## DETRIMENTAL FACTORS FOR MATHEMATICS ACHIEVEMENT AT SECONDARY LEVEL

A

#### THESIS

BY

**BARUN ALE** 

# FOR THE PARTIAL FULFILLMENT OF REQUIREMENTS FOR THE DEGREE OF MASTERS OF EDUCATION

**SUBMITTED** 

ТО

DEPARTMENT OF MATHEMATICS EDUCATION CENTRAL DEPARTMENT OF EDUCATION UNIVERSITY CAMPUS, KIRTIPUR TRIBHUVAN UNIVERSITY KATHMANDU, NEPAL

2018

#### **RECOMENDATION FOR ACCEPTANCE**

This is to certify that **Mr. Barun Ale** has completed his M.Ed. thesis entitled **''Detrimental Factors for Mathematics Achievement at Secondary Level''** under my supervision during the period prescribed by the rules and regulations of Tribhuvan University, Kirtipur, Kathmandu, Nepal. I recommend and forward his thesis to the Department of Mathematics Education to organize final viva-voce.

.....

(Mr. Bed Prasad Dhakal)

Supervisor

Date: 9/10/2018

#### LETTER OF APPROVAL

A

Thesis

By

#### **BARUN ALE**

This thesis entitled "**Detrimental Factors for Mathematics Achievement at Secondary Level** "submitted in the partial fulfilment of the requirements for the Degree of Masters in Education had been approved.

| <u>Viva-Voce Committee</u>       | <u>Signature</u> |
|----------------------------------|------------------|
| Assoc. Prof. Laxmi Narayan Yadav |                  |
| (Chairman)                       |                  |
| Prof. Uma Nath Pandey            |                  |
| (External)                       |                  |
| Mr. Bed Prasad Dhakal            |                  |
| (Supervisor)                     |                  |
| Date: 9/10/2018                  |                  |

#### LETTER OF CERTIFICATE

This is to certify that **Mr. Barun Ale**, a student of academic year **2070/71** with Campus Roll Number **45/070**, Thesis Number **1251**, Exam Roll Number **280374** and TU Registration Number **9-2-233-91-2008** has completed this thesis for the period prescribed by the rules and regulations of Tribhuvan University, Kirtipur, Kathmandu, Nepal.This thesis entitled **''Detrimental Factors for Mathematics Achievement at Secondary Level''** has been prepared based on the results of his investigation. I hereby, recommend and forward his thesis to be submitted for the evaluation as the partial requirements to award the degree of Master of Education.

.....

(Assoc. Prof. Laxmi Narayan Yadav)

Head

Date:

### © 2018

### Copyright by Barun Ale

This document is copyright material. Under law, no parts of this document can be

reproduced without the written permission of the researcher.

All Rights Reserved!

Defense Date: October 9, 2018.

### DEDICATION

To My Late Father

Lok Bahadur Ale

#### DECLARATION

This thesis contains no material which has been accepted for the award of other degree in any institutions. To the best of knowledge and belief this thesis contains no material previously published by any authors except due acknowledgements has been made.

.....

Barun Ale

(Researcher)

Date: 9/10/2018

#### ACKNOWLEDGEMENT

I would like to express my sincere appreciation to my research supervisor Mr. Bed Prasad Dhakal who provided me a great support in my research. His suggestions during the whole process of this research are gratefully praised. Without his encouragement, motivation and persistent help, I would not have been successful to do my research.

I would like to express my gratefulness to Assoc. Prof. Laxmi Narayan Yadav, Head of the Department of Mathematics Education, University Campus, Kirtipur, who provided me the opportunity to write this thesis. Equally, my sincere gratitude also goes to Prof. Dr. Hari Prasad Upadhyay, Prof. Dr. Lekh Nath Sharma, Prof. Dr. Min Bahadur Shrestha, Prof. Dr. Binod Dhakal, Lect. Abatar Subedi and all the Readers and Lecturers of Department of Mathematics Education, University Campus, Kirtipur for their valuable cooperation, comments and suggestions to complete this research work.

I would like to express deepest gratitude to my lovely sister Thira Kumari Ale who always encouraged and supported me to continue my higher study.

I am also grateful to the friends Raju Shrestha and Shyamhari Kadel, Principals and mathematics teachers of my research schools, co-operative help of my research participants and all the concerned people who directly and indirectly supported my research work for their continuous support.

Finally, I offer a special note of appreciation to my mother Laxmi Devi Ale Magar for encouragement and supports given throughout my academic life. Thank you for providing the guidelines and supports you all have done, in any way, for me.

.....

Barun Ale

#### ABSTRACT

This study entitled "**Detrimental Factors for Mathematics Achievement at Secondary Level**" was conducted with the specific objectives; to find out detrimental factors of mathematics achievement and to analyze the major factors that affect in achievement of mathematics of grade ten students.

This thesis has mainly two purposes the first one was to find out the detrimental factors of mathematics achievement and the second was to analyze the detrimental factors of mathematics achievement of class ten in Kathmandu district. Among 161 government schools, only four government schools were selected for the sample. In total 240 students were participated from the sample school.

A combination of quantitative and qualitative research methods was used to collect data for the study. Firstly the data was collected through MAT questions, secondly opinion of the students was investigated by using the opinionnaire and qualitative data was obtained through the interview from students, head teachers and math teachers.

This study found that the detrimental factors (variables) of mathematics achievement were teacher related factors, student related factors and environmental factors. Among these factors, student related factors were highly detrimental with students' achievement. Likewise teachers' support and administrative support were respectively responsible for students' mathematics achievement. This study declared that students learning environment were major factor that hinders their mathematics achievement.

### TABLE OF CONTENTS

| Letter of Certificate ii                   |
|--|
| Letter of Approval iii                     |
| Recommendation for Acceptance iv           |
| Copyright v                                |
| Dedication vi                              |
| Declaration vii                            |
| Acknowledgement viii                       |
| Abstract ix                                |
| Table of Contents                          |
| Acronyms xii                               |
| List of Tables xiii                        |
| Chapters                                   |
| I: INTRODUCTION                            |
| Background of the Study 1                  |
| Statement of the Problem                   |
| Objectives of the Study 4                  |
| Research Questions 5                       |
| Significance of the Study 5                |
| Limitations and Delimitations of the Study |
| Operational Definition of the key terms    |
| II: REVIEW OF RELATED LITERATURE           |
| Review of Empirical Literature             |

| Review of Empirical Literature   | 0    |
|----------------------------------|------|
| Review of Theoretical Literature | . 18 |
| Conceptual Framework             | . 20 |

# **III: METHODS AND PROCEDURES**

| Design of the Study                                   | 21          |
|---|-------------|
| Population and Sample                                 | 22          |
| Data Collection Tools                                 | . 23        |
| Validity and Reliability of the Tools                 | 37          |
| Data Collection Procedures                            | 24          |
| Data Analysis Procedures                              | 25          |
| IV: ANALYSIS AND INTERPRETATION OF DATA               |             |
| Analysis of student related Factors                   | . 26        |
| Analysis of Teacher related Factors                   | . 29        |
| Analysis of Environmental Factors                     | . 33        |
| Detrimental Factors for Mathematics Achievement       | . 37        |
| V: SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATION | S           |
| Summary of the Study                                  | . 40        |
| Findings of the Study                                 | . 41        |
| Conclusion  | . 41        |
| Recommendations for future Research                   | . 43        |
| REFERENCES  | <b>.</b> 44 |
| APPENDIX  | . 48        |

## LIST OF TABLES

| Table No.1: Statement Related to Student          | 26 |
|---|----|
| Table No. 2: Statement Related Teacher            | 29 |
| Table No. 3: Statement Related Environment        | 33 |
| Table No. 4: Summary Table of Regression Analysis | 37 |

#### ACRONYMS

| NCF = National Curriculum Framework                               |
|---|
| NCTM = National Council of Teachers of Mathematics                |
| MA=Mathematics Achievement  |
| SLC = School Leaving Certificate Examinations                     |
| SPSS = Statistical Package for Social Science                     |
| MAT= Mathematics Achievement Test                                 |
| CERID= Research Centre for Educational Innovation and Development |

MOE= Ministry of Education

EDSC= Education Development Service Center

BPEP= Basic Primary Education Project

TIMS= Third International Mathematics and Science Study