## **Table of Contents**

## Introduction

## **Mathematics Education of our Students**

l.	The need for a new model in teaching and learning of mathematics
II.	Keystone model in mathematics education
	A. Formative assessment: purpose and objectives
	B. Frequent and Cumulative Testing
	C. Cumulative homework
	D. Time-pressured quizzes and tests
	E. Effects of testing on recall
	F. Grading curve and standards of excellence
	G. Structured cooperative learning
	H. A note on speed and performance
III.	A study of the developmental mathematics at the colleges in the U.S. in
	1990s (Genesis of the Keystone Project)27
IV.	Improving learning outcomes in developmental mathematics31
V.	Keystone mathematics project, 1993-199533
••	A. Conceptual framework of the study
	B. General description of the study
	C. Subjects in the study
	D. Design of the study
	E. Materials in the study
	F. Classroom management
	G. Results of the study
	H. Retention
	I. Performance in mathematics
	J. Ability to work with full concentration
	K. Arithmetic (cut-time) test
	L. Reading comprehension (full-time) test
	M. Correlation between improvements in arithmetic and English comprehension
	N. Effects of the project on students with different initial performance
	O. Comparison of full-time, cut-time gains
	P. Full-time, cut-time gains by student groups
	Q. Cut-time, full-time correlation coefficients
	V.1 Conclusions
	V.2 Discussions
	V.3 In their own words: Student testimonials

DEUTSCHE NATIONAL BIBLIOTHEK

VI.	Can Mathematics Improve Fluid Intelligence?61
VII.	Is Keystone Model Appropriate for Higher Math Classes?63
VIII.	Is Keystone Model Appropriate for other Disciplines?65
IX.	Do Keystone Students Persist in Mathematics and other Disciplines?67
X.	Is Keystone Model Labor Intensive?69
XI.	Results of Keystone Expansion in 1998-200971
XII.	Policy Implications of the Study
XIII.	Future Research
XIV.	A Note on Teaching Methods
XV.	My Teaching Philosophy79
XVI.	Teaching and Learning: A Perspective81
XVII.	References
XVIII	. Appendices91
Ap	pendix I. Course Policies and Ground Rules (Math 110) pendix II. Final Exam (Math 110) pendix III. Course Policies and Ground Rules (Math 140)
	pendix III. Course Forces and Ground Rules (Math 140) pendix IV. Final Exam (Math 140)