi and Bayast stated that math anxiety has the effect that make the mathematical creative
thinking abilities of students low [2]. In addition, a lack of confidence when working in mathematical situations is described by Stuart as the one cause of maths anxiety [3]. It is also in line with the opinion stated by Ashcraft & Faust that Highly math’s anxious individuals will be less fluent in mathematical thinking and attitudes, less knowledgeable about mathematics, and less likely to have discovered special strategies and relationships within the mathematics domain [4].

Math anxiety is an accumulation of attitudes towards the phenomenon of learning mathematics. An overview of the process of the occurrence of math anxiety, according to Arem called the math anxiety cycle (circle math anxiety) has 5 stages which are presented in the following figure [5].

Based on this research aims to see the math anxiety of students in one school in east Jakarta. It is constituted by the curiosity of the researcher to the math anxiety of children in urban areas. To study more related to math anxiety will discuss about math anxiety in children in rural areas.

In this study, math anxiety that question is an uncomfortable condition when faced with mathematical problems and to measure the math anxiety of the students used some indicators, adapted from Cooke suggests math anxiety consists of 4 components are: (1) mathematics knowledge/understanding related to the emergence of thoughts that a person does not know much about mathematics, (2) somatic related to changes in the circumstances of a person's body such as sweating or heart rate beating fast or shaking the whole body, (3) cognitive related to the cognitive changes a person when seeing mathematics as not forget all of the formulas or can't think clearly, (4) attitude with regard to the attitudes that arise when someone has math anxiety such as not confident to do the things that are asked or do not want to do it [6].

This research will be described about the students' answers to the questionnaire that has been adapted and validated based on the four indicators of math anxiety. Each indicator of math anxiety will be discussed 2 the grain problem.

2. Experimental method

This research uses descriptive analysis of qualitative. In this research the subject in two class in grade VII in one junior high school at East Jakarta and involved 49 students. The students’ mathematics anxiety was measured by a questionnaire about mathematics anxiety and consisting of 21 items. Questionnaire used in this study consists of four answers to be selected by the student, i.e., very often
(VO), frequent (F), rarely (R), and never (N). Statement of students on questionnaire consisted of positive statements and negative with the aim to equate the statement in the questionnaire according to the personality of the good and bad students in aspects of anxiety mathematically so that a given response is accurate and can be accounted. Students' response to the positive statement was given a score of \( VO = 4, F = 3, R = 2, \) and \( N = 1, \) while the opinion towards the negative statement is given a score of \( VO = 1, F = 2, R = 3, \) and \( N = 4. \)

3. Result and discussion

The part of this discussion each will be discussed 2 of the statement related to the 4 indicators of math anxiety. In this study, math anxiety that question is an uncomfortable condition when faced with mathematical problems and to measure the math anxiety of the students used some indicators, adapted from Cooke suggests math anxiety consists of 4 components are: (1) mathematics knowledge/understanding related to the emergence of thoughts that a person does not know much about mathematics, (2) somatic related to changes in the circumstances of a person's body such as sweating or heart rate beating fast or shaking the whole body, (3) cognitive related to the cognitive changes a person when seeing mathematics as not forget all of the formulas or can't think clearly, (4) attitude with regard to the attitudes that arise when someone has math anxiety such as not confident to do the things that are asked or do not want to do it [6].

At the first indicator of Mathematics knowledge/understanding related to the emergence of thoughts that a person does not know much about mathematics. The statements are “I feel ready to work on the math quiz given by the teachers suddenly” and “I think to choose a math lesson on the choice of majors in high school or college”. On the statement “I feel ready to work on the math quiz given by the teachers suddenly”, of the 49 students there were 5 students choose very often, 16 students choose often, 20 students chose rarely, and 8 students choose never. as for the statement “I think to choose a math lesson on the choice of majors in high school or college” of the 49 students, 8 students choose very often, 12 students choose often, 6 students chose rarely, and 23 students choose never.

Most of the students chose never think to choose a math level. this identified one of them because the learning of mathematics in schools is still conventional. The emergence of the notion that mathematics is a science that is not fun make almost all students choose to avoid mathematics at higher level. It becomes the task of the teacher to be able to create an environment of learning mathematics fun. This is in line with the opinion of Zakaria & Nordin said that teachers need to be aware of the effects of anxiety on students’ achievement and motivation. They should make an effort to lessen anxiety on these students. Teachers should develop teaching strategies that help highly anxious students [7].

On the second indicator of somatic related changes in the circumstances of a person's body such as sweating or heart rate beating fast or shaking the entire body. The statements are “my heart is beating faster than usual every teacher give the questions in class” and “I was very excited when the teacher asks me to do problems in front of the class”. On the statement “my heart is beating faster than usual every teacher give the questions in class”, 9 students choose most of the time, 13 students chose often, the 17 students chose rarely, and 8 students choose never. While on the statement “I am very excited when the teacher asks me to do problems in front of the class”, as many as 7 students choose very often, 19 students chose often, 18 students chose rarely, and 5 students chose never.

Based on the selection on second item such a declaration is seen that the anxiety of the students when given the question suddenly and asked to explain in front of the class almost all the students showed a reaction uneasy, less confident, and shy. This is in line with Ashcraft and Kirk which states that the correlation between mathematics anxiety and academic performance is inversely significant [8]. In line with Garry also said that many students who suffer from mathematics anxiety have little confidence in their ability to do mathematics and tend to avoid mathematics course [9].

On the third indicator of cognitive related cognitive changes a person when seeing mathematics as not forget all of the formulas or can't think clearly. The statements are “I can't think kernih while
studying to take the math test” and “everything I learn I can remember when asked the teacher to explain a math problem in front of the class”. On the statement “I can't think clearly while studying and math tests”, as many as 2 students choose very often, 10 students chose often, the 17 students chose rarely, and 20 students chose never. While the statement “everything I learn I can remember when asked the teacher to explain a math problem in front of the class”, as many as 5 students choose very often, 16 students choose often, 20 students chose rarely, and 7 students chose never.

On this indicator the fourth about the attitude associated with the attitude that arises when someone has math anxiety such as not confident to do the things that are asked or do not want to do it. The statements are “I avoid face-to-face with the teacher when the teacher asked for a volunteer to answer the math problem in front of the class” and “I am less confident with the answers I write the math exam”. On the statement “I avoid face-to-face with the teacher when the teacher asked for a volunteer to answer the math problem in front of the class”, as many as 5 students choose very often, with 14 students choosing often, 18 students chose rarely, and 12 students choose never. While the statement “I am less confident with the answers I write the math exam”, a total of 6 students choose very often, with 14 students choosing it often, 21 students chose rarely, and 8 students choose never.

Based on some elaboration of the statement prepared based on the 4 indicators of math anxiety, it is seen that anxiety of mathematics in schools is still high. This is based on many still choose the option of “rarely” in each statement so that teachers of mathematics need more effort to create a learning environment that declared students.

4. Conclusion
Based on the research result, the researchers concludes that mathematics anxiety is still quite high so need a learning which is can increase the confidence of students. Woodard [10] suggested the following techniques: (a) Create an environment in which students do not feel threatened and allow them to relax. (b) Use cooperative grouping. It helps students to understand that others have the same problems as they do. (c) Teach at a slow pace. It can help students better comprehend the material being taught. (d) Provide extra tuition sessions so that they are not left behind academically. With all these efforts it can be a positive force in reducing mathematics anxiety. Mathematics teacher should show their students a sincere, caring attitude to help them overcome mathematics anxiety.

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