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Attitudes of Children Toward Mathematics

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One of the hardest subjects in school is Mathematics that some of the children are having a hard time dealing with it. Childhood is a sensitive stage for the development of attitudes and feelings toward Mathematics. At this stage children may form positive or negative attitudes toward any subject hence these attitudes may last all throughout their school years. This study determined the positive and negative attitudes of the children toward Mathematics. The participants who took part in this research were Grade 2 students in a public school in Mandaluyong City. They are 7 to 8 years of age. This qualitative study used descriptive survey method to gather data. Three research-made instruments, namely the Attitude Scales, the Observation Guide and the Interview Schedule were use in gathering the data of this study. The results of this study show that 79% of the samples possess positive attitudes toward Mathematics, such that they like the subject and feel the joy, happiness and excitement while dealing with it. On the other hand, 21% of the samples possess negative attitudes toward learning Mathematics such that they experience fear, difficulty, anxiety and frustration on the subject. Therefore, this study recommends carefully-planned Mathematics' instruction where children are neither feel threatened nor frustrated but get into the excitement of exploring the helpful and useful subject called the Mathematics.

Keywords: positive, negative, attitudes of children, Mathematics

I. INTRODUCTION

Most studies on attitude toward Mathematics have focused on secondary students or adults. However, according to Cockcroft Report (1982) Mathematics may also elicit reactions from children. McLeod (1994) adds that childhood is a critical stage in the development of attitudes and emotional reactions toward Mathematics. It means that children may exhibit positive or negative attitudes when they experience happiness or frustration on that subject and retain that attitude until adulthood.

Furthermore, attitudes may change throughout school, generally, once formed, negative attitudes, anxiety and fear are difficult to remove and may carry into adult life. That leads to reduce children's willingness to persist on a problem. Children who have negative attitude may weaken their concentration in learning Mathematics. The studies on motivation in Mathematics indicate that children

who are motivated and driven are more likely interested in Mathematics regardless of their mathematical skills. Children who have positive attitude can do things in Math even if they experience failure. They take risks in order to understand the concept of Mathematics.

Hence, this research aimed to identify the positive and negative attitudes and detect the possible factors that influence the attitudes of children toward Mathematics.

This study determined the positive and negative attitudes of the children toward Mathematics. Specifically, the researcher answered the following questions:

1. What is the attitude of the students toward Mathematics?
2. What are the positive attitudes of students toward Mathematics?
3. What are the negative attitudes of students toward Mathematics?
4. What are the possible factors that influence the attitude of students toward Mathematics?
5. What interventions could be offered to those having negative attitude toward Mathematics?

II. RELATED LITERATURE

In education, attitude is one of the important elements which determine the students' success. Most children dislike Mathematics where negative attitudes have been created in their minds. In line with Ashcraft's views (2002) primary school children who are anxious about Mathematics should be the teacher's priority group as it is likely that they will go on to underachieve mathematically during their secondary years. Children may carry their anxiety and fear into adulthood limiting their chance to explore the subject and further opportunities to learn. As stated in Newstead (1998), young children are beginning to develop anxiety toward Mathematics in the primary school. It might be possible that children may not understand and consequently not be interested in the subject. If a child already gives up studying mathematics in the early stage of learning, this will result in anxiety, fear and frustration in solving mathematical problems.

Children's perceptions in mathematics were quite revealing. Their statements show negativity on the subject. In addition, when young children already developed negative attitudes toward the subject in their primary years it would be very difficult to change them when they have already reached adulthood. Newstead (1998) supports that attitudes formed at or by this stage will be hard and may well persist into adult life. Moreover, in the case of frequent failures, attention is needed for the protection of children from the danger of disappointment. On the other hand, Bandura (1977) posits children's self-efficacy as becoming more accurate and stable over time and are very difficult to change. Children often hate mathematics because of the teacher factor, the subject itself or the student factor. Some researchers found that fear, anxiety and dislike of Mathematics are caused by the teaching approach, poor skills in math, and

negative attitudes (Mohd, N., Mahmood, T., and Ismail, M., 2011 and Zan, R. and Di Martino, P., 2007). Furthermore, causes of negative attitude also include teacher anxiety, educational or environmental factors, and innate characteristics of Mathematics, failure in it and the influence of early school experiences on the subject.

Based on the research of Stodolsky (1985), the beginnings of anxiety can often be traced to negative classroom experiences. It proves that one factor of negative attitude of children toward Mathematics begin at school. This research mentioned that the roots of negative attitudes lie in the instructional method and/or in the quality of mathematics teaching in the elementary level. Children might experience failure because of poor performance in Math class.

Another contributing factor why negativism on the subject is developed is when the children would not easily understand the language of Mathematics that may lead to their loss of interest. So, children might do some work while having their math class and pay attention to their irrelevant work. Skemp (1986) suggests that rote learning of mathematics can cause children to develop anxiety and fear toward Mathematics. He also notes the problem being faced by teachers who are hoping to teach the children with understanding the process "how" and connection "why". Primary Mathematics should be taught in a way that the children see a connection in their everyday lives where they can apply the mathematical skills they learned rather than emphasizing memorization. Moreover, children should understand not only the concept but the processes involved in learning Mathematics. McLeod (1994) explains that active learning, the novelty and difficulty of non-routine problems, and the need to communicate about problems are expected to give rise to more intense affective responses and are expected to simplify it for the students who have difficulty in answering mathematical problems. Where pupils feel at ease to ask questions and take risks without fear of criticism.

Educators believe that children who see a connection of their lessons to their lives are motivated to learn, a condition where they achieve a higher level of performance in class and that which lessens the build-up of negative attitudes toward their lessons and tasks at hand.

According to Effandi and Normah (2009), negative attitudes toward Mathematics need to be processed, so that later in life, the students will not suffer from it. They assert that in order to live a competent life, it is important to master the basic Mathematics concepts and operations. Their claim is supported by O'Connell (2000) who points out that students must have positive attitude toward Mathematics if they are to succeed. O'Conneell proposes that facing mathematics problem requires patience, persistence, perseverance and willingness to accept risks. Thus, students who come to enjoy mathematics will increase their self-esteem and intrinsic motivation to learn. Zacharos, K., Koliopoulos, D., Dokimaki, M. and Kassoumi, H. (2007) share that students with positive attitude towards Mathematics will generally excel in it.

A study conducted by Faridah (2004) shows that students with high level of perseverance will not stop trying until they manage to get the answer and they will continue to work on a problem until they succeed in solving. Education Matters (2008) asserts that confidence toward–Mathematics play a significant role in Mathematics achievement. When the children are confident, they are capable of developing their own strategies on how to perform in Mathematics. More importantly, the right guidance of the teacher and his various teaching styles in Math would help the children to be active and eager in the mathematics subject. Attitudes of children have an impact on their learning because it influences how they perceive and like the subject. Some young learners who may have already established positive attitude toward Mathematics will do their best to arrive at the correct solution to their problem, despite initial-failures. Thus, failures do not pose a threat in their process of learning the subject whether the positive and negative attitudes towards mathematics are directly influenced by children's learning process in Mathematics.

III. METHODOLOGY

Research Method

The researcher used the quantitative design, particularly the descriptive survey design which describes the nature and characteristics of the phenomenon. This design was selected to meet the objectives of the study, to determine the positive and negative attitudes of the subjects.

Respondents

The respondents were children aged 7 - 8 years old and consisted of 13 boys and 17 girls in Grade 2. This study was conducted in a public school in Mandaluyong City. The study was limited to 30 participants who were capable of reading and the samples were all in the same class. The samples were purposively selected for their readiness skills in reading and carrying out a group administered test. It is assumed that the subjects selected are representative samples of the Grade 2 population in the public school where the study was conducted.

The Instruments

The instrument used to gather the data was a researcher-made, such as an attitude scale, an observation guide and an interview schedule. The Attitude Scale consisted of both positive and negative statements; the statements were shuffled to ensure reliability of the answers. It adopted a Likert Scale format where statements were rated according to the following degree of responses: SD – Strongly Disagree, D- Disagree, A- Agree, and SA- Strongly Agree. This Attitude Scale was used to measure the attitudes of the samples toward Mathematics. The researcher translated the survey into the respondents' mother-tongue so they would easily understand the statements in it. The second instrument that was used was an observation guide. This featured a table consisting of student's attitude,

teacher's instructional technique and the classroom setting. It was used to cover the overall observation during the class instruction of Mathematics. The last instrument was an interview schedule. The questions in the schedule were as follows: *Do you like Math? Why or why not?* And *can you describe what Mathematics is for you?* The three (3) students who gave the highest positive rating and the three (3) who gave the lowest or negative rating within the samples became the participants of the interview.

The Data Analysis Procedure

The data from the attitude scale provided the bulk information in determining the attitude of the subjects toward Mathematics. The researcher processed the data from the Scale using the weighted mean. The total score for the positive and negative attitudes were interpreted and analyzed using a measure of central tendency, the mean. The information obtained from the observations and interviews enriched the results that–answered the research problem. Also, this study used the frequency count, percentage and rank in processing the data.

IV. RESULT

A student's attitude towards Mathematics can have positive or negative effects on the learning processes and outcomes in Mathematics. From the data gathered, 79% of the shows positive attitude toward Math while 21% of the respondents show negative attitude toward it.

Table 1: Highest Mean of Attitude

Item Number	Statement	Mean
14	I listen carefully in Math class.	4.0
23	I'm happy doing Math problems.	3.5
1	I like Mathematics.	3.3
3	Learning new things in Math is fun for me.	3.3
5	Math is important throughout life.	3.1

Table 1 indicates the five highest mean in the attitude scale which means that the respondents who have positive outlook toward Mathematics enjoy solving mathematical problems. This means they have the interest to pay attention to what the teacher is sharing in class if they think and sense that Math is good. In addition, O'Connell (2000) who points out that facing mathematics must have patience and perseverance explains a common belief that children who sustain their interest in math are likely to have a better disposition in acquiring mathematical skills. Even though they get low grades in the subject, they still like it and never lose interest in it.

The respondents who gave a high positive rating in item no. 5 (Math is important throughout life) reveal that they give more importance to the details of the discussion to make Math understandable to them. The Item no. 14 which tackles the listening disposition of the students shows a perfect rating of 4.0. This

implies a good possibility appreciating Math because the more they listen, the more they know about the subject, and the more they learn skills and concepts, provided that the delivery of instruction is clear and accurate. This positive listening attitude keeps the students interested in learning mathematics. In support of this result, Faridah (2004) stresses this idea where she explains that students with high level of interest and perseverance will not stop trying until they manage to get the answer and will continue to work on a problem until they succeed in it.

Item numbers 1, 3 and 23 show that the samples feel the happiness and enjoyment in learning Mathematics. This implies that they are happy when solving Math problems. The attitude of being happy in solving problems can be helpful even if sometimes it appears to be very hard to grasp. With a happy and positive disposition, they persist in trying to answer and understand the particular concept being studied. As shown in the response, exposes importance of having the attitude of happiness and enjoyment for this helps sustain the interest in dealing with any Mathematics concept. For the educators who believe that children learn more when they are interested and happy incorporate the element of connecting to the students interests in their instruction. A positive response such as "*we enjoyed doing activities and playing numbers in Math."* proves that happiness and enjoyment fuel the children to like the subject. To have better understanding of Mathematics, as this study has found out is to make the students feel comfortable in facing Math problems and furthermore, to enjoy what they are doing.

The respondents repeatedly gave high rating on the items in the attitude scale that pertain to math as a tool in everyday life. These results communicate children's strong preference to the practical application of Mathematical skills rather than on rote learning. All the things that they learn in their Math class they would like to use in their everyday life. The 76% of them agreed that Math is very useful because they can use it when they buy something or when they are able to compute accurately. On the other hand, 24% of the students disagreed on the usefulness of mathematics.

The high rating that the samples gave to Item no. 23 proves that children can enjoy the subject because they have the confidence to try mathematical problems. These data are in total agreement to what the Education Matters (2008) belief that confidence toward mathematics play a significant role in mathematics achievement. As O'Connell (2000) posits students who come to enjoy Mathematics will increase their self-esteem and intrinsic motivation to learn and to connect Mathematics into their lives. This makes the subject more meaningful to them.

Table 2: Lowest Mean of Attitude

Item Number	Statement	Mean
19	I'm afraid of Mathematics.	1.4
21	I don't want to participate in Math class.	2.0
22	I easily get upset when I can't understand the lesson.	2.0
12	I hate math because it's so hard to understand.	2.0
6	I didn't like Math.	2.0

Table 2 shows the lowest means. These five items are negative attitudes. This means the respondents strongly disagree with the statements. Being in disagreement with the given statements means the following: they are not afraid of math, they want to participate in Math class, they do not get upset when they do not understand, they do not hate Math, and that they like Math. Item number 19 displayed the fear in math with 63% and 33% who rated the item with strongly disagree and disagree, respectively, and a meager 3% of the students rated it strongly agree. These ratings imply that the big majority of the sample populations are not afraid of mathematics, they have the confidence to face Math problems and they never fears– Mathematics. Item numbers 21, 22, 12 & 6 indicate that the participants disagree with the statements that regard mathematics negatively. These data show that the participants, though they received low marks in Math, they are not afraid of it and are willing to understand it for they deem it important in their daily lives. These data were consistent even if they experience difficulty in Mathematics, they strive to understand its concepts. Despite this attitude they still believe in themselves and try their best to solve mathematical problem.

Positive and Negative Attitudes toward Mathematics

As the results show, twenty-four (24) or 79% of the respondents demonstrated positive attitude regardless of the difficulty on the subject. The respondents relay that they enjoyed and get excited to learn the subject. The things that they learned in Math are fun for them thus children who have high level of positive attitude toward Mathematics will have a high level of success in life. Attentions should be directed towards creating, developing and reinforcing positive attitudes. The respondents agreed that they ask for clarification if they do not understand the lesson in Mathematics. Perseverance and confidence are keys to have a better position on the subject.

In contrast, six (6) or 21% of the respondents possessed negative attitude such as anxiety, fear, frustration, difficulty in understanding and did not like mathematics. According to them, sometimes, they easily get upset if they do not get the right answer in the problem given to them. They also pretend that they understood the lesson but deep inside they really did not get the idea and confused. As one of the interviewees had share, he does not want to ask for help from his teacher because the latter might scold him. Feelings of anxiety can lead to panic, fear, nervous, frustration, helplessness and loss of ability to concentrate. Therefore, students with these attitudes may avoid engaging in Mathematics experiences. In

the study of Sweeting (2011) he asserts that students may develop either positive or negative attitudes toward mathematics during their school experiences. Thus, attention is needed for the protection of children from the danger of disappointment. To be able to overcome negative attitude, children should possess the positive attitude to reduce anxiety, fear and frustration. Prior to this, young learners should be implanted with positive attitude toward Mathematics so that in their adult life it is not hard for them to like the subject and perform well in class. Therefore, the respondents of this study perceived Mathematics with positive attitudes than with negative attitudes. They do not mind the difficulty of mathematics as long as they experience positivity in learning the subject through the use of proper approach and method of the teacher, it comforts for the students to easily like and understand mathematical concepts.

V. CONCLUSION

Based on the results obtained from the research, the conclusions were formed. The participant's level of positive attitude in Mathematics influenced them to like the subject and feel the joy, happiness and excitement in learning it. It is a good sign that the children's attitude toward Math may help them face the subject positively in their future endeavors with it. The small percentage of the respondents still possess negative attitudes such as fear, anxiety and frustration toward the subject. The 21% of the children rated that they feel that they are having a difficult time in math. It shows that these negative attitudes affect the student's liking of Math.

Thus, teacher's intervention such as addressing the needs of the children in terms of solving mathematical problems, giving feedbacks, discussing the important concepts in Math and helping to solve Math problems might contribute to have positive attitude toward the subject. Classroom atmosphere greatly affects the students' attitude toward the subject where praise is offered, and features clear and effective motivation yield the development positive attitudes. Overall, teaching approach of the teacher must available and responsive in helping children to answer mathematical problem that may have positive attitude of the children toward mathematics.

References

Ashcraft MH. Math anxiety: Personal, educational, and cognitive consequences. Current Directions in Psychological Science. 2002;11:181–185.

Bandura, A. (1977). Self-efficacy: towards a unifying theory of behaviour change. *Psychological Review*. 84, 191-215.

Cockcroft, W. (1982), Mathematics counts: report of the Committee of Inquiry into the
teaching of mathematics in schools. London: HMSO. Retrieved from http://www.educationengland.org.uk/documents/cockcroft

Education Matters (2008). Student achievement in mathematics – the roles of attitudes,
perceptions and family background. Retrieved from Education Matters http://www.statcan.gc.ca/pub/81-004x/2005001/7836-eng.htm.

Effandi, Z. and Normah, Y. (2009) Attitudes and Problem-solving Skills in Algebra
among Malaysian College Students. *European Journal of Social Sciences*, 8: 232-245.

Faridah Salleh (2004). The ability to solve non-routine problems among high achievers.
Universiti Kebangsaan Malaysia, Bangi, Selangor,

McLeod, B. D. (1994). Research on Affect and Mathematics Learning in the JRME: 1970 to
the Present. *Journal for Research in Mathematics Education, 25* (6), 637-647.

Mohd, N., Mahmood, T., and Ismail, M. (2011). Factors that influence students in
mathematics achievement. International *Journal of Academic Research*, 3(3),49-54

Newstead, K. (1998). Aspects of children's mathematics anxiety. *Educational Studies in*
Mathematics, 36, 53 – 71.

O'Connel, S. (2000) .Introduction to problem solving. Strategies for the elementary math
classroom. Portsmouth: N.H. Heinemann.

Skemp, (1986) *Students' attitudes towards Mathematics.*Thesis, Published

Stodolsky, S. (1985) Telling Math: Origins of Math Aversion and Anxiety, *Educational*
Psychologist 3, 125-133.

Sweeting, K. (2011). Early years' teachers' attitudes towards mathematics. Unpublished

master's thesis, Queensland University of Technology, Australia. retrieved from: http://eprints.qut.edu.au/view/person/Sweeting,_Kylie.html.

Zan, R. and Di Martino, P. (2007). Attitude toward mathematics: Overcoming the positive/negative dichotomy. Montana Council of Teachers of Mathematics. 3. 157-168.

Zacharos, K., Koliopoulos, D., Dokimaki, M. and Kassoumi, H. (2007). Views of prospective
early childhood education teachers, towards mathematics and its instruction. European Journal of Teacher Education. 30. 305-318. 10.1080/02619760701486134.

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