

**FACTORS THAT AFFECT THE PERFORMANCE OF
STUDENTS IN CAMBRIDGE
GCE (ORDINARY LEVEL) MATHEMATICS**

Cyril De Silva Jayasinghe

08 / 10302

Thesis

Submitted in partial fulfilment of the requirements of the
Masters Degree in Operational Research

**DEPARTMENT OF MATHEMATICS
UNIVERSITY OF MORATUWA
SRI LANKA**

MARCH 2013

Declaration of the Candidate & Supervisor

I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

Also, I hereby grant to University of Moratuwa the non-exclusive right to reproduce and distribute my thesis, in whole or in part in print, electronic or other medium. I retain the right to use this context in whole or part in future works (such as articles or books).

Signature:

Date:

The above candidate has carried out research for the Masters thesis under my supervision.

Signature of the supervisor:

Date:

CONTENTS

Declaration	i
Abstract	iv
Acknowledgement	v
List of Tables	vi
1. Introduction	1
1.1 Background of the Study	1
1.2 Objectives of the study	2
1.3 Scope and limitations of the study	2
1.4 Research Methodology	3
2. Review of the Related Literature	4
2.1 Introduction	4
2.1.1 Student Factor	4
2.1.2 Home Factor	7
2.1.3 School Factor	9
2.1.4 Teaching Factor	10
2.1.5 Resources and Material Factor	13
2.1.6 Contribution to Methodology	13
3. Research Methodology	16
3.1 Introduction	16
3.1.1 Scope of the Study	16
3.1.2 Data needs of the study	16
3.1.3 Sources of data	17
3.1.4 Data collection	17
3.1.5 Data analysis and Interpretation	18
3.1.6 Research Procedure	19
4. Data Analysis and Presentation	20
4.1 An analysis of Student Factors	21
4.1.1 Library Utilisation	21
4.1.2 Grasping Speed	21
4.1.3 Enjoyment derived in learning Mathematics	22
4.1.4 Teaching Style	22
4.1.5 Students' utilisation of school facilities	22

4.2	An Analysis of Teacher Factors	23
4.3	An Analysis of School Management Factors	26
4.4	An Analysis of Parental Factors	29
5.	Conclusions and Recommendations	32
5.1	Introduction	32
5.2	Factors affecting students' performance	32
5.2.1	Student Factors	32
5.2.2	Teacher Factors	33
5.2.3	School Management Factors	35
5.2.4	Parental Factors	35
5.3	Recommendations	36
5.2.1	Student Factors	37
5.2.2	Teacher Factors	37
5.2.3	Management Factors	38
5.2.4	Parental Factors	38
5.4	Discussion	39
	References	41
Appendix (i)	Questionnaire for Students	42
Appendix (ii)	Questionnaire for Teachers	48
Appendix (iii)	Questionnaire for School Management	53
Appendix (iv)	Questionnaire for Parents	55
Appendix (v)	Public Library Utilisation	58
	School Library Utilisation	60
Appendix (vi)	Grasping Speed	63
Appendix (vii)	Enjoyment derived in Learning Mathematics	66
Appendix (viii)	Teaching style	69
Appendix (ix)	Encouragement from the Management	71

ABSTRACT

The purpose of this study was to identify the factors that affect student performance in Cambridge GCE (Ordinary Level) Mathematics. The four factors selected for the study dealt with students, teachers, school management and the parents.

A group of 57 students studying in two classes of a private school and sitting the Cambridge GCE (Ordinary Level) Examination in the year 2011 formed the main source of data for this study. The data needed from this source were collected through a questionnaire administered to the students. In addition to the above, the questionnaire method was used to collect data from the three other sources namely teachers who taught Mathematics to these students, the school management, and the parents of the student group under concerned. Independent *t*-test, Mann-Whitney test, one way ANOVA, Tukey's comparison procedure and Kruskal-Wallis test were used to analyse the data so collected. All the tests were conducted at 5% level of significance.

Analysis of student data revealed that the students who were in the habit of using public library than the school library, the students learning slowly or moderately with more grasping power than others who learned speedily, students who enjoy learning Mathematics performing better in the examinations, the students considering the teaching style in line with their preference and the students either having no opinion or denying any encouragement from the management.

An analysis of data collected from teachers identified that for better student performance in Mathematics both students and teachers should derive pleasure from their learning and teaching task respectively. Provision of adequate time in the time table for the subjects under concern, use of modern methods of teaching and receiving due support from the school management and the parents are other main factors found to be of importance. The study also found that it was the responsibility of the school management to stick to the punctuality considerations, and take timely action to hold school tests and provide the needed learning-teaching materials.

The data collected from the school management revealed that they paid high priority for students and teachers punctuality and less priority for school tests. Provision of curricular material in the class room was also identified as another priority area.

In addition to the school related factors that contribute to the success of student learning the parents also have a part to play. In this respect they should ensure regular school attendance of their children, make arrangements to check their homework and provide suitable home environment conducive to learning. Moreover, parents have to extend their support to promote Mathematics-related activities undertaken by the school and meet teachers regularly to find out the strengths and weaknesses of their children with a view to taking suitable action to overcome any learning difficulties encountered by their children.

ACKNOWLEDGEMENT

First and foremost I would like to acknowledge the constant and untiring support rendered by my supervisor Mr P Dias, Senior Lecturer (Grade I), Department of Statistics and Computer Science, University of Sri Jayawardenepura, from the planning stage of this research to its ultimate completion. I would also like to thank Mr Amila Wickramasekara, lecturer, Department of Decision Sciences, University of Sri Jayawardenepura, who devoted a substantial amount of his precious time to assist me in analysing the data collected.

Next I would like to thank the principal of the school, who gave his consent for me to carry out the study in the school under concerned. The vice principal, the sectional heads, the teachers of Mathematics, the students and their parents who supported me in meeting data needs are also sincerely remembered and appreciated.

Finally, I take this opportunity to thank my family members for bearing patiently the long hours I have to devote for the completion of study.

List of Tables

Table		Page
4.1	An analysis of factors selected for the study	20
4.2	Analysis of teachers' personal information	23
4.3	Analysis of teacher factors contributing to student performance	24
4.4	Analysis of personal information of school management	26
4.5	Analysis of management factors contributing to student performance	27
4.6	Support given by the parents to student to improve performance	29