FACTORS AFFECTING STUDENTS' ATTITUDE TOWARDS MATHEMATICS

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Purpose of the study

The purpose of this study was to investigate attitudes formed by students in secondary schools in the University of the Cordilleras - Baguio City, towards learning and their influence in the performance of mathematics and find out whether such attitudes contributed to poor learning of mathematics and consequently poor performance in mathematics among students in secondary schools in the district. Specifically the study will be concerned with: the types of attitudes; whether negative, neutral or positive and factors enforcing such attitudes towards learning and performance of mathematics.

Objectives of the study

The objectives of this study were to:

i) Establish attitudes that students form towards learning and performance of mathematics.

ii) Find out whether attitudes formed by students contributed to inappropriate learning of mathematics and consequently poor performance in the subject.

iii) Establish factors which influence the formation of attitudes towards learning and performance of mathematics among students.

Data Analysis, Results and Discussion

Introduction

The findings of the study are presented in this chapter based on the data collected from the respondents and as per the research objectives. These included a) establishing the sort of attitude that secondary school students form towards learning and performance in mathematics, b) to finding out whether the attitudes formed contributed to inappropriate learning of mathematics and consequently poor performance in secondary schools and c) finding out the factors which influence attitudes towards learning and performance in mathematics among secondary school students. Three hundred and fifty nine (359) questionnaires were filled out of the three hundred and sixty five (365) given out, giving a response rate of 98 per cent which was adequate for analysis. Discussion of the results was done as per the objectives of the study.

Background information

This section covers the gender distribution of the respondents, and attitudinal problems affecting learning of mathematics according to the respondent students.

Gender Distribution

The sample selected for the study constituted (35%) Male, (55%) Female, and the rest, (10%) they prefer not to say their gender as indicated in Figure 1.

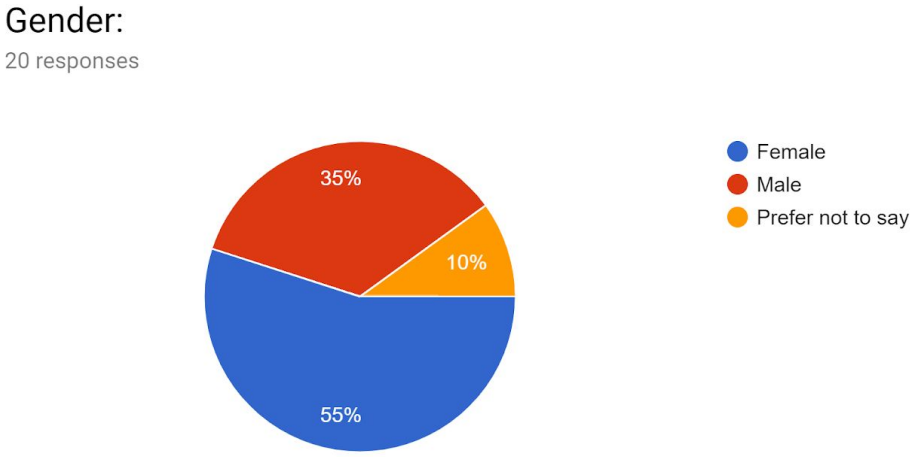


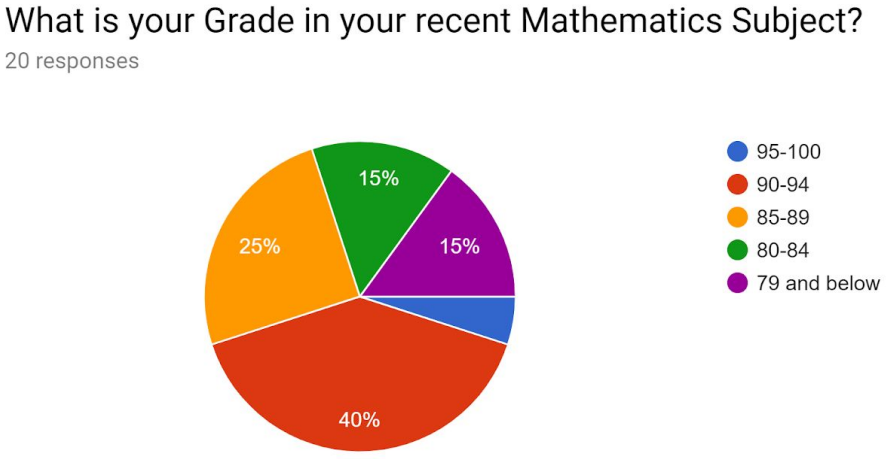
Figure 1. Gender Distribution

To be able to capture the students' attitudes towards learning and performance in mathematics, the researcher selected respondents from the University of the Cordilleras - Baguio City. However, the percentage of Female respondents were few as compared to Male, and the respondents' with "Prefer not to say" chosen gender.

Several studies have reported that there are gender differences in attitude towards mathematics with girls showing more negative attitudes than boys. In general, most of the studies reported that, compared with boys, girls lacked confidence, had debilitating causal attribution patterns, perceived mathematics as a male domain, and were anxious about mathematics (Casey et al, 2001).

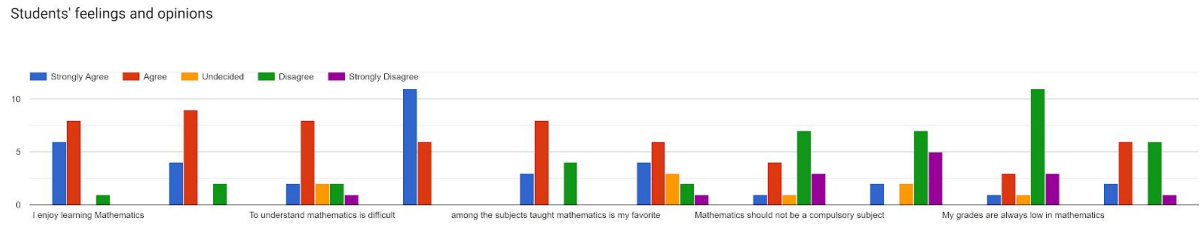
Students' Grade or Average to their recent Mathematics subject.

The sample selected for the study constituted (5%) 95-100, (40%) 90-94, (25%) 85-89, (15%) 80-84, (15%) has an average of 79 and below as indicated in Figure 2.



Students' attitudes towards learning and performance in mathematics

The study further sought to identify the opinions of students towards learning and performance in mathematics. This helped in detecting the kind of attitudes they had formed towards the subject. The responses were put under five categories of a five-point Likert-scale which included strongly agree, agree, undecided, disagree and strongly disagree, Graph 1.



Graph 1. Students' feelings and opinions

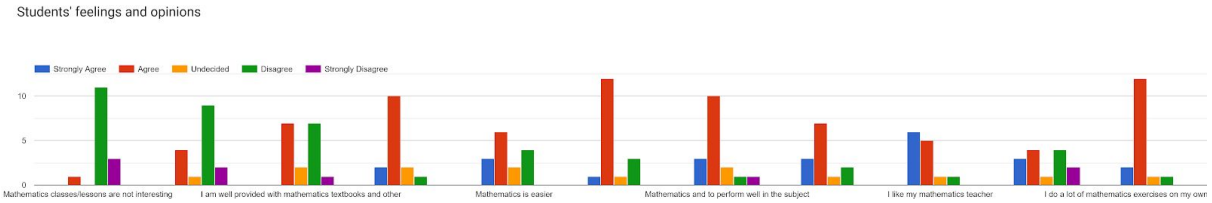
Findings indicated that 27.3% of the respondents strongly agreed that they enjoyed learning mathematics as a subject. Nineteen percent (19%) of the respondents strongly agreed that they would like to continue doing mathematics citing reasons such as Mathematics was easy to study and that it was a logical subject (and that it needed no cramming). Further to this only 4.8% of the respondents strongly disagreed that understanding mathematics was difficult while 57.1% of the respondents strongly agreed that Mathematics was a very useful subject in life. Only 14.3% of the respondents strongly agreed that among the subjects taught, mathematics was their favorite. This is indicative of favourable attitudes towards learning mathematics and consequent better performance in the subject. Worth noting was that there were a few students who did not like the subject by stating that mathematics was difficult (19% who strongly agreed or agreed) and that some topics were not applicable to daily life problems.

In addition, up to 9.5% of the respondents strongly disagreed that Mathematics was impossible to learn. Those who agreed that the subject was impossible to learn said that Mathematics was for intelligent students since it was a tough subject and that few students managed to study the subject to higher levels. They added that the subject needed sharp and fast thinking students. The study also revealed that 19% of the respondents agreed that they felt extremely anxious and fearful when math exams were mentioned or brought while 9.5% strongly disagreed. High level anxiety in students had a negative influence on their learning and performance of the subject. At least 52% of the respondents either strongly agreed or agreed with the statement. This has been associated with increasing test stress, low self-confidence, fear of failure, and negative attitudes towards learning mathematics (Besant, 1995).

When asked whether Mathematics should be a compulsory subject up to 38.1% disagreed. However (4.8%) strongly disagreed that they did mathematics for the sake of it.

Factors in influencing attitudes towards learning and performing in Mathematics

The study also sought to establish the contributing factors which influence the formation of attitudes by students towards learning and performance in Mathematics. The findings are presented in Graph 2.



Graph 2. Students' feelings and opinions

Notably, with regards to attitudes related to mathematics teachers, 61.9% of the respondents either agreed or strongly agreed that it was the teacher who could make mathematics learning easier for them. In addition, about 14.3% of the respondents strongly disagreed that Mathematics classes/lessons were interesting. 57.1% of the respondents strongly disagreed and agreed that they were given a lot of unnecessary mathematics assignments while only 40.8% of the respondents were of the opinion that they were well provided with mathematics textbooks and other learning materials. For 14.3% strongly agreed that they understood Mathematics regardless of the gender of their teacher.

The gender of the teacher was an influencing factor in learning of mathematics where for example an assessment of boys by a female teacher could produce a generous mark or marking of girls' work by a male teacher (Goddard-Spear, 1989). Some students' dissatisfaction on how some mathematics teachers taught the subject was related to the fact that 42.9% of the respondents felt there were not enough reference books and textbooks, making students perform poorly in mathematics and lose interest in the subject. At least fifty-two percent (52%) of the respondents reported that their friends did not like learning mathematics with them which meant that, that percentage of respondents were intrinsically motivated to learn and perform in mathematics. This further meant these students had formed favourable attitudes towards learning and performance of mathematics. Equally so, 66.7% stated that their parents and siblings encouraged them to learn Mathematics. Parents' and siblings' level of education influence how students perceive learning and performance in mathematics (Costello, 1991). For 71.4% of the respondents

reported that they did a lot of mathematics exercises on their own or with a friend, hence enhancing their learning and performance in mathematics.

Conclusion

The results from this study suggest that students know that mathematics is important and they seem willing to learn mathematics and learn it well. However, their attitudes acquired from previous experience in the subject, teachers, parents and peers influenced their learning of the subject. In addition, school teachers must be aware that there are certain aspects of students' learning in mathematics that need to be improved. In particular, students should be given more opportunities to work on non-routine and challenging mathematics problems so as to maximize their thinking skills and value the intrinsic essence of mathematics. This will require teachers going the extra mile in leading students in that path of learning. The subject should not be limited to theoretical teaching and focused on passing examinations only. In this sense, mathematics should be demonstrated in a more practical way, by which students can spontaneously associate mathematics knowledge with their everyday environment. By doing so, the engagement and exposure will result in students' better perspective of mathematics and their mathematics learning, which in turn help students to develop more positive attitudes toward the subject and therefore further promote their learning ability and consequently perform better in mathematics examinations. Since the study identified the connection between attitudes, learning, performance and practical application of mathematics in real life the following recommendations are suggested.

Recommendations

The following recommendations are made from the study.

1. Positive attitudes towards learning and performing well in mathematics are necessary ingredients in mathematics education. There is a need for teachers, parents, and any other education stakeholders to enhance these positive attitudes.
2. There is a successive connection between attitudes, learning, performance and practical utility of mathematics. This connection should be established early enough in a students' mathematics education.
3. The unfavourable attitudes should be curtailed professionally and early enough before students utterly give up in learning and/or performance of mathematics.
4. Mathematics teachers should wisely utilize available learning resources to enhance positive attitudes, reinforce neutral attitudes, if any, and neutralize any negative attitudes towards learning and performance in mathematics.
5. Efforts should be made to ensure gender does not hinder learning and/or performance in mathematics among students. Teachers, parents and siblings of the students should encourage both the female and male learners to equally embrace mathematics.