MATHEMATICAL AND LANGUAGE ABILITIES OF GRADE SIX PUPILS OF THE THREE CENTRAL SCHOOLS IN CATBALOGAN, SAMAR

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DEDICATION

To my dearest husband,

RAUL CURIANO PEREZ

And to our three children,

DINA,

TOLIN & LARRY,

For their prayers, love

and inspiration,

I dedicate this humble work.

ANSANG

ABSTRACT

This study attempted to determine the relationship between the mathematical and language abilities of 120 grade six pupils of the central elementary schools of the three districts in Catbalogan, Samar. The descriptive-analytical method of research was used this study involving one hundred twenty grade six pupils of which 60 were males and 60 were females. The selection of the subject schools was based on the school in each district having the highest enrolment in grade six during the school year. Twenty males and 20 females were taken from each of the subject school. The obtained mastery level of Catbalogan I Central was 15 percent; Catbalogan II Central was 12.5 percent; Catbalogan III Central was 57.5 percent. This denotes that only 28 percent of the fifty items test were mastered by the grade six pupils. Therefore there is a need to reteach the same objectives taken on the achievement test in Communication Arts English. It provides a slight evidence of significant relationship between the achievement scores in the two subjects, and provides substantial evidence of significant relationship between the scholastic achievement in Elementary Mathematics and in Communication Arts English. The school should make provisions for the continuous study of the results of the division achievement test in Elementary Mathematics and Communication Arts English so that the progress of the school with regard to classroom instruction could be improved.

TABLE OF CONTENTS

TITLE PAGE i

APPROVAL SHEET ii

ACKNOWLEDGEMENT iii

DEDICATION vi

ABSTRACT vii

TABLE OF CONTENTS viii

Chapter Page

I. THE PROBLEM 1

Introduction 1

Theoretical Framework 3

Conceptual Framework 4

Statement of the Problem 5

Hypotheses 6

Importance of the Study 7

Scope and Delimitation 8

Definition of Terms 9

II. REVIEW OF RELATED LITERATURE AND STUDIES . 14

RELATED LITERATURE 14

RELATED STUDIES 20

III. METHODOLOGY 27

The Research Design 27

The Subjects and Sources of Data . . . 27

TABLE OF CONTENTS (Cont'd.)

Chapter		Page
	Instrumentation	28
	The test questions	28
	MECS Form 138-E	29
	Gathering of Data	31
	Statistical Treatment of Data . . .	32
IV.	PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA	37
	Pupil's Mean Achievement Scores in Elementary Mathematics by School	37
	Pupils' Mean Achievement Scores in Communication Arts English by School	39
	Pupils' Mean Scholastic Achievement Rating in Elementary Mathematics .	41
	Pupils' Mean Scholastic Achievement Rating in Communication Arts English	42
	Relationship Between Mean Achievement Score and Mean Scholastic Achievement Rating in Elementary Mathematics	44
	Relationship Between Mean Achievement Score and Mean Scholastic Achievement Rating in Communication Arts English	45
	Relationship Between Mean Achievement Scores in Elementary Mathematics and in Communication Arts English	46

TABLE OF CONTENTS (Cont'd.)

Chapter		Page
	Relationship Between Mean Scholastic Achievement Ratings in Elementary Mathematics and Communication Arts English	48
V.	SUMMARY, CONCLUSION AND RECOMMENDATION. .	50
	Summary	50
	Findings	52
	Conclusions	57
	Recommendations	58
BIBLIOGRAPHY	. . . . .	59
APPENDICES	. . . . .	62
A.	Request for Approval of Problem	63
B.	Application for Assignment of Adviser . . .	64
C.	Appointment of Adviser	65
D.	Request for Schedule of Pre-Orals	66
E.	Request for Permission for Trial Run . . .	67
F.	Request to Administer the Achievement Test .	68
G.	Request for Schedule of Oral Defense . . .	69
H.	Achievement Test in Elementary Mathematics .	70
H-1.	Answers Key in Elementary Mathematics . . .	76
H-2.	Table of Specification in Elementary Mathematics	77
I.	Achievement Test in Communication Arts English	78

TABLE OF CONTENTS (Cont'd.)

Chapter		Page
I-1.	Answers Key in Communication Arts English .	83
I-2.	Table of Specification	84
J.	Data Collected from 120 Grade Six Pupils .	85
K.	Reliability Coefficient of Achievement Test in Elementary Mathematics Grade Six	91
K-1.	Computation for the Standard Deviation and the Pearson Product Moment (r) . . .	92
L.	Reliability Coefficient of Achievement Test in Communication Arts English Grade Six	93
M.	Achievement Level of Grade Six Pupils in Elementary Mathematics of Catbalogan I Central	95
M-1.	Achievement Level of Grade Six Pupils in Elementary Mathematics in Catbalogan I Central	98
M-2.	Achievement Level of Each Grade Six Pupils in Elementary Mathematics of Catbalogan II Central	100
M-3.	Achievement Level of Grade Six Pupils in Elementary Mathematics in Catbalogan II Central	103
M-4.	Achievement Level of Each Grade Six Pupil in Elementary Mathematics of Catbalogan III Central	105
M-5.	Achievement Level of Grade Six Pupils in Elementary Mathematics of Catbalogan III Central	108

TABLE OF CONTENTS (Cont'd.)

Chapter		Page
N.	Achievement Level of Grade Six Pupils in Communication Arts English of Catbalogan I Central	110
N-1.	Achievement Level of Grade Six Pupils in Communication Arts English of Catbalogan I Central	113
N-2.	Achievement Level of Grade Six Pupils in Communication Arts English of Catbalogan II Central	115
N-3.	Achievement Level of Grade Six Pupils in Communication Arts English of Catbalogan II Central	118
N-4.	Achievement Level of Each Grade Six Pupils in Communication Arts English of Catbalogan III Central	120
N-5.	Achievement Level of Grade Six Pupils in Communication Arts English of Catbalogan III Central	123
O.	Scholastic Achievement Level in Elementary Mathematics of Grade Six Pupils of Catbalogan I Central	125
O-1.	Scholastic Achievement Level of Grade Six Pupils in Elementary Mathematics of Catbalogan II Central	127
O-2.	Scholastic Achievement Level of Grade Six Pupils in Elementary Mathematics of Catbalogan III Central	129
P.	Scholastic Achievement Level of Grade Six Pupils in Communication Arts English Catbalogan I Central	131
P-1.	Scholastic Achievement Level of Grade Six Pupils in Communication Arts English of Catbalogan II Central	133

TABLE OF CONTENTS (Cont'd.)

Chapter		Page
P-2.	Scholastic Achievement Level of Grade Six Pupils in Communication Arts English Catbalogan III Central	135
Q.	Scattergram for the Achievement Scores and the Scholastic Achievement in Elementary Mathematics	137
Q-1.	Computations of the t-value of Relationship Between Achievement Score and Scholastic Achievement in Elementary Mathematics	139
R.	Relationship Between Achievement Score and Scholastic Achievement in English . . .	140
R-1.	Computations of t-value of Relationship Between Achievement Score and Scholastic Achievement in Communication Arts English	142
S.	Relationship Between Achievement Scores in Elementary Mathematics and in Communication Arts English	143
S-1.	Computations of t-value of Relationship Between Achievement Scores in Elementary Mathematics and in Communication Arts English	145
T.	Relationship Between Scholastic Achievement in Elementary Mathematics and in Communication Arts English	146
T-1.	Computations of t-value of Correlation Between Scholastic Achievement in Elementary Mathematics and Communication Arts English	148
CURRICULUM VITAE		149
LIST OF FIGURE AND TABLES		152

CHAPTER I

THE PROBLEM

Introduction

Mathematics and English play a vital role in the educational system. Some subjects in the elementary grades are fused with other subjects but Mathematics and English remain as independent subjects in the curriculum. This is because of the country's demand for higher degrees of mathematical literacy and communication competency in English. Failure to handle the subjects effectively places the burden not only in school but in the country as a whole.

It was observed that some grade six pupils were good in mathematics but poor in English or vice-versa. Some also were equally good in both subjects. But this observation cannot be a good basis for drawing conclusion because there were only few pupils observed. To make the conclusion more reliable the researcher intended to broaden her observation by conducting a study of 120 samples.

A study conducted in 1974, the "Survey of Outcomes of Elementary Education" (SOUTELE), revealed that sixth graders across the nation are deficient in skills which are basic to success in learning in the different

subject areas, those which belong to what is traditionally referred to as the three R's.[1]

In view of these facts, emphasis is being placed on the development of reading, speaking, writing and computational skills in the elementary schools. Furthermore the present trend is less emphasis on facts and more on learning to learn skills. If the pupil is equipped with such skills, he can go after the facts or knowledge of his own.[2]

The return to basic movement has necessitated a massive retraining of teachers, the development of instructional materials designed to further strengthen the skills in reading, language and mathematics and the adoption of a systematic pupil evaluation scheme.[3]

Education at the elementary level is the country's major program for the delivery of mass and universal education to the people. It is the society's main avenue for the development of basic literacy, work skills, numeracy, and communicative skills which will enhance learning capabilities that will enable the pupils to

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[1] Educational Reform, CSC-DEC Continuing Program Through Distance Teaching, Learning Package No. 9, p. 3.

[2] Ibid., p. 4.

[3] Ibid.

become more productive, self-reliant, versatile and totally developed citizens.

The desired outcomes of elementary mathematics and English instructions include increased achievement as well as positive attitude of pupils towards the subjects. Achievement of pupils are usually measured in terms of teacher-made achievement tests which evaluate the specific objectives of classroom instructions.

It is expected that this study will benefit school administrators, mathematics and english teachers, and other researchers in the field of education. They could make use of the findings to conduct another study in mathematics and English for further improvement of the teaching-learning process or they can conduct another study that may establish the validity of the result.

Theoretical Framework

Lyman, in his "Measurement Theory" states that the measure of covariability tells us the extent of relationship between two tests or two variables; the extent to which variations in one variable go with variations in another variable.[4] It ranges from -1.00 to +1.00.

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[4]Howard B. Lyman, Test Score and What They Mean, (New Jersey: Prentice Hill Inc., 1978), p. 50.

Positive correlation shows that large amount of one variable tends to accompany large amount of the other variable or small amount of one variable tends to have small amount of the other variable.

Conceptual Framework

The graphic representation of the conceptual framework is drawn below:

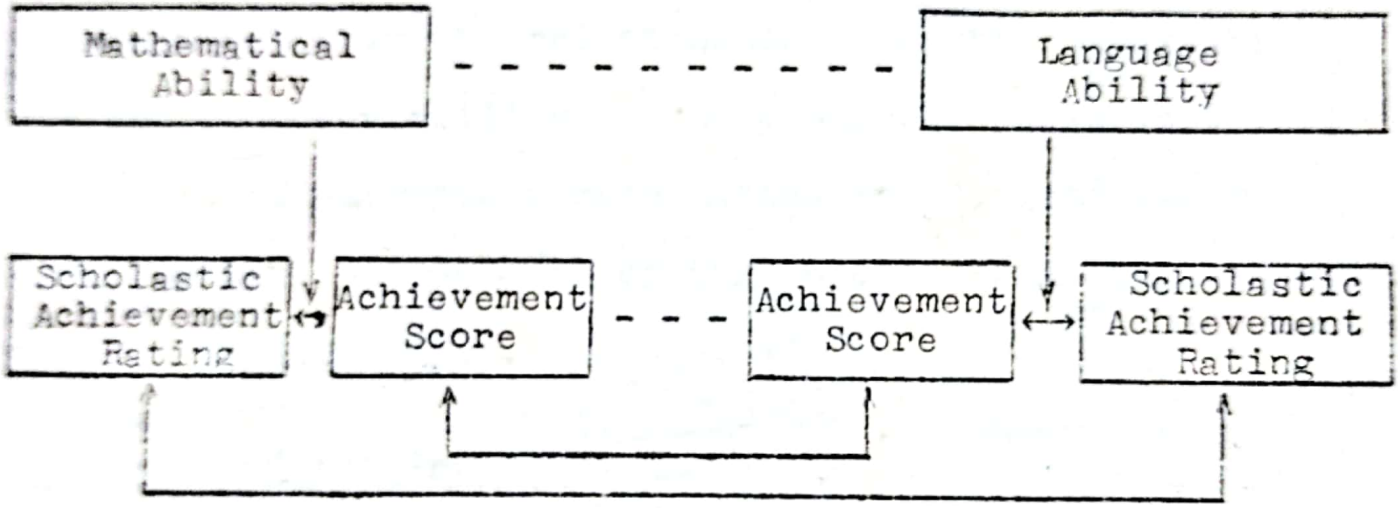

Figure 1. Conceptual Model of the Study.

The two way direction of arrows provide information concerning the degree of relationship between the variables. The one way direction of arrow indicates the components of mathematical ability and the language ability. The dots indicate positive relationship between the mathematical ability and the language ability, meaning, for each increment in the mathematical ability there is corresponding increment in the language ability. To

ascertain the relationship between the mathematical ability and the language ability of the grade six pupils, the following relationships will be determined: (1) between the achievement score and the scholastic achievement rating in mathematics and in English; (2) between the achievement scores in the two subject areas; (3) between the scholastic achievement ratings in each subject area.

Guided by the conceptual framework, the study examined not only the relationship of mathematical ability and language ability of the grade six pupils but also the level of elementary mathematics and communication arts English achievements of the three central elementary schools of Catbalogan.

Statement of the Problem

This study attempted to find the relationship between the mathematical ability and the language ability of grade six pupils in the three central schools of the three districts in Catbalogan, Samar, during the school year 1984-1985. Specifically, it sought answers to the following questions:

1. What is the level of achievement score of grade six pupils in elementary mathematics and in communication arts English in each school?

2. What is the level of scholastic achievement rating of grade six pupils in elementary mathematics and in communication arts English in each school?

3. Is there a significant relationship between the achievement score and the scholastic achievement rating in elementary mathematics of the grade six pupils?

4. Is there a significant relationship between the achievement score and the scholastic achievement rating in communication arts English of the grade six pupils?

5. Is there a significant relationship between the achievement score in elementary mathematics and the achievement score in communication arts English?

6. Is there a significant relationship between the scholastic achievement rating in elementary mathematics and the scholastic achievement rating in communication arts English?

Hypotheses

1. Null Hypotheses

   a. There is no significant relationship between the achievement score and the scholastic achievement rating in elementary mathematics of the grade six pupils.

b. There is no significant relationship between the achievement score and the scholastic achievement rating in communication arts English of the grade six pupils.

c. There is no significant relationship between the achievement score in elementary mathematics and the achievement percentage score in communication arts English.

d. There is no significant relationship between the scholastic achievement rating in elementary mathematics and the scholastic achievement rating in communication arts English.

Importance of the Study

This research is conducted because up to this time there has been no study to show the relationship between the mathematical ability and the language ability of grade six pupils of the three central schools of the three districts in Catbalogan, Samar. To gain insight into the level of achievement in elementary mathematics and communication arts English of the grade six pupils.

The findings of this study is expected to serve as basis in the development of proper attitudes toward mathematics and English as basic tool subjects. It is hoped that it will help the teachers improve or enrich the subject content, their methodology of teaching, their instructional materials and their procedures of evaluating pupil's learning. Hopefully, it will encourage

the school administrators to adjust the placement of teachers in the elementary, to study the needs and problems of classroom teachers or to reexamine the educational program in order to discover the feasible means for continuous professional growth.

Perhaps, becoming aware of the relationship between mathematics and language abilities may facilitate closer communication between the teacher and the pupils; thus leading to the improvement of pupil's performance in elementary mathematics and communication arts English.

It is important that the school administrators, mathematics organizations, English organizations, teacher and parents should lead or help one another in the development of desirable attitudes, appreciations and values towards mathematics and English, and eventually strengthen the Mathematics and English programs of the country.

Scope and Delimitation

This study primarily centered on the relationship between the mathematical ability and the language ability of grade six pupils of the central schools of the three school districts in Catbalogan, Samar during the school year 1984-1985. The schools included were Catbalogan I Central, Catbalogan II Central, and Catbalogan III Central. It included 40 pupils from each of the subject schools

broken down as 20 males and 20 females, thus making a total of 120 sample pupils.

The study was limited to the three central schools in Catbalogan, Samar because the researcher observed that the grade six pupils of these schools have varied range in terms of intelligent quotient and economic status which resemble the status of the grade six population of the whole division of Samar. The test questions adopted were those used by the division testing team to evaluate the pupil's achievement in elementary mathematics and in communication arts English throughout the division of Samar. The difficulty and discrimination indices were considered in the analysis of each test item. The test questions included were having the difficulty indices of 40 percent to 70 percent and with the discrimination indices of 30 percent to 40 percent. The computed reliability was 0.89 for elementary mathematics and 0.86 for communication arts English. This means that the test items were not easy nor difficult but of medium difficulty. The test was consistent in measuring the proficiency of the grade six pupils under study.

Definition of Terms

For the purpose of clarity the following words are hereby defined:

Achievement score. This is the raw score obtained by a pupil in the division achievement test.

Coefficient of correlation. This refers to the index number expressing the degree of relationship between two sets of measures for the same individuals or variable.[5] The correlation coefficient most frequently used in test development and educational research is that known as the Pearson, or Product-Moment r.

Communication arts english. This applies to the process of learning through listening, speaking, reading and writing.

Difficulty index. This term refers to the percentage of pupils who make the correct responses to each test item.[6] In this study this is usually derived from the 27 percent passing the test item in the upper group (on total number of pupils) and the 27 percent passing in the lower group.

Discrimination index. The degree to which a test item differentiates between persons possessing much or little of a certain trait, skill or proficiency.[7] It is

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[5]Minimum Expectances for Elementary English, PNC Resource Materials for Elementary English, p. 102.

[6]Bruce U. Tuckman, Measuring Education Outcomes, (New York: Harcourt Bruce Jovanovich, Inc., 1975), p. 477.

[7]Ibid.

taken from the number passing in the highest third of the group (on total score) and the number passing in the lowest third.

Elementary mathematics. This is a branch of science which deals with the study of whole numbers, rational numbers, geometry, measurements, graphs and scales.

Language ability. This refers to the process by which the child communicates his ideas verbally in well formed sentences using intelligible spelling and pronunciations. This also shows the way he shares his ideas with his listeners and for them to comprehend these ideas stated in sentences that are grammatically correct.[8] In the elementary grades pupils are asked to write, to role play, do narrations on a dialogue, make introductions, short descriptions, tell personal experiences act out story parties, participate in class meetings and informal group discussions. In this research, the term is defined as the raw score obtained by a pupil in the division achievement test and the scholastic achievement obtained in communication arts english at the end of the school year.

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[8] PNC Resource Materials..., loc. cit.

Mathematical ability. This term applies to the way the child shows his skills in mathematical processes and methods such as computing, seeking patterns and relation, forming conjectures from observed patterns and relations and verifying them, arriving at conclusions by inference, translating quantitative relations into mathematical terms and describing relations defined in mathematical symbolism.[9] In this research, the term applies specifically to the raw scores obtained by a pupil in the division achievement test and the scholastic achievement obtained in elementary mathematics at the end of the school year.

Random sample. This is a sample drawn from a population in such a manner that each member has equal chance of being selected.[10] Samples so drawn are unbiased and should yield statistics representative of the population.

Relationship. In this study this term refers to association or "going togetherness," between two sets of

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[9]Some Thoughts on Teaching the History of Mathematics, Journal of Science and Mathematics Education In Southeast Asia, Vol., No. 2, July 1981.

[10]PNC Resource Materials., loc. cit.

variables, the tendency of one variable to vary concomitantly with the other as the tendency of the pupils of high intelligent quotient to be above average in reading ability.[11] The existence of strong relationship i.e. a high correlation between two variables does not necessarily indicate that one has any casual influence on the other hand,

Reliability. This is the extent to which a test is consistent in measuring whatever it does measure; accuracy, dependability, stability, trustworthiness, relative freedom from errors of measurement.[12] This is usually expressed by a reliability coefficient or by the standard error of measurement derived from it.

Scholastic achievement rating. This refers to the average grade obtained by a pupil in elementary mathematics and in communication arts english at the end of the school year.

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[11] Bruce W. Tuckman, Measuring Education Outcomes, (New York: Harcourt Brace Jovanovich, Inc., 1975), p. 848.

[12] Ibid., p. 476.

CHAPTER II

REVIEW OF RELATED LITERATURE AND STUDIES

An intensive search for related literature and studies revealed that several researches have been found out that for purposes of determining the correlation between the mathematical and the language abilities, no study has been made that is exactly similar to the present investigation. However, some literatures and studies with little bearing to the present study have been included in this review.

RELATED LITERATURE

Manor revealed that early experiences of children seem to be more or less a confused mass of ideas and feelings about objects and activities. Ideas but vaguely sensed at first gradually acquire significance and value as they are seen to function from one situation to another. Thus there is built up a large body of mathematical experiences that form a background and give a basis for the later and more formal studies of numbers. This principle is similar to the one used in teaching beginning reading where the child has acquired a large vocabulary through the use of language before entering

the beginning reading class.[13]

The study of Manor has some similarities with the present study, in the sense that it discusses the mathematical and the language abilities of the children. However, the study was made in the primary level, while the present study is in the intermediate.

A similar study was that done by Wood, which mentioned the interests of children in elementary mathematics which are conditioned by the early experiences with number relationship. He pointed out that concrete learning with mathematical concepts should be emphasized with young children as much as possible.

As the child advances in his school experiences, he still gains an increasing ability in computational skills.[14]

Wood, in his study, states that greater interest of boys and girls in later life in mathematics may be conditioned by early experiences with number relationships.[15]

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[13]Ruby Manor, Early Childhood Education: Its Principles and Practices, (D. Appleton-Century Company, Inc., 1937), p. 530.

[14]Ibid.

[15]Clifford Wood, Bulletin of the School of Education, Vol. 6, No. 6, July 1930), p. 50.

From these findings, it may be assumed that more meanings in number situations should be emphasized with young children when and as needed, that vocabularies should be extended whenever the situations provide an opening for such learnings, and that more time may be given to the acquisition of numerical concepts involving relationship and understanding rather than repetitive drill without concrete meaning.[16]

Wheelers, in her article entitled "Nursery School Education," noted that language is used in everything that the child does in and out of school. It is a part of everyday living. Thus, efforts should be directed to help the child acquire proper language tools and habits early. The teacher has all the opportunities to make the child aware of language, to listen to it, experience with the production of sounds, and make suitable responses. It should however be remembered that language depends upon the experiential background, home condition, emotional and physical health, knowledge of these factors point up to the fact that the quality of child's language which he brings to school does not necessarily indicate the level of his intelligence.[17]

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[16] Ibid.

[17] Olive Wheelers, "Nursery School Education", University of London Press, (London, 1939), p. 314.

The study conducted by Wheelers bears similarity with the present study because both discuss the language ability of the child. She stated that effort should be directed to help the child acquire proper language tools for it is the foundation towards higher learning.

Listening, speaking, reading and writing are the major skills which language arts program aim to develop.[18]

Macatangay indicated in his article, "How To Test Pupil's Ability in Mathematics," that the test of a pupil's ability in mathematics is problem solving. The child must solve a problem by applying different situations ranging from the use of illustrations to the different equations or mathematical sentences. The child must learn the problem in his own language, understand the relationship among the elements in the problem. He must learn to identify what operations are to be used by studying the concepts underlying its structure and contents. For accuracy and speed, he must apply different methods of operating numbers in solving the formulated equations. This will enable the teacher to diagnose the pupil's difficulties in problem solving. A pupil who consis-

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[18] Ibid.

tently writes the equation but gets incorrect answer is poor in number operations, while a pupil who cannot write the correct equation of a given problem needs help in reading and in interpreting problems.[19]

Macatangay's article has some similarity in some aspects with the present study, for it discussed the processes involved in testing the mathematical ability of the pupil, which is one of the basis of the study.

Reading experts have stressed the importance of developing one's vocabulary. Edgar Dale emphasized that the reading level of an individual is tied to his vocabulary or conceptual level. The more words one knows, the higher is his reading level, and once one improves his vocabulary, he too improves his reading ability. Furthermore, it stated that reading and vocabulary development must be seen as a significant part of a broad program on language.[20]

Triggs states that vocabulary skill is used to aid the learner to think as he reads, to get the meaning,

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[19]Felix Macatangay, "How To Test Pupil's Ability in Mathematics," The Philippine Journal of Education, Vol. 4, No. 6, August 1970, p. 104.

[20]Edgar Dale, "How To Improve Your Vocabulary," (Handout, U.P., from the Newsletter, Vol. XXIII, No. 7), April 1945.

feel meaning, and to extend his own understanding. All words are useful as long as they become symbols of the meanings for which they stand. To him, vocabulary is an accurate predictor of grade getting ability. He believes that a child with the best vocabulary will generally also have good comprehension.[21]

Smith, et. al. states that intelligence and vocabulary skills are basic determinants of school achievement. They also correlate highly with comprehension; without understanding of words, comprehension is impossible.[22]

Smith, et. al. said that "Youkam pointed out that comprehending or reading matter involves the correct association of meaning with word symbol." Both also quoted Bond and Tinker saying "that for a word to be serviceable in reading, meaning must be attached to it." It was further stated that "it is only by the use of word meanings that comprehension may be attained." Both further cited Davis saying "that knowledge of word meaning from the context were essential factors." Thus, without an understanding of the words, comprehension is

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[21] F. O. Triggs, Reading Its Creative Teaching and Testing, (1960), p. 43.

[22] H. Smith, et. al., Psychology in Teaching Reading, (1961), p. 68.

impossible.[23]

The articles written by some of the reading experts: Dale, Triggs, Smith, et.al., bear similarity with the present study in the sense that all emphasized the importance of reading and vocabulary development. All of these contributed much to the development of the language ability of the child.

RELATED STUDIES

Andres conducted a study on the correlation between the pupils performance in elementary mathematics V achievement test and their final scholastic grades. The correlation method was used in this study. The respondents consisted of 829 grade five pupils enrolled in the district of Angadanan, San Guillermo, during the school year 1978-1980. The computed value of r was 0.73 which showed that there was a high correlation between the final grades by the teachers and the performance of the pupils in the achievement test exemplies the objectivity of the teachers in giving grades.[24]

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[23] Ibid.

[24] Lelina Andres, "Correlation Between Pupils Performance in Elementary Mathematics V Achievement Test and Their Final Scholastic Grades," (unpublished master's thesis, Baguio City, Vocation Normal School, 1980), pp. 57-59.

The study also found out the factors that affect the relationship between the pupil's test results in the achievement test in elementary mathematics and their final grades, a questionnaire and a checklist were presented to the 16 teachers handling grade five mathematics in the district. Based on the questionnaire and checklist, the reason drawn to explain the low performance of some pupils in the achievement test was the inavailability of curriculum materials on the new content.[25]

This study has a similarity to the present study because both are correlational. However, the study was made on the grade five level while the study on hand is on the grade six level.

Cero made a study on the relationship of the teacher-given ratings to the district achievement test scores of grade six pupils in three subject areas, namely: arithmetic, english and social studies. The respondents of the study consisted of 107 grade six pupils coming from the four sections. She used the results of the district achievement test in the three subject areas, and correlated them with the final ratings of pupils gathered from their permanent records. She used the Pearson's

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[25] Ibid.

product moment method in finding the coefficient of correlation. Her finding showed that in arithmetic alone, the coefficient of correlation was 0.77 which means that there was a high degree of correlation between the two variables paired. This implied that the marks given by the teachers were reliable.[26]

This study is related to the present study in the sense that both used the Pearson Product Moment Method in finding the coefficient of correlation. This covered the correlation between the teacher-given ratings and the results of the achievement test.

Another study was written by Nuez[27] on the relationship between reading achievement and modern mathematics achievement among the grades five and six pupils. She found out that there was a very high correlation between reading and modern mathematics. This study also revealed that mathematics is dependent upon reading,

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[26] Patero Cero, "A Study on the Relationship of the Teacher's Ratings to the District Achievement Test Scores of Grade Six Pupils of Jagna Central Elementary School Division of Bohol 1969-1970, (unpublished master's thesis, Rafael Palma College, City of Tagbilaran, 1970), p. 61.

[27] Victoria Nuez, "The Relationship Between Reading Achievement and Modern Mathematics Achievement Among the Grades Five and Six Pupils of Guadalupe Elementary School in 1968-1969 and in 1969-1970," (unpublished masters thesis, Colegio de San Jose Recoletos, Cebu City, 1971), p. 58.

especially on problem solving and interpreting mathematical sentences.

This study is related to the present study in the sense that it is a correlational study between English and mathematics achievement which the present study also did.

Manahan conducted a study on the correlation of reading comprehension skill to mathematical skills in problem solving of 250 grade six pupils of Calabanga Pilot school. The data used in the study were the report cards (Form 138) of previous years in grade five and grade six in reading comprehension and in problem solving in mathematics. The statistical tool used was the Pearson's Product-Moment coefficient of correlation.[28]

Her findings showed that the skills in reading comprehension and their correlations to problem solving skills in mathematica as found in the investigation provide very meaningful information on the nature and extent of the relationship between reading comprehension and problem solving and the strength and weaknesses of pupils in these skills. She concluded that:

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[28]Divina T. Manahan, "The Correlation of Reading Comprehension Skills to Mathematical Skills in Problem Solving of Sixth Grade Pupils of Calabanga," (unpublished master's thesis, University of Nueva Caceras, 1977), p. 49.

1) The marked, substantial and positive correlation of 0.64 between the diagnostic test scores in reading comprehension and diagnostic test score in problem solving and the correlation of 0.54 between summative test scores in these skills, proved that the pupils who had good comprehension skills got high scores in problem solving and in the reading comprehension test.[29]

2) There is a position substantial and marked correlations between variables of reading comprehension and problem solving.

3) The weaknesses of children in problem solving are mostly in solving two or three-step problems, inability to determine what is given and what is asked, inability to think critically and determine what operations are needed, and weaknesses in the computations of the four fundamental operations.

4) Grade VI pupils weakness in reading comprehension are mostly in sequencing events, answering critical questions, drawing conclusions, comparisons, generalizations, interpreting and making inferences, cause and effect relationship.[30]

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[29] Ibid.

[30] Ibid., p. 106.

The study bears relation to the present study because both deal with correlation between English achievement and mathematics achievement.

Grey found out that prospective elementary mathematics teachers did not have full understanding of the different concepts in elementary mathematics. The teachers lacked mastery of the basic facts in the fundamental processes on the set of whole numbers and integers. She found out that they did not understand terms, symbols and principles used in elementary mathematics. Most of them were not acquainted with the different standard instrument of measurements. Diagnostic testing at the beginning of the school year, homogeneous grouping, and remedial instructions were some of her recommendations.[31]

Andallo made a study on the difficulties of the grade six pupils of Ilocos Sur in solving problems and investigation showed the following findings:

1) the diagnostic test revealed low achievement of the pupils in problem solving.

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[31] Modesta B. Grey, "A Survey On the Difficulties in Elementary Mathematics of Prospective Elementary School Teachers in National Teacher's College, Manila, During the First Semester, School Year 1971-1973," (unpublished master's thesis, NTC, Manila, 1971), p. 48.

2) inability to estimate the answer.

3) failure to grasp the relationship between what is asked for and what are given.

Her recommendations were the following:

a) give sufficient and frequent drills on the four fundamental operations.

b) emphasize neatness and legibility in writing numbers and order step by step solutions.

c) avoid giving too large and complicated numbers that might involve confusion and,

d) make a follow-up of the skills and abilities.[32]

All literatures and studies reviewed in this chapter were relevant to the present study because they were correlational studies on mathematical and language abilities, the same statistical measures were employed, other studies were of the same level of sample pupils, but others differed in the number of pupils involved, and the educational level of sample pupils, some in the primary, others in grade five, but the present study is on the grade six level.

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[32] Julita Andallo, "Difficulties of the Grade VI Pupils of Ilocos Sur in Solving Elementary Mathematics Problems During the School Year 1974-1975," (unpublished master's thesis, Northeastern College, Laoag City, 1975), p. 56.

CHAPTER III

METHODOLOGY

This chapter presents the methods and procedures, the research design, the description of the respondents, the instrument used to gather data, and the statistical measures used in the treatment of the data gathered.

The Research Design

The analytical-descriptive research was used in this study. This is used to ascertain facts that prevail in the two variables.

The Subjects and Sources of Data

The subjects of this study were grade six pupils of Catbalogan I, Catbalogan II, and Catbalogan III Central Elementary Schools of which sixty were males and sixty were females, during the school year 1984-1985.

The selection of the subject schools was based on the school in each district, having the highest enrolment in grade six during the school year. Twenty males and twenty females were taken from each of the central schools. A random sampling was employed in order that each grade six pupil has an equal chance to be included in this study. To determine the samples, the researcher employed the "fish-bowl" technique. Two boxes containing

the rolled sheets of paper some of which with numbers one to 20 while all the rest were blank. After the rolled sheets were shaken thoroughly, they were drawn by all the grade six male and the grade six female pupils separately in each subject school. Those who have drawn the rolled sheets of paper with numbers one to 20 served as the samples for the males, and the samples for the females.

Instrumentation

The test questions. The researcher adopted the test questions used by the division testing team to evaluate the pupil's achievements in elementary mathematics and communication arts English throughout the division of Samar. The content areas in the test for elementary mathematics are: (a) whole numbers; (b) rational numbers; (c) geometry; (d) measurements; (e) graphs and scales. In communication arts English, the content areas are the following: (a) listening; (b) speaking; (c) reading; and (d) writing. The five areas for mathematics and the four areas for English are all found in the learning continum for elementary mathematics grade six, and communication arts English grade six. All the areas for the two subjects are to be covered by the teachers in mathematics and English for the whole school year, The test for each subject is fifty items only. The higher cognitive level of thinking

was given more weight in the preparation of a two-way systems of specifications, one for elementary mathematics and the other for communication arts English. The distribution of questions for elementary mathematics are as follows: 18 percent on knowledge; 38 percent on comprehension; and 44 percent on application. For communication arts English, 20 percent on knowledge; 26 percent on comprehension; and 54 percent on application.

Most of the test items are of objective type using the multiple choice with four options, to facilitate administration, scoring and interpretation. The four-option pattern was used because it was recommended by many educational statisticians as the most desirable number of options in an objective type test. The trial run of the test was conducted to the grade six pupils of Salug Elementary School, not chosen as respondents of the study, on the second semester of school year 1984-1985. All rules except the time, in the administration of the division test were followed during the testing. The purpose was to determine the testing time of the evaluative instrument. The time consumed was sixty minutes for elementary mathematics and sixty minutes for communication arts English.

MECS form 138-E. The grades obtained by the

pupils in elementary mathematics and communication arts English were secured from the form 138-E which was the pupil's report card. The scholastic achievement in elementary mathematics was obtained by adding the grades from the first grading to the fourth grading periods and divided by four. The scholastic achievement in communication arts English was obtained by the adding the grades from the first to the fourth grading periods and divided by four.

The difficulty index was considered in analyzing the responses to each test item. This is expressed as the percentage of pupil's who make the correct responses to the alternatives. Twenty seven percent of the total number of pupils who took the test were taken for the upper group and twenty seven percent for the lower group. The formula for calculating the difficulty index is by adding the correct responses of the upper group and the correct responses of the lower group, divided by the total number of pupils used in the analysis. The computed difficulty index in the test questions fall between 40 percent to 70 percent. This means that the test items are not too easy nor too difficult but of medium difficulty.

Another factor used in analyzing the individual test item was the index of discrimination. It provided

an indication of how well an item sort out the good pupils from the poor ones, as measured by the test as a whole. It can be calculated by subtracting the number of pupils in the lower group responding to the correct options, from the pupils in the lower group responding to the correct option, and dividing by one half of the total number of pupils used in the analysis. The computed discrimination index in the test questions range from 30 to 40 percent. This means that the test items contribute to the overall pattern of the examination results and one statistical grounds should be accepted.

The computed reliability for elementary mathematics was 0.89 and for communication arts English was 0.86. This means that the test was consistent in measuring the proficiency of the grade six pupils under study.

Gathering of Data

The researcher sought approval from the Division Superintendent of Schools for the administration of the achievement test in the three elementary districts of Catbalogan, Samar.

Subsequently, another approval was sought from the District Supervisor of each district in Catbalogan, and from the Principal of each central school. After all

requests were approved, the researcher went to the different grade six classes to meet the teachers and pupils for the selection of the samples. Those male and female pupils who drew the rolled sheets of paper containing the numbers one to 20 for the males and one to 20 for the females, represented as samples in each school. An arrangement was made with the teachers to excuse the respondents from their classes to facilitate the administration of the achievement test.

The researcher administered the test to 40 grade six pupils, 20 males and 20 females, first in elementary mathematics, then in communication arts English. Even if the instruction of the test were detailed enough still further instructions were given to clarify doubts. The testing time adopted was determined from the trial run of the test of the 40 grade six pupils of Salug Elementary School.

Statistical Treatment of Data

To arrive at the solution to the problems raised in this study, the answer sheets were corrected, the results were recorded, analyzed and interpreted quantitatively and qualitatively using the appropriate statistical measures.

Different statistical measurements such as the

mean, standard deviation, reliability coefficient, Pearson Product-Moment method of Correlation, and the t-test of significance were employed in treating the achievement test score and the scholastic achievement rating of the grade six pupils, which were the basis of interpretation and the drawing of conclusions.

The reliability coefficient was used to evaluate the test questions in elementary mathematics and in communication arts English. Below is the scoring and interpreting scheme for achievement scores:

Raw Scores	Verbal Descriptions
43-50	Outstanding
36-42	Very Satisfactory
30-35	Satisfactory
28-29	Moderately Satisfactory
below 27	Unsatisfactory

Scoring and interpreting scheme for scholastic achievement ratings.

Ratings	Verbal Descriptions
93-95	Outstanding
86-92	Very Satisfactory
80-85	Satisfactory
78-79	Moderately Satisfactory
75-77	Unsatisfactory

There were four null hypotheses tested in this study. To test the first, second, third and fourth hypotheses, the researcher used the Pearson's Product-Moment of correlation using the following formula.[33]

$$M = AM + \frac{Efd}{N} \times i \qquad SD = i \sqrt{\frac{Efd^2}{N} - \frac{Efd}{N}}$$

Where:

M = the mean of test scores

AM = assumed mean

E = add the values of

f = frequency or the number of pupils obtaining any specified scores

d = deviation

N = number of cases or the number of pupil's for whom we have the score

i = size of the interval

SD = the standard deviation of the test score

$$r = \frac{K}{K-1} \left[1 - \frac{M\ (K-M)}{KS^2} \right]$$

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[33] W. James Popham, Education Evaluation, (New Jersey: Prentice Hall, Inc., 1975), p. 119.

Where:

r = reliability coefficient

K = number of items in the test

M = mean of the set of test scores

S = standard deviation of the set of test scores

The Pearson Product-Moment of correlation was computed using the following formula:[34]

$$rxy = \frac{\frac{Ex'y'}{N} - My' (Mx')}{Oy' (Ox')}$$

Where:

Ex'y' = deviation of coded values x and y from their respective mean

My' and Mx' = means of the coded values of x' and y' respectively

Oy' and Ox' = standard deviations of coded values of x and y respectively

The following rules provide a guide for interpreting the obtained correlation in this study:

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[34] J. Guilford and B. Fruchter, Fundamental Statistics in Psychology and Education, (Tokyo: McGraw-Hill Kogakusha, Ltd., 1973).

Coefficient (c)	Relationship
± .00 to ± .20	Indifferent or negligible
± .20 to ± .40	Low correlation , present but slight
± .40 to ± .70	Substantial or moderate relationship
± .70 to ±1.00	High to very high relationship

The t-test of significance of the correlation between a set of paired observations was adopted to evaluate the null hypotheses whether the obtained correlation falls within the region of acceptance or rejection. The formula which appears below was used.

$$t = \frac{r - \sqrt{N - 2}}{\sqrt{1 - r^2}}$$

Where:

t = t-test of significance

r = obtained coefficient correlation

N-2 = degree of freedom

Since the alternative hypothesis is a statement of non-equality, the hypotheses is non-directional and a two-tailed region of rejection was adopted. The region of rejection consists of all values of t which are so small the null hypothesis is equal to or less than .05 level of significance.

CHAPTER IV

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter presents the data and the analysis and interpretation of the data. They are presented in tabular form for easy means of analysis and interpretations. There were four hypotheses tested in this study.

Pupil's Mean Achievement Scores in Elementary Mathematics by School

Table 1 indicates that the grade six pupils of Catbalogan I Central School obtained a mean achievement of 24.7; mean percentage raw score of 49.4 which means that the mathematical abilities of the pupils under study of this school are unsatisfactory or below average. The computed mastery level of 10 percent shows that only 10 percent could achieve the 75 percent mastery level or the pupils who got the score of 37.5 which is the 75 percent of the 50 items achievement test in mathematics and 90 percent could not master the objectives of the test. Therefore, there is a great need of the mathematics teachers of this district to reteach the same objectives as those in the achievement test.

The grade six pupils of Catbalogan II Central School obtained a mean achievement of 30.46; mean per-

Table 1

Pupils' Mean Achievement Scores in Elementary Mathematics by School

School	No. Tested	Mean achievement score in Elem. Math.	Mean Percentage Raw Score	Mastery Level (%)	Interpretation
Catbalogan I Central	40	24.7	49.4	10	Unsatisfactory Math. Abil.
Catbalogan II Central	40	30.6	60.92	28	Unsatisfactory Math. Abil.
Catbalogan III Central	40	32.2	64.5	32.5	Unsatisfactory Math. Abil.
Total	120	29.2	58.3	23.5	

centage raw score of 60.92 which means that the mathematical abilities of the pupils under study are unsatisfactory or below average. The computed mastery level reveals that 28 percent of the fifty test items in elementary mathematics was mastered and 72 percent have not been mastered by the grade six pupils, so there is a need to reteach the same objectives as those in the achievement test.

The grade six pupils of Catbalogan III Central School obtained a mean achievement score of 32.2; mean

percentage raw score of 64.5 which signifies that the mathematical abilities of the pupils under study are unsatisfactory or below average. The mastery level of 32.5 percent shows that only 32.5 percent of the test items in elementary mathematics was mastered by the pupils, while 67.5 percent have not been mastered. Therefore, there is a need to reteach the objectives or the lessons taken in the achievement test.

Pupils' Mean Achievement Scores in Communication Arts English by School

Table 2 shows that the grade six pupils of Catbalogan I Central School obtained a mean achievement score of 28; mean percentage raw score of 56 which denotes that the language abilities of the pupils under study are unsatisfactory or below average. The computed mastery level of 15 percent indicates that only 15 percent of the 50 items test was mastered by the pupils, while 85 percent have not been mastered. So then, it is necessary to reteach the objectives taken in the achievement test.

The grade six pupils of Catbalogan II Central School obtained an achievement score of 28; mean percentage raw score of 56 which shows that the language

Table 2

Pupils' Mean Achievement Scores in Communication Arts English by School

School	No. Tested	Mean achievement score in Elem. Math.	Mean Percentage Raw Score	Mastery Level (%)	Interpretation
Catbalogan I Central	40	28	56	15	Unsatisfactory language ability
Catbalogan II Central	40	28	56	12.5	Unsatisfactory language ability
Catbalogan III Central	40	37.25	74.5	57.5	Moderately Satisfactory language ability
Total	120	31.1	62.2	28.3	

abilities of the pupils are unsatisfactory or below average. The computed mastery level of 12.5 percent indicates that only 12.5 percent of the 50 test items in communication arts English was mastered, 87.5 have not been mastered, so there is a need to reteach the same objectives as those taken in the achievement test.

The sample pupils of Catbalogan III Central School

obtained a mean achievement score of 37.25; mean percentage raw score of 74.5 which denotes that the language abilities of the pupils are moderately satisfactory. The computed mastery level of 57.5 reveals that only 57.5 percent of the 50 test items in communication arts English was mastered by the grade six pupils. Since that 42.5 of the test items was not mastered, The teachers taking the subject should reteach the same objectives as those taken in the achievement test.

Pupils' Mean Scholastic Achievement Rating in Elementary Mathematics

Table 3 reveals that the grade six pupils of Catbalogan I Central obtained a mean scholastic achievement of 82.66 which means that the pupils have satisfactory mathematical abilities. The computed standard deviation indicates that the mathematical abilities of the pupils under study are homogeneous or their abilities in mathematics are close to each other.

The grade six pupils of Catbalogan II Central obtained a mean scholastic achievement rating of 81.74 which shows that pupils have satisfactory mathematical abilities. The computed standard deviation shows that the

Table 3

Pupils' Mean Scholastic Achievement Rating in Elementary Mathematics

School	Mean Scholastic Achievement Rating	Standard Deviation	Interpretation
Catbalogan I Central	82.66	3.54	Satisfactory Mathematical ability
Catbalogan II Central	81.72	3.42	Satisfactory Mathematical ability
Catbalogan III Central	82.3	4.64	Satisfactory Mathematical ability

mathematical abilities of the pupils under study are homogeneous or close to each other.

The grade six pupils of Catbalogan III Central obtained a mean scholastic achievement rating of 82.3 which shows that the mathematical abilities of the pupils are satisfactory or average level. The computed standard deviation points out that the mathematical abilities are homogeneous or their abilities in mathematics are close to each other.

Pupils' Mean Scholastic Achievement Rating in Communication Arts English

Table 4 shows that the grade six pupils of Catba-

Table 4

Pupils' Mean Scholastic Achievement Rating in Communication Arts English

School	Mean Scholastic Achievement Rating	Standard Deviation	Interpretation
Catbalogan I Central	83.7	2.71	Satisfactory language ability
Catbalogan II Central	83.1	4.41	Satisfactory language ability
Catbalogan III Central	82.1	5.06	Satisfactory language ability

logan I Central School obtained a mean scholastic achievement rating of 83.7 which means that the pupils have satisfactory language abilities. The computed standard deviation of 2.71 denotes that the abilities of the pupils in English are homogeneous or closely related with each other.

The grade six pupils in Catbalogan II Central obtained a mean scholastic achievement rating of 83.1 which means that the language abilities of the pupils involved are satisfactory. The computation of the standard deviation of 4.41 as shown in appendix P-1 indicates that the language abilities of the pupils under study are homogeneous or close to each other.

The grade six pupils of Catbalogan III Central obtained a mean scholastic achievement rating of 82.1 which signifies that the sample pupils have satisfactory language abilities. The computed standard deviation of 5.06 shows that the language abilities of the pupils are homogeneous or the spread of their language abilities are still close to each other.

Relationship Between Mean Achievement Score and Mean Scholastic Achieve- Rating in Elementary Mathematics

Table 5 reveals that there is substantial or moderate relationship between the achievement score and the scholastic achievement in elementary mathematics as indicated by the computed rxy of 0.48, as based on the guide provided for the interpretation of the obtained correlation.

From the computations found in Appendix Q-1 the t value of 5.94 was greater than the critical or tabular t value of 1.96 at .05 significance level, indicating the rejection of hypothesis which states that there is no significant relationship between the achievement score and the scholastic achievement rating in elementary mathematics. This connotes that moderate or substantial significant relationship exist between the achievement score and the scholastic achievement rating in elementary

mathematics, which means that a pupil with high achievement score likewise obtained a high scholastic achievement rating in elementary mathematics.

Table 5

Relationship Between Mean Achievement Score and Mean Scholastic Achievement Rating in Elementary Mathematics

Variables	N	rxy	t_c	Critical value at .05 level	Interpretation
x and y	120	0.48	5.94	1.96	Significant substantial relationship

Legend:

x = achievement score

y = scholastic achievement rating

rxy = obtained correlation

t_c = t computed

N = number of cases

Relationship Between Mean Achievement Score and Mean Scholastic Achievement Rating in Communication Arts English

Table 6 discloses that there is a slight relationship between the two variables as shown by the computed rxy of 0.32, based on the computations in Appendix R.

The t value of 3.61 is greater than the critical or tabular value of 1.98 resulting the rejection of the hypothesis which states that there is no significant relationship between the achievement score and the scholastic achievement rating in communication arts english.

Table 6

Relationship Between Mean Achievement Score and Mean Scholastic Achievement Rating in Communication Arts English

Variables	N	rxy	t_c	Critical value at .05 level	Interpretation
x and y	120	0.32	3.76	1.96	Significant slight relationship

Legend:

x = achievement score

y = scholastic achievement rating

N = number of cases

r_{xy} = obtained correlation

t_c = computed t

This means that there is slight significant relationship between the mean achievement score and the mean scholastic achievement rating in communication arts English, which indicates that those who obtained high achievement

scores in the achievement test may necessarily obtain high scholastic achievement ratings in communication arts English.

Relationship Between Mean Achievement Scores in Elementary Mathematics and in Communication Arts English

Table 7 shows the summary of the computations in Appendix R of r_{xy} which asserts that there is slight relationship between the two subjects as indicated by the computed value of 0.61, as based on the guide of the obtained correlation.

The computed t of 8.36 is greater than the critical value of 1.96 which signifies the rejection of the hypothesis which states that there is no significant relationships between the mean achievement score in elementary mathematics and the mean achievement score in communication arts English. It is rejected because slight significant relationship exist between the achievement score in elementary mathematics and the achievement score in communication arts English. This means that those who obtained high achievement score in elementary mathematics may likewise obtained a high achievement score in communication arts English.

Table 7

Relationship Between Mean Achievement Scores in Elementary Mathematics and Communication Arts English

Variables	N	r_{xy}	t_c	Critical value at .05 level	Interpretation
x and y	120	0.61	8.36	1.96	Significant slight relationship

Legend:

x = elementary mathematics

y = communication arts English

r_{xy} = obtained correlation

t_c = computed t

Relationship Between Mean Scholastic Achievement Ratings in Elementary Mathematics and Communication Arts English

Table 8 points out that substantial or moderate relationship exist between the scholastic achievement ratings in elementary mathematics and in English as exhibited by the computed r_{xy} of 0.70, as based on the computations in Appendix S.

Based on the computations of t in Appendix T-1, the computed value of 10.64 is very much greater than the critical value of 1.96 at .05 significance level. This

Table 8

Relationship Between Mean Scholastic Achievement Ratings in Elementary Mathematics and in Communication Arts English

Variables	N	r_{xy}	t_c	Critical value at .05 level	Interpretation
x and y	120	0.70	10.64	1.96	Significant substantial relationship

Legend:

x = Elementary Mathematics

y = Communication Arts English

r_{xy} = obtained correlation

t_c = computed t

indicates the rejection of the hypothesis which states that there is no significant relationship between the scholastic achievement rating in elementary mathematics and the scholastic achievement in communication arts English. It is rejected because there is moderate or substantial relationship between the scholastic achievement ratings in the two subjects.

This simply means that those who obtained high scholastic achievement ratings in elementary mathematics likewise obtained high scholastic achievement ratings in communication arts English.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter shows the summary, findings, conclusions and recommendations of the study.

Summary

This study was conducted to determine the correlation between the mathematical and the language abilities of the grade six pupils of the three central schools of the elementary school districts in Catbalogan, Samar, during the school year 1984-1985. More specifically, it sought answers to questions on the relationship between the achievement score and the scholastic achievement in each subject, between the achievement scores in both subjects, and between the scholastic achievements in the two subjects.

The analytical-descriptive method of research was employed in this study using the division achievement test in elementary mathematics and in communication arts English grade six, and MECS Form 138-E as the instruments in gathering the data needed from the 120 grade six pupils of the subject schools.

There were four null hypotheses formulated:

1. There is no significant relationship between the achievement score and the scholastic achievement in

elementary mathematics.

2. There is no significant relationship between the achievement score and the scholastic achievement in communication arts English.

3. There is no significant relationship between the achievement scores in elementary mathematics and in communication arts English.

4. There is no significant relationship between the scholastic achievements in elementary mathematics and in communication arts English.

This study is of importance to pupils, teachers and administrators because becoming aware of the relationships in mathematics and in language abilities, may facilitate closer communication between the teacher and the pupils, thus leading to the improvement of pupil's performance in elementary mathematics and communication arts English. It will encourage the school administrators to adjust the placement of teachers in the elementary and conduct seminar workshops for continuous professional growth.

To enrich the content of the study, the writer consulted mathematics and English teachers, reviewed several books, unpublished theses, periodicals and other reading materials, to obtain the additional information with relevance to the study.

The data gathered were recorded and tabulated found in Appendix J. They were analyzed and interpreted using the appropriate statistical measures such as the Pearson's Product Moment method of correlation and the t-test for testing the significance of a coefficient of correlation with .05 signigicance level.

Findings. Based on the computations found in Appendices M, T-1, the following results were obtained:

1. The obtained mean achievement scores of the grade six pupils in elementary mathematics are shown by school: Catbalogan I Central, 24.7; Catbalogan II Central, 30.6; Catbalogan III Central, 32.2. The computed mean percentage raw scores are as follows: Catbalogan I Central, 49.4 -- unsatisfactory; Catbalogan II Central, 60.92 -- unsatisfactory; Catbalogan III Central, 64.5 -- unsatisfactory. These revealed that the mathematical abilities of the grade six pupils of the three central schools are unsatisfactory or below average.

The obtained mastery level of the sample grade six pupils are the following: Catbalogan I Central -- 10 percent of 40 who took the test; Catbalogan II Central -- 28 percent; Catbalogan III Central -- 64.5 percent. This connotes that only 23 percent of the 50 items was achieved

or mastered by the pupils. Therefore there is a great need to reteach all the objectives taken in the achievement test in elementary mathematics.

2. The obtained mean achievement scores of the grade six pupils in communication arts English by school are as follows: Catbalogan I Central, 28; Catbalogan II Central, 28; and Catbalogan III Central, 37.25. The obtained mean percentage raw scores are: Catbalogan I Central, 56 -- unsatisfactory; Catbalogan II Central, 56 -- unsatisfactory; Catbalogan III Central, 74.5 -- moderately satisfactory. This means that the language abilities of the grade six pupils of Catbalogan I Central and Catbalogan II Central are unsatisfactory; and Catbalogan III Central moderately unsatisfactory.

The obtained mastery level of Catbalogan I Central is 15 percent; Catbalogan II Central is 12.5 percent; Catbalogan III Central is 57.5 percent. This denotes that only 28 percent of the fifty items test in communication arts English was mastered. Therefore there is a great need to reteach the same objectives taken in the achievement test.

3. The obtained mean scholastic achievement rating of grade six pupils in elementary mathematics are

as follows: Catbalogan I Central -- 82.66, satisfactory; Catbalogan II Central -- 81.72, satisfactory; Catbalogan III Central -- 82.3, satisfactory. This shows that the scholastic achievement rating of the grade six pupils of the three central elementary schools is satisfactory. The computation of the standard deviation indicates that the mathematical abilities are homogeneously group or their abilities in mathematics are closely related with each other.

4. The obtained mean scholastic achievement rating of the grade six pupils in communication arts English are the following: Catbalogan I Central -- 83.7, satisfactory; Catbalogan II Central -- 83.1, satisfactory; and Catbalogan III Central -- 82.1, satisfactory; which shows that the scholastic achievement rating of the grade six pupils of the three central elementary schools are satisfactory or average level. The computed standard deviation indicates that the language abilities are homogeneously grouped or the abilities in communication arts English are near each other.

5. The obtained t-value of the correlation rxy 0.48 between pupil's achievement score and the scholastic achievement rating in elementary mathematics was 5.94. This is greater than the tabular or critical t-value of

1.96 at .05 level of significance. The relationship between the two measures of pupil's ability is significant. This finding implies that there is significant substantial relationship between the achievement score and the scholastic achievement rating in elementary mathematics of the pupils under study. The researcher had objective evidence to reject the hypothesis which states that there is no significant relationship between the achievement score and the scholastic achievement rating in elementary mathematics.

6. The obtained t-value of the correlation rxy = 0.32 between pupil's achievement percentage score and the scholastic achievement rating in communication arts English was 3.76. This is greater than the tabular or critical t-value of 1.96 at .05 significance level. The relationship between the two measures of pupil ability is significant. This finding indicates that significant slight relationship exist between the achievement score and the scholastic achievement rating in communication arts English of the grade six pupils. With this result, therefore leads the rejection of the hypothesis which states that there is no significant relationship between the achievement score and the scholastic achievement rating in communication arts English.

7. The obtained t value of the correlation rxy =

0.61 between pupils' achievement score in elementary mathematics and the achievement score in communication arts English was 8.36. This result is greater than the tabular t value of 1.96 at .05 significance level, which denotes significant relationship between the two measures of pupil's ability. The finding shows that there is significant slight relationship between the achievement score in elementary mathematics and the achievement score in communication arts English. This evidence therefore leads the rejection of hypothesis number three which states that there is no significant relationship between the achievement score in Elementary Mathematics and the achievement score in communication arts English.

8. The obtained t value of the rxy equals 0.70 between the pupils' scholastic achievement rating in mathematics and the scholastic achievement rating in communication arts English was 10.64. This result is greater than the tabular or critical t value of 1.96 at .05 level of significance. The relationship between the two measures of pupil ability is significant. This finding connotes that significant substantial relationship exist between the pupils' scholastic achievement ratings in mathematics and the scholastic achievement ratings in communication arts English. The researcher had the evidence to reject

the fourth hypothesis which states that there is no significant relationship between the scholastic achievement rating in mathematics and the scholastic achievement rating in communication arts English.

Conclusions

Based on the foregoing findings the following conclusions were derived:

1. The grade six pupils of the three Central Elementary Schools of Catbalogan has unsatisfactory or below average achievements in elementary mathematics and in communication arts English.

2. The scholastic achievement rating in elementary mathematics and in communication arts English of grade six pupils in the three central elementary schools of Catbalogan is satisfactory.

3. This study provides a moderate or substantial evidence of significant relationship between the achievement score and the scholastic achievement in elementary mathematics.

4. It provides a slight evidence of significant correlation between the achievement score and the scholastic achievement in communication arts English.

5. This provides slight evidence of significant correlation between the achievement scores in the two

subjects.

6. This study provides substantial evidence of significant correlation between the scholastic achievements in elementary mathematics and in communication arts English.

Recommendations

Based on the conclusions made in this study the researcher recommends the following:

1. There should be a study conducted for teaching mathematics and English in order to determine the causes of lower achievement of pupils in mathematics and in English.

2. The school should make provisions for the continuous study of the results of the division achievement test in elementary mathematics and communication arts English so that the progress of the school with regard to classroom instruction could be improved.

3. Teachers who would like to improve the achievement in elementary mathematics of pupils should first improve the latter's reading comprehension skills.

4. The mastery learning should be given more emphasis on the development of pupil's performance in elementary mathematics and in English for it is the foundation toward higher mathematics and higher English.

B I B L I O G R A P H Y

A P P E N D I C E S

APPENDIX A

SAMAR STATE POLYTECHNIC COLLEGE
Catbalogan, Samar

April 27, 1984

The Dean of Graduate Studies
Samar State Polytechnic College
Catbalogan, Samar

S i r :

In my desire to start working on my thesis proposal any time this year, I have the honor to submit for approval one of the following research problems preferably topic number one.

1. MATHEMATICAL AND LANGUAGE ABILITIES OF GRADE SIX PUPILS OF THE THREE CENTRAL SCHOOLS IN CATBALOGAN, SAMAR.

2. AN ANALYSIS OF CLASSROOM TEST ON SELECTED TOPICS IN ELEMENTARY MATHEMATICS OF GRADE SIX PUPILS IN CATBALOGAN I DISTRICT FOR THE SCHOOL YEAR 1983-1984.

3. AN ANALYSIS OF CLASSROOM TEST ON THE FOUR FUNDAMENTAL OPERATIONS IN ELEMENTARY MATHEMATICS OF GRADE SIX PUPILS IN CATBALOGAN I DISTRICT FOR THE SCHOOL YEAR 1983-1984.

I hope for your early and favorable action.

Very truly yours,

(SGD.) TOMASA R. PEREZ
Researcher

Recommending Approval:

(SGD.) ALEJANDRO E. CANANUA, M. Ed.
Head, Research and Development

APPROVED:

(SGD.) DOMINADOR Q. CABANGANAN, Ed. D.
Dean, Graduate Studies

APPENDIX B

Republic of the Philippines
SAMAR STATE POLYTECHNIC COLLEGE
Catbalogan, Samar

GRADUATE SCHOOL

APPLICATION FOR ASSIGNMENT OF ADVISER

NAME Perez (Family Name) Tomasa (First Name) Rafales (Middle Name)

CANDIDATE FOR DEGREE IN Master of Arts in Education

AREA OF SPECIALIZATION Administration and Supervision

TITLE OF PROPOSED THESIS MATHEMATICAL AND THE LANGUAGE ABILITIES OF GRADE SIX PUPILS OF THREE CENTRAL SCHOOLS IN CATBALOGAN, SAMAR.

NAME OF REQUESTED ADVISER Asst. Prof. Eusebio T. Pacolor

APPROVAL OF ADVISER _____ DISAPPROVAL _____

(SGD.) EUSEBIO T. PACOLOR
Adviser

DATE 10/8/84

APPROVED:

(SGD.) DOMINADOR Q. CABANGANAN, Ed. D.
Dean of Graduate Studies

APPENDIX C

Republic of the Philippines
SAMAR STATE POLYTECHNIC COLLEGE
Catbalogan, Samar

GRADUATE SCHOOL

October 8, 1984
(Date)

Department : Graduate Studies

Name of Mentor: Asst. Prof. Eusebio T. Pacolor

Dear Asst. Prof. Eusebio T. Pacolor,

The Graduate Studies (department) is pleased to appoint you as thesis mentor of Mrs. Tomasa R. Perez effective October 8, 1984.

As thesis adviser, you are expected to meet with the student at least one hour once a week within the duration of thesis writing.

(SGD.) DOMINADOR G. CABANGANAN, Ed. D.
Department Chairman

CONFORME:

(SGD.) EUSEBIO T. PACOLOR
Mentor

October 8, 1984
Date

APPENDIX D

SAMAR STATE POLYTECHNIC COLLEGE
Catbalogan, Samar

October 29, 1984

The Dean of Graduate Studies
Samar State Polytechnic College
Catbalogan, Samar

S i r:

I have the honor to request that I be scheduled on November 15, 1984 to defend my thesis proposal entitled MATHEMATICAL AND LANGUAGE ABILITIES OF GRADE SIX PUPILS OF THE THREE CENTRAL SCHOOL IN CATBALOGAN, SAMAR.

In this connection, I am submitting herewith five copies of my thesis proposal for distribution to the Dean and the panel members.

I hope for your favorable action on this matter.

Very truly yours,

(SGD.) TOMASA R. PEREZ
Researcher

Recommending Approval:

(SGD.) EUSEBIO T. PACOLOR
Adviser

APPROVED:

(SGD.) DOMINADOR Q. CABANGANAN, Ed. D.
Dean, Graduate Studies

APPENDIX E

SAMAR STATE POLYTECHNIC COLLEGE
Catbalogan, Samar

GRADUATE SCHOOL

February 11, 1985

The District Supervisor
Catbalogan I District
Catbalogan, Samar

S i r :

I have the honor to request permission from your office to administer the trial run of my achievement test for the study entitled "MATHEMATICAL AND LANGUAGE ABILITIES OF GRADE SIX PUPILS OF THE THREE CENTRAL SCHOOLS IN CATBALOGAN, SAMAR", to the grade six pupils of Salug Elementary School, on the thirteenth day of February 1985.

I hope for your favorable action on this matter.

Very truly yours,

(SGD.) TOMASA R. PEREZ
Graduate Student

APPROVED:

(SGD.) RAFAEL P. SEVILLA
District Supervisor

APPENDIX F

SAMAR STATE POLYTECHNIC COLLEGE
Catbalogan, Samar

GRADUATE STUDIES

January 28, 1985

The Schools Division Superintendent
Division of Samar
Catbalogan, Samar

S i r :

I have the honor to request permission and approval from your office to administer my achievement test for the study entitled "MATHEMATICAL AND LANGUAGE ABILITIES OF GRADE SIX PUPILS OF THE THREE CENTRAL SCHOOLS IN CATBALOGAN, SAMAR," within the month of February 1985.

I hope for your early favorable action on this matter.

Very truly yours,

(SGD.) TOMASA R. PEREZ
Graduate Student

APPROVED:

(SGD.) LEOVIGILDO T. GELI
Schools Division Superintendent

APPENDIX G

Republic of the Philippines
SAMAR STATE POLYTECHNIC COLLEGE
Catbalogan, Samar

February 10, 1987

The Dean of Graduate Studies
Samar State Polytechnic College
Catbalogan, Samar

S i r :

I have the honor to request that I be scheduled on February 25, 1987 to defend my thesis entitled "MATHEMATICAL AND LANGUAGE ABILITIES OF GRADE SIX PUPILS OF THE THREE CENTRAL SCHOOLS IN CATBALOGAN, SAMAR."

In this connection, I am submitting herewith six (6) copies of my thesis for distribution to my adviser, the chairman and the members of the panel of examiners.

I hope for your early favorable action on this request.

Very truly yours,

(SGD.) TOMASA R. PEREZ
Graduate Student

Recommending Approval:

(SGD.) EUSEBIO T. PACOLOR
Adviser

APPROVED:

(SGD.) DOMINADOR Q. CABANGANAN, Ed. D.
Dean of Graduate Studies

APPENDIX H

Ministry of Education, Culture and Sports
Region VIII
DIVISION OF SAMAR
Catbalogan, Samar

ACHIEVEMENT TEST IN ELEMENTARY MATHEMATICS
GRADE VI

Direction: Read each item carefully and write only the letter of the correct answer.

Example:

In the number 24, 26, 28, __, 32, what is the number?

a. 27 c. 30
b. 29 d. 31 Answer: c

1. In the numeral 357886, what is the value of 3?
   a. tens c. thousands
   b. hundreds d. ten thousands

2. In which number does 8 have the greatest value?
   a. 68,216,935 c. 76,532,891
   b. 6,856,491 d. 181,032,745

3. 305 less 268 is how many?
   a. 42 c. 37
   b. 27 d. 57

4. What does the Roman Numeral D stands for?
   a. 50 c. 500
   b. 100 d. 1,000

5. Which of these is four million, four hundred ten thousand fifteen?
   a. 40,304,215 c. 4,410,015
   b. 4,402,015 d. 40,042,015

6. If you round off 324,760 to the nearest ten thousands, which of these is the number?
   a. 300,000 c. 320,000
   b. 310,000 d. 340,000

7. In the numeral 3,456,108 what is the place value of 4?
   a. hundred
   b. thousand
   c. ten thousands
   d. hundred thousands

8. The sum of 4,186 and 3,089 is:
   a. less than 7,200
   b. greater than 7,300
   c. between 7,200-7,300
   d. less than 5,000

9. What is the average of the following grades 85, 86, 90 and 83?
   a. 86
   b. 87
   c. 88
   d. 85

10. How do we write the exponential form of 6x6x6x6x6?
   a. 6^3
   b. 6^4
   c. 6^5
   d. 6^7

11. How many 8 are there in 1,207?
   a. 9
   b. 12
   c. 14
   d. 15

12. If we multiply 9 by 10,000, what is the product?
   a. 900
   b. 9,000
   c. 90,000
   d. 900,000

13. Which of these is the exponential form of 10,000,000?
   a. 10^5
   b. 10^6
   c. 10^7
   d. 10^8

14. What will be the answer if you divide 1,864 by 8?
   a. 224
   b. 226
   c. 227
   d. 233

15. How is $\frac{465}{1,000}$ written in decimal form?
   a. 46.5
   b. 4.65
   c. .465
   d. .0465

16. Find the sum of 1/7 plus 2/7 plus 3/7.
   a. 4/7
   b. 5/7
   c. 6/7
   d. 3/7

17. How do you write fifty pesos and fifty centavos?
   a. ₱15.50
   b. ₱50.10
   c. ₱50.50
   d. ₱50.05

18. What is the least common denominator for 1/4 plus 2/5?
    a. 20 c. 10
    b. 15 d. 8

19. What is the product of .004 multiplied by 1.3?
    a. .52 c. .052
    b. .0052 d. 5.200

20. Which of the following fractions is greater than one?
    a. 2/5 c. 2/11
    b. 3/7 d. 9/5

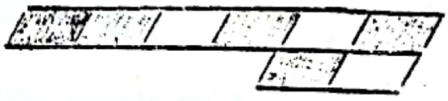
21. How many numbers will each group have if 32 groups will be formed from 384 delegates?
    a. 10 c. 14
    b. 12 d. 16

22. If 7,100 islands that composed the Philippines only 2773 have names. How many islands are still unnamed?
    a. 4,307 c. 3,347
    b. 4,327 d. 3,437

23. Mrs. Lopez engages in duck raising. She wanted to hatch 480 duck eggs. One incubator can hold 32 eggs. How many incubators does she need?
    a. 25 c. 10
    b. 15 d. 5

24. Which fraction is equivalent to one half?
    a. 3/4 c. 4/5
    b. 6/12 d. 8/10

25. What part of the figure is shaded?
    a. 1/8 c. 5/8
    b. 3/8 d. 7/8



26. Minda would ride in a jeep in going to school everyday. She rides 3 kilometers a day in each return trip to and from the school. How many kilometers does she ride in 5 days?
    a. 10 km. c. 15 km.
    b. 12 km. d. 18 km.

27. There are 1,000 meters in one kilometer. What part of a kilometer is one meter?
    a. .1 c. .001
    b. .01 d. .0001

28. If you multiply 3/5 by 1/3 what is the product?
    a. 3/15
    b. 4/15
    c. 5/15
    d. 6/15

29. This number 513 is divisible by:
    a. 2
    b. 3
    c. 4
    d. 5

30. What is the sum of 2.35, .05 and 1.6?
    a. .303
    b. 3.03
    c. 4.47
    d. 4.00

31. In a grade six class there are 9 boys and 18 girls. What is the ratio of boys to the number of girls?
    a. 1 : 2
    b. 1 : 5
    c. 1 : 4
    d. 1 : 3

32. Select the polygon with three sides.

    a.
    b.
    c.
    d.

33. Which of these figures is a pentagon?

    a.
    b.
    c.
    d.

34. What angle is formed if the hands of the clock is at 5:00 o'clock?
    a. acute angle
    b. right angle
    c. obtuse angle
    d. straight angle

35. One kilo of rice now cost ₱4.50. How much will Rita pay for seven kilos of rice?
    a. ₱28.50
    b. ₱31.50
    c. ₱32.50
    d. ₱33.50

36. Alberta has read 1/4 of a book which has 160 pages. How many pages has she read?
    a. 70
    b. 60
    c. 50
    d. 40

37. If Leo can solve difficult problem in 3 minutes, how many difficult problems can he solve for half an hour?
    a. 33
    b. 27
    c. 12
    d. 10

38. Which of the following figure has a right angle?

a.

c.

b.

d.

39. What is the guarantee of payment of borrowed money from the bank?

a. Principal
b. interest rate
c. amortization
d. collateral

40. At the rate of 10% a year. What is the interest of ₱2,000 for one year?

a. ₱100.00
b. ₱200.00
c. ₱300.00
d. ₱400.00

41. Which is the smallest fraction?

a. 1/2
b. 1/4
c. 2/3
d. 1/8

42. How many angles has a quadrilateral triangle?

a. 3
b. 4
c. 5
d. no angle

Below is a horizontal bar graph on a class median in grade six mathematics in certain school. Study the graph and answer each question found below:

Class Median in Mathematics VI

43. Which section has the highest median? _____

44. Which section has the lowest median? _____

45. What are the sections having the same median? _____

46. _____

47. Find the perimeter frame whose side is 50 cm.
    a. 100 cm. c. 180 cm.
    b. 150 cm. d. 200 cm.

48. If you will add these numbers 6,001, 524, 4,431, 33, and 1,010, what is the sum?
    a. 12,999 c. 11,999
    b. 21,989 d. 11,899

49. Pablo tried his best to divide 2.25 by 9 which has his answer?
    a. 2.5 c. .025
    b. 1.25 d. .25

50. Which of the following is one centavo in decimal form?
    a. ₱0.1 c. ₱0.01
    b. ₱01 d. ₱.001

APPENDIX H-1

ACHIEVEMENT TEST IN ELEMENTARY MATHEMATICS VI

ANSWERS KEY

1. d
2. d
3. c
4. c
5. c
6. c
7. d
8. c
9. a
10. c
11. d
12. c
13. c
14. d
15. c
16. c
17. d
18. a
19. b
20. d
21. b
22. b
23. b
24. b
25. c
26. c
27. c
28. a
29. b
30. d
31. a
32. b
33. a
34. a
35. b
36. d
37. d
38. d
39. c
40. a
41. d
42. b
43. Section 1
44. Section 4
45. Section 2
46. Section 5
47. d
48. b
49. d
50. c

APPENDIX H-2

TABLE OF SPECIFICATION

Elementary Mathematics
Grade VI

Objectives / Contents	Knowledge	Comprehension	Application	Total No. of Test	Weight in %
Whole Numbers	1, 2, 4 7, 13, 15 17, 39	10, 21, 22 23, 26, 35 36, 50	3, 5, 6, 8 6, 11, 12 14, 16, 19	30	60
Rational Numbers		40, 41	18, 20, 24 25, 28	7	14
Geometry	32	33, 38	34, 42	5	10
Measurements		27, 31, 37	47	4	8
Graph and Scale		43, 44, 45 46		2	8
Total No. of Test Items	9	19	22	50	
Weight in Percent	18	38	44		100

APPENDIX I

Ministry of Education, Culture and Sports
Region VIII
DIVISION OF SAMAR
Catbalogan, Samar

ACHIEVEMENT TEST IN COMMUNICATION ARTS ENGLISH
GRADE VI

Direction: Write S if the underlined sound are the same. If they are not, write the letter before the word that has a different sound.

Example:

a. gen b. gone c. generous d. gentle

Answer: b

1. a. Chant b. Choir c. Chorus d. Christmas

2. a. bake b. cake c. make d. take

3. a. apply b. simply c. reply d. comply

In the following words which syllable have stress, write the letter above the stressed syllable only.

	a.	b.	c.	d.
4.	hos	pi	ta	ble
	a.	b.	c.	d.
5.	com	mit	tee	
	a.	b.	c.	d.
6.	de	vel	op	ment
	a.	b.	c.	d.
7.	De	cem	ber	

In the following sentences indicate how the underlined words are pronounced by selecting the correct answer from those that follow. Write the letter only.

8. The secretary will <u>record</u> the results.
   a. record c. either a or b
   b. record d. both a and b

9. The object was in the room.
   a. o'bject
   b. object
   c. either a or b
   d. both a and b

On your paper draw an arrow after the number to indicate whether the sentence has a raising or falling intonation.

10. How much does this cost

11. This is the house that Jack built

12. Are you coming

Which of the answer given will complete the sentence? Write the letter of the correct answer.

13. Mr. Gerardo is the three _____ father.
   a. boy
   b. boy's
   c. boys'
   d. either of a or b

14. Three kilos of pork _____ ₱32.
   a. costs
   b. cost
   c. costing
   d. was cost

15. Mother gave this cloth to _____ .
   a. Nena and I
   b. Me and Nena
   c. I and Nena
   d. Nena and me

16. Did you eat early this morning? No _____ didn't.
   a. he
   b. I
   c. they
   d. she

17. Ronaldo is successful _____ when he was yet a student, he was diligent and industrious.
   a. since
   b. because
   c.
   d.

18. Which of the following statements is the indirect discourse of: The teacher told Delia "Erase the board."
   a. The teacher told Delia to erase the board.
   b. The teacher told to Delia to erase the board.
   c. Erase the board, said the teacher to Delia.
   d. None of these.

19. The newly elected president of the club begin the first meeting with this statement:
    a. The meeting will begin now.
    b. Let's begin the meeting now.
    c. The meeting will please come to order.
    d. Be quite everybody, we'll begin the meeting now.

20. Good news _____ me very much.
    a. interest
    b. interests
    c. interesting
    d. are interesting

21. Nilda dances _____ and sing.
    a. since
    b. when
    c. because
    d. while

22. If I _____ rich, I would help the poor.
    a. was
    b. am
    c. are
    d. were

23. Nena and her friends are beautiful ____ are beauty queens.
    a. each
    b. all
    c. both
    d. neither

24. Did you _____ the scout's meeting last Friday?
    a. attend
    b. attends
    c. attended
    d. will attend

25. The ____ were busy at the Nutrition Center.
    a. lady
    b. ladies
    c. lades
    d. ladis

26. The _____ were working on their barangay project.
    a. men
    b. man
    c. mean
    d. main

27. _____ are sweet when fully ripe.
    a. mango
    b. mangos
    c. mangoes
    d. manggos

28. Manila's _____ are tourist attraction.
    a. church
    b. churchs
    c. churcheses
    d. churches

29. Nena _____ to church on Sundays.
    a. went
    b. goes
    c. go
    d. gone

30. Mr. Santos _____ his taxes before March 15 last year.
a. pay c. paying
b. pays d. paid

Read the story carefully and do what you are asked to do.

A tree looked down at a flower one day and said, "look, how useless you are! Why aren't you strong and useful like me? People build houses, make boxes and chairs from my wood. I am very strong. I can stand here for years even when the wind blows. I pity you. You are tiny that just a little wind would blow you out of your stem." The tiny flower dropped her petals and said nothing. That night a strong wind blow. It blow so hard that everything that grow, snok and quivered. With a rattling crasing sound it hit the old tree. With a loud thud, the tree fell crashing on the ground.

The little flower clutched firmly on the soil. It was so small that the wind just blow around it. It was so soft that it swayed with the wind.

The next morning the sun shone brightly on the little flower that stand erect beside the fallen tree.

Find the word in the selection that means the same or nearly the same as the word in each number.

Example: 1. glad answer: happy

31. tiny

32. see

33. straight

Find the word in the selection that means the opposite or about the opposite of the word in each number.

Example: 1. bad answer: good

34. everything

35. useless

36. weak

37. hard

38. up

39. day

Read the question after each number carefully. From the choices following each question select the one that answers the question correctly.

40. What kind of flower is described in the story?

red tiny big yellow

41. What does the wind do?

shines grows blows shake

42. What does the sun do?

stands laughs shines storms

43. What happen to the tree after the wind blow hard?

It stood erect It fell down It grow tall

Write the letter correctly. Observe correct punctuation, capitalization and indention (7 points).

August 30 1983 48 San Roque St. Catbalogan Samar
Dear Mario I would like to invite you to our class party on Friday at 4:00 in the afternoon Please come
Roberto your friend.

APPENDIX I-1

ACHIEVEMENT TEST IN COMMUNICATION ARTS ENGLISH GRADE VI

ANSWERS KEY

1. a
2. a
3. b
4. b
5. b
6. b
7. b
8. b
9. b
10.
11.
12.
13. c
14. b
15. b
16. b
17. a
18. a
19. c
20. b
21. d
22. d
23. c
24. a
25. b
26. a
27. c
28. d
29. b
30. d
31. little or small
32. look
33. stand erect
34. nothing
35. useful
36. strong
37. soft
38. down
39. night
40. tiny
41. blows
42. shines
43. It fell down
44. San Roque St.
45. Catbalogan, Samar
46. Dear Mario
47. I would like to invite you to our class party on Friday at 4:00 in the afternoon.
48. Please come.
49. Your friend,
50. Roberto

APPENDIX I-2

TABLE OF SPECIFICATION

Communication Arts English
Grade VI

Objectives / Contents	Knowledge	Comprehension	Application	Total No. of Test	Wt. in %
Listening	4, 5, 6, 7			4	8
Speaking	1, 2, 5		13, 14, 15 16, 17, 18 19, 20, 21 22, 23, 24 25, 26, 27 28, 29, 30	21	42
Reading		31, 32, 33 34, 35, 36 37, 38, 39 40, 41, 42 43	8, 9, 13	16	32
Writing	10, 11, 12		44, 45, 46 47, 48, 49 50	10	20
Total No. of Test Items	10	13	27	50	
Wt. in %	20	26	54		100

APPENDIX J

DATA COLLECTED FROM 120 GRADE SIX PUPILS

Respondents	X_1	X_2	Y_1	Y_2
1	39	90	31	85
2	24	89	33	83
3	24	81	17	83
4	31	81	40	89
5	21	80	29	81
6	33	90	33	86
7	29	85	26	81
8	23	82	22	83
9	39	87	41	87
10	32	82	38	84
11	29	82	36	86

Legend:

X_1 = Achievement score in elementary mathematics

X_2 = Scholastic achievement rating in elementary mathematics

Y_1 = Achievement score in communication arts English

Y_2 = Scholastic achievement rating in communication arts English.

DATA COLLECTED ... (Cont'd.)

Respondents	X_1	X_2	Y_1	Y_2
12	26	85	31	86
13	27	82	33	84
14	28	83	24	85
15	21	83	24	83
16	11	79	19	83
17	14	79	20	85
18	19	83	25	82
19	28	78	16	84
20	12	78	14	78
21	29	85	29	83
22	26	85	36	82
23	23	80	24	82
24	41	93	43	89
25	26	84	20	84
26	40	84	39	86
27	26	85	27	85
28	30	78	39	81
29	17	79	22	80
30	27	83	26	84
31	15	83	25	88
32	21	79	13	78
33	10	78	20	79
34	23	79	36	81
35	21	83	35	83
36	24	84	22	83
37	26	81	37	88
38	20	80	24	83

DATA COLLECTED ... (Cont'd.)

Respondents	X_1	X_2	Y_1	Y_2
39	18	83	28	88
40	16	80	23	83
41	42	84	38	88
42	46	90	39	93
43	45	84	37	84
44	42	84	28	81
45	42	90	37	92
46	21	82	32	82
47	42	83	37	79
48	15	80	14	78
49	32	83	30	81
50	27	79	19	80
51	25	81	27	86
52	21	78	11	81
53	18	80	16	78
54	20	78	18	80
55	17	79	12	75
56	33	80	17	85
57	17	79	33	77
58	15	84	24	85
59	21	79	18	79
60	17	79	16	78

DATA COLLECTED ... (Cont'd.)

Respondents	X_1	X_2	Y_1	Y_2
61	46	85	38	91
62	42	82	37	92
63	44	83	39	84
64	26	80	21	80
65	26	80	21	80
66	37	81	33	82
67	37	80	24	79
68	24	81	31	84
69	21	82	29	84
70	28	79	35	87
71	36	86	36	86
72	36	85	32	83
73	36	81	29	81
74	40	91	39	90
75	39	80	36	83
76	13	83	23	84
77	17	80	21	81
78	20	81	35	84
79	19	75	28	78
80	21	79	25	84
81	29	86	38	79

DATA COLLECTED ... (Cont'd.)

Respondents	X_1	X_2	Y_1	Y_2
82	21	77	30	78
83	26	82	43	82
84	33	77	33	78
85	22	78	35	75
86	19	80	31	76
87	44	92	40	92
88	40	85	40	87
89	37	77	38	77
90	38	77	37	80
91	43	92	41	92
92	41	86	31	85
93	40	80	34	75
94	42	83	40	82
95	44	81	40	82
96	43	79	41	77
97	36	79	36	77
98	37	80	39	77
99	40	79	40	76
100	31	86	31	85
101	28	81	40	83
102	24	82	37	85

DATA COLLECTED ... (Cont'd.)

Respondents	X_1	X_2	Y_1	Y_2
103	24	84	34	82
104	22	84	35	80
105	17	78	38	80
106	24	82	39	81
107	33	81	34	81
108	23	85	40	83
109	25	80	42	83
110	25	80	39	85
111	44	93	41	93
112	35	87	42	87
113	37	84	40	89
114	31	80	38	82
115	42	92	38	92
116	30	76	35	77
117	26	75	35	77
118	41	87	39	88
119	32	82	38	87
120	23	80	29	80

DATA COLLECTED ... (Cont'd.)

Respondents	X_1	X_2	Y_1	Y_2
103	24	84	34	82
104	22	84	35	80
105	17	78	38	80
106	24	82	39	81
107	33	81	34	81
108	23	85	40	83
109	25	80	42	83
110	25	80	39	85
111	44	93	41	93
112	35	87	42	87
113	37	84	40	89
114	31	80	38	82
115	42	92	38	92
116	30	76	35	77
117	26	75	35	77
118	41	87	39	88
119	32	82	38	87
120	23	80	29	80

APPENDIX K

RELIABILITY COEFFICIENT OF ACHIEVEMENT TEST IN ELEMENTARY MATHEMATICS GRADE SIX

	f	d	fd	fd^2
44 - 47	12	5	60	300
40 -43	11	4	44	176
36 - 39	15	3	45	135
32 - 35	8	2	16	24
28 - 31	13	1	13	13
24 - 27	22	0	0	0
20 - 23	20	-1	-20	20
16 - 19	11	-2	-22	44
12 - 15	6	-3	-18	54
8 - 11	2	-4	- 8	32
	N=120		Efd=110	Efd^2=798

$$M = AM + \frac{Efd}{N} \times i$$

$$= 25.5 + \frac{110}{120} \times 4$$

$$= 25.5 + .92 \times 4$$

$$= 25.5 + 3.68$$

$$M = 29.18$$

APPENDIX K-1

COMPUTATION FOR THE STANDARD DEVIATION AND THE PEARSON PRODUCT MOMENT (r)

$$SD \pm = i\sqrt{\frac{Efd^2}{N} - \left(\frac{Efd}{N}\right)^2}$$

$$= 4\sqrt{\frac{798}{120} - \left(\frac{110}{120}\right)^2}$$

$$= 4\sqrt{6.65 - .8464}$$

$$= 4\sqrt{5.8036}$$

$$= 4 \times 2.41$$

$$SD = 9.64$$

Heterogeneously grouped

$$r = \frac{K}{K-1}\left[1 - \frac{M(K-M)}{KS^2}\right]$$

$$= \frac{50}{50-1}\left[1 - \frac{29.18(50-29.18)}{50(9.64)^2}\right]$$

$$= \frac{50}{49}\left[1 - \frac{29.18(21)}{50(92.9296)}\right]$$

$$= \frac{50}{49}\left(1 - \frac{611}{4646.48}\right)$$

$$= 1.02\ (1 - .13)$$

$$= 1.02\ (.87)$$

$$r = .89$$

APPENDIX L

RELIABILITY COEFFICIENT OF ACHIEVEMENT TEST IN COMMUNICATION ARTS ENGLISH GRADE SIX

	f	d	fd	fd^2
42 - 44	4	6	24	144
39 - 41	22	5	110	550
36 - 38	24	4	96	384
33 - 34	15	3	45	135
30 - 34	8	2	16	32
27 - 29	10	1	10	10
24 - 26	11	0	0	0
21 - 23	7	-1	-7	7
18 - 20	7	-2	-14	28
15 - 17	6	-3	-18	54
12 - 14	4	-4	-16	64
9 - 11	2	-5	-10	50
	N=120		Efd=236	Efd^2=1458

$$M = AM + \frac{Efd}{N} \times i$$

$$= 25 + \frac{236}{120} \times 3$$

$$= 25 + 1.97 \times 3$$

$$= 25 + 5.91$$

$$M = 30.91$$

$$SD = i\sqrt{\frac{Efd^2}{N} - \left(\frac{Efd}{N}\right)^2}$$

$$= 3\sqrt{\frac{1458}{120} - \left(\frac{236}{120}\right)^2}$$

$$= 3\sqrt{12.15 - (1.97)^2}$$

$$= 3\sqrt{12.5 - 3.8809}$$

$$= 3\sqrt{8.6191}$$

$$= 3 \times 2.94$$

$$SD = 8.82$$

$$r = \frac{K}{K-1}\left[1 - \frac{M(K-M)}{KS^2}\right]$$

$$= \frac{50}{50-1}\left[1 - \frac{30.91(50-30.91)}{50(8.82)^2}\right]$$

$$= \frac{50}{49}\left[1 - \frac{30.91(19.09)}{50(77.7924)}\right]$$

$$= 1.02\left[1 - \frac{590.0719}{3889.62}\right]$$

$$= 1.02\ (1 - 0.1517)$$

$$= 1.02\ (.85)$$

$$r = .86$$

Heterogeneously grouped

APPENDIX M

Achievement Level of Each Grade Six Pupil in Elementary Mathematics of Catbalogan I Central

Respondents	RS	PS	ML
1	39	78	78
2	24	48	48
3	24	48	48
4	31	62	62
5	21	42	42
6	33	66	66
7	29	58	58
8	23	46	46
9	39	78	78
10	32	64	64
11	29	58	58
12	26	52	52
13	27	54	54
14	28	56	56

Legend :

RS = Raw Score

PS = Percentage Score

ML = Mastery Level

Achievement Level ... (Cont'd.)

Respondents	RS	PS	ML
15	21	42	42
16	11	22	22
17	14	28	28
18	19	38	38
19	28	56	56
20	12	24	24
21	29	58	58
22	26	52	52
23	23	46	46
24	41	81	81
25	26	52	52
26	40	80	80
27	26	52	52
28	30	60	60
29	17	34	34
30	27	60	60
31	15	30	30
32	21	42	42
33	10	20	20
34	23	46	46
35	21	42	42

Achievement Level ... (Cont'd.)

Respondents	RS	PS	ML
36	24	48	48
37	26	52	52
38	20	40	40
39	18	36	36
40	16	32	32

APPENDIX M-1

ACHIEVEMENT LEVEL OF GRADE SIX PUPILS IN ELEMENTARY MATHEMATICS OF CATBALOGAN I CENTRAL

	f	d	fd
39 - 41	4	5	20
36 - 38	0	4	0
33 - 34	1	3	3
30 -32	3	2	6
27 - 29	7	1	7
24 - 26	8	0	0
21 - 23	7	-1	-7
18 - 20	3	-2	-6
15 - 17	3	-3	-9
12 - 14	2	-4	-8
9 - 11	2	-5	-10
	N=40		Efd= -4

$$M = AM + \frac{Efd}{N} \times i$$

$$= 25 + \frac{-4}{40} \times 3$$

$$= 25 - .01 \times 3$$

$$= 25 - .03$$

$$M = 24.7$$

$$\text{MPRS} = \frac{\text{Mean}}{\text{Total No. of Test Items}} \times 100$$

$$= \frac{24.7}{50} \times 100$$

MPRS = 49.4 Below average

$$\begin{array}{r} 50 \\ \times\ .75 \\ \hline 250 \\ 350 \\ \hline 37.50 \end{array}$$

Standard score

$$\text{Mastery Level} = \frac{\text{no. of pupils who obtained the standard score of 37.5}}{\text{no. of pupils who took the test}} \times 100$$

$$= \frac{4}{40} \times 100$$

$$= .10 \times 100$$

M.L. = 10%

APPENDIX M-2

Achievement Level of Each Grade Six Pupil in Elementary Mathematics of Catbalogan II Central

Respondents	RS	PS	ML
41	42	84	84
42	46	92	92
43	45	90	90
44	42	84	84
45	42	84	84
46	21	42	42
47	42	84	84
48	15	30	30
49	32	64	64
50	27	54	54
51	25	50	50
52	21	42	42
53	18	36	36

Legend :

RS = Raw score

PS = Percentage score

ML = Mastery Level

Achievement Level ... (Cont'd.)

Respondents	RS	PS	ML
54	20	40	40
55	17	34	34
56	33	66	66
57	17	34	34
58	15	30	30
59	21	79	18
60	17	34	34
61	46	92	92
62	42	84	84
63	44	88	88
64	26	52	52
65	26	52	52
66	37	74	74
67	37	74	74
68	24	48	48
69	21	42	42
70	28	56	56
71	36	72	72
72	36	72	72
73	36	72	72
74	40	80	80

Achievement Level ... (Cont'd.)

Respondents	RS	PS	ML
75	39	78	78
76	13	26	26
77	17	34	34
78	20	40	40
79	19	38	38
80	21	42	42

APPENDIX M-3

ACHIEVEMENT LEVEL OF GRADE SIX PUPILS IN ELEMENTARY MATHEMATICS IN CATBALOGAN II CENTRAL

	f	d	fd
45 - 47	3	6	18
42 - 44	6	5	30
39 - 41	2	4	8
36 - 38	5	3	15
33 - 35	1	2	2
30 - 32	1	1	1
27 - 29	2	0	0
24 - 26	4	-1	-4
21 - 23	5	-2	-10
18 - 20	4	-3	-12
15 - 17	6	-4	-24
12 - 14	1	-5	-5
	N = 40		Efd=33

$$M = AM + \frac{Efd}{N} \times i$$

$$= 28 + \frac{33}{40} \times 3$$

$$= 28 + .82 \times 3$$

$$= 28 + 2.46$$

$$M = 30.46$$

$$\text{MPRS} = \frac{\text{Mean}}{\text{No. of Test Items}} \times 100$$

$$= \frac{30.46}{50} \times 100$$

$$= .6092 \times 100$$

MPRS = 60.92 Below average

$$\text{Mastery Level} = \frac{\text{No. of pupils who obtained the score of 37.5}}{\text{Total No. of Pupils who took the test}} \times 100$$

$$= \frac{11}{40} \times 100$$

$$= .28 \times 100$$

M.L. = 28%

APPENDIX M-4

Achievement Level of Each Grade Six Pupil in Elementary Mathematics of Catbalogan III Central

Respondents	RS	PS	ML
81	29	58	58
82	21	42	42
83	26	52	52
84	33	66	66
85	22	44	44
86	19	38	38
87	44	88	88
88	40	80	80
89	37	74	74
90	38	76	76
91	43	86	86
92	41	82	82
93	40	80	80
94	42	84	84
95	44	88	88

Legend:

RS = Raw score

PS = Percentage score

ML = Mastery level

Achievement Level ... (Cont'd.)

Respondents	RS	PS	ML
96	43	86	86
97	36	72	72
98	37	74	74
99	40	80	80
100	31	62	62
101	28	56	56
102	24	48	48
103	24	48	48
104	22	44	44
105	17	34	34
106	24	48	48
107	33	66	66
108	23	46	46
109	25	50	50
110	25	50	50
111	44	88	88
112	35	70	70
113	37	74	74
114	31	62	62
115	42	84	84
116	30	60	60

Achievement Level ... (Cont'd.)

Respondents	RS	PS	ML
117	26	52	52
118	41	82	82
119	32	64	64
120	23	46	46

APPENDIX M-5

ACHIEVEMENT LEVEL OF GRADE SIX PUPILS IN ELEMENTARY MATHEMATICS OF CATBALOGAN III CENTRAL

	f	d	fd
42 - 44	7	5	35
39 - 41	5	4	20
36 - 38	5	3	15
33 - 35	3	2	6
30 - 32	4	1	4
27 - 29	2	0	0
24 - 26	7	-1	-7
21 - 23	5	-2	-10
18 - 20	1	-3	-3
15 - 17	1	-4	-4
	N=40		Efd=56

$$M = AM + \frac{Efd}{N} \times i$$

$$= 28 + \frac{56}{40} \times 3$$

$$= 28 + 1.4 \times 3$$

$$= 28 + 4.2$$

$$M = 32.2$$

$$\text{MPRS} = \frac{\text{Mean}}{\text{No. of Test Items}} \times 100$$

$$= \frac{32.2}{50} \times 100$$

$$= .644 \times 100$$

MPRS = 64.5 Below average

$$\text{Mastery Level} = \frac{\text{No. of pupils with score of 37.5}}{\text{Total No. of Pupils who took the test}} \times 100$$

$$= \frac{13}{40} \times 100$$

M.L. = 32.5

APPENDIX N

Achievement Level of Each Grade Six Pupil in Communication Arts English of Catbalogan I Central

Respondents	RS	PS	ML
1	31	62	62
2	33	66	66
3	17	34	34
4	40	80	80
5	29	58	58
6	33	66	66
7	26	52	52
8	22	44	44
9	41	82	82
10	38	76	76
11	36	72	72
12	31	62	62
13	33	66	66

Legend:

RS = Raw score

PS = Percentage score

ML = Mastery level

Achievement level ... (Cont'd.)

Respondents	RS	PS	ML
14	24	48	48
15	24	48	48
16	19	38	38
17	20	40	40
18	25	50	50
19	25	50	50
20	14	28	28
21	29	58	58
22	36	72	72
23	24	48	48
24	43	86	86
25	20	40	40
26	39	78	78
27	27	54	54
28	39	78	78
29	22	44	44
30	26	52	52
31	25	50	50
32	13	26	26
33	20	40	40
34	36	72	72

Achievement Level ... (Cont'd.)

Respondents	RS	PS	ML
35	35	70	70
36	22	44	44
37	37	74	74
38	24	48	48
39	28	56	56
40	23	46	46

APPENDIX N-1

ACHIEVEMENT LEVEL OF GRADE SIX PUPILS IN COMMUNICATION ARTS ENGLISH OF CATBALOGAN I CENTRAL

	f	d	fd
42 - 44	1	5	5
39 - 41	4	4	16
36 - 38	5	3	15
33 - 35	4	2	8
30 - 32	2	1	2
27 - 29	4	0	0
24 - 26	8	-1	-8
21 - 23	4	-2	-8
18 - 20	4	-3	-12
15 - 17	2	-4	-8
12 - 14	2	-5	-10
	N=40		Efd = 0

$$M = AM + \frac{Efd}{N} \times i$$

$$= 28 + \frac{0}{40} \times 3$$

$$= 28 + 0$$

$$M = 28$$

$$\text{MPRS} = \frac{\text{Mean}}{\text{Number of Test Items}} \times 100$$

$$= \frac{28}{50} \times 100$$

$$= .56 \times 100$$

MPRS = 56 Below average

$$\text{Mastery level} = \frac{\text{No. of pupils who obtained score of 37.5}}{\text{No. of pupils who took the test}} \times 100$$

$$= \frac{6}{40} \times 100$$

$$= .15 \times 100$$

M.L. = 15

APPENDIX N-2

Achievement Level of Each Grade Six Pupil in Communication Arts English of Catbalogan II Central

Respondents	RS	PS	ML
41	38	76	76
42	39	78	78
43	37	74	74
44	28	56	56
45	37	74	74
46	32	64	64
47	37	74	74
48	14	28	28
49	30	60	60
50	19	38	38
51	27	54	54
52	11	22	22
53	16	32	32
54	18	36	36
55	12	24	24
56	17	34	34

Achievement Level ... (Cont'd.)

Respondents	RS	PS	ML
57	33	66	66
58	24	48	48
59	18	36	36
60	16	32	32
61	38	76	76
62	37	74	74
63	39	78	78
64	21	42	42
65	21	42	42
66	33	66	66
67	24	48	48
68	31	62	62
69	29	58	58
70	35	70	70
71	36	72	72
72	32	64	64
73	29	58	58
74	39	78	78
75	36	72	72
76	23	46	46

Achievement Level ... (Cont'd.)

Respondents	RS	PS	ML
77	21	42	42
78	35	70	70
79	28	56	56
80	25	50	50

APPENDIX N-3

ACHIEVEMENT LEVEL OF GRADE SIX PUPILS IN COMMUNICATION ARTS ENGLISH OF CATBALOGAN II CENTRAL

	f	d	fd
39 - 41	3	5	15
36 - 38	8	4	32
33 - 35	4	3	12
30 - 32	4	2	8
27 - 29	5	1	5
24 - 26	3	0	0
21 - 23	4	-1	-4
18 - 20	3	-2	-6
15 - 17	3	-3	-9
12 - 14	2	-4	-8
9 -11	1	-5	-5
	N=40		Efd=40

$$M = AM + \frac{Efd}{N} \times 3$$

$$= 25 + \frac{40}{40} \times 3$$

$$= 25 + 1 \times 3$$

$$= 25 + 3$$

$$M = 28$$

$$\text{MPRS} = \frac{\text{Mean}}{\text{Number of Test Items}} \times 100$$

$$= \frac{28}{50} \times 100$$

$$= .56 \times 100$$

MPRS = 56 Below average

$$\text{Mastery Level} = \frac{\text{Number of pupils who obtained score of 37.5}}{\text{Number of pupils who took the test}} \times 100$$

$$= \frac{5}{40} \times 100$$

$$= .125 \times 100$$

M.L. = 12.5

APPENDIX N-4

ACHIEVEMENT LEVEL OF EACH GRADE SIX PUPIL IN COMMUNICATION ARTS ENGLISH OF CATBALOGAN III CENTRAL

Respondents	RS	PS	ML
81	38	76	76
82	30	60	60
83	43	86	86
84	33	66	66
85	35	70	70
86	31	62	62
87	40	80	80
88	40	80	80
89	38	76	76
90	37	74	74
91	41	82	82
92	31	62	62
93	34	68	68
94	40	80	80
95	40	80	80
96	41	82	82
97	36	72	72

APPENDIX N-4

ACHIEVEMENT LEVEL OF EACH GRADE SIX PUPIL IN COMMUNICATION ARTS ENGLISH OF CATBALOGAN III CENTRAL

Respondents	RS	PS	ML
81	38	76	76
82	30	60	60
83	43	86	86
84	33	66	66
85	35	70	70
86	31	62	62
87	40	80	80
88	40	80	80
89	38	76	76
90	37	74	74
91	41	82	82
92	31	62	62
93	34	68	68
94	40	80	80
95	40	80	80
96	41	82	82
97	36	72	72

ACHIEVEMENT ... (Cont'd.)

Respondents	RS	PS	ML
98	39	78	70
99	40	80	80
100	31	62	62
101	40	80	80
102	37	74	74
103	34	68	68
104	35	70	70
105	38	76	76
106	39	78	78
107	34	68	68
108	40	80	80
109	42	84	84
110	39	78	78
111	41	82	82
112	42	84	84
113	40	80	80
114	38	76	76
115	38	76	76
116	35	70	70
117	35	70	70
118	39	78	78

ACHIEVEMENT ... (Cont'd.)

Respondents	RS	PS	ML
119	38	76	76
120	29	58	58

Legend:

RS = Raw score

PS = Percentage score

ML = Mastery Level

APPENDIX N-5

ACHIEVEMENT LEVEL OF GRADE SIX PUPILS IN COMMUNICATION ARTS ENGLISH OF CATBALOGAN III CENTRAL

	f	d	fd
43	1	7	7
42	2	6	12
41	3	5	15
40	8	4	32
39	4	3	12
38	6	2	12
37	2	1	2
36	1	0	0
35	4	-1	-4
34	3	-2	-6
33	1	-3	-3
32	0	-4	0
31	3	-5	-15
30	1	-6	-6
29	1	-7	-7
	N=40		Ffd=50

$$M = AM + \frac{Ffd}{N} \times i$$

$$= 36 + \frac{50}{40} \times 1 = 36 + 1.25$$

$$M = 37.25$$

$$\text{MPRS} = \frac{\text{Mean}}{\text{Number of Test Items}} \times 100$$

$$= \frac{37.25}{50} \times 100$$

$$= .745 \times 100$$

MPRS = 74.5 Average

$$\text{Mastery Level} = \frac{\text{Number of pupils who obtained the score of 37.5}}{\text{Number of pupils who took the test}} \times 100$$

$$= \frac{23}{40} \times 100$$

$$= .575 \times 100$$

M.L. = 57.5

APPENDIX O

SCHOLASTIC ACHIEVEMENT LEVEL IN ELEMENTARY MATHEMATICS OF GRADE SIX PUPILS OF CATBALOGAN I CENTRAL

	f	d	fd	fd^2
92 - 93	1	4	4	16
90 - 91	2	3	6	18
88 - 89	1	2	2	4
86 - 87	1	1	1	1
84 - 85	8	0	0	0
82 - 83	11	-1	-11	11
80 - 81	7	-2	-14	28
78 - 79	9	-3	-27	81
	N=40		Efd=37	Efd^2=159

$$M = AM + \frac{Efd}{N} \times 1$$

$$= 84.5 + \frac{-37}{40} \times 2$$

$$= 84.5 - .92 \times 2$$

$$= 84.5 - 1.84$$

$M = 82.66$ Satisfactory mathematical ability

$$SD = i \sqrt{\frac{Efd^2}{N} - \left(\frac{Efd}{N}\right)^2}$$

$$= 2 \sqrt{\frac{159}{.40} - \left(\frac{-37}{40}\right)^2} .$$

$$= 2 \sqrt{3.975 - (.92)^2}$$

$$= 2 \sqrt{3.975 - .8464}$$

$$= 2 \sqrt{3.1286}$$

$$= 2 \times 1.77$$

SD = 3.54 Homogeneously grouped

APPENDIX O-1

SCHOLASTIC ACHIEVEMENT LEVEL OF GRADE SIX PUPILS IN ELEMENTARY MATHEMATICS OF CATBALOGAN II CENTRAL

	f	d	fd	fd^2
90 - 91	3	4	12	48
88 - 89	0	3	0	0
86 - 87	1	2	2	4
84 - 85	6	1	6	6
82 - 83	7	0	0	0
80 - 81	13	-1	-13	13
78 - 79	9	-2	-18	36
76 - 77	0	-3	0	0
74 - 75	1	-4	-4	16
	N=40		Efd=-15	Efd^2=123

$$M = AM + \frac{Efd}{N} \times i$$

$$= 82.5 + \frac{-15}{40} \times 2$$

$$= 82.5 - .38 \times 2$$

$$= 82.5 - 0.76$$

$M = 81.74$ Satisfactory mathematical ability

$$SD = i \sqrt{\frac{Efd^2}{N} - \left(\frac{Efd}{N}\right)^2}$$

$$= 2 \sqrt{\frac{123}{40} - \left(\frac{-15}{40}\right)^2}$$

$$= 2 \sqrt{3.075 - (.38)^2}$$

$$= 2 \sqrt{3.075 - .1444}$$

$$= 2 \sqrt{2.9306}$$

$$= 2 \times 1.71$$

SD = 3.42 Homogeneously grouped

APPENDIX O-2

SCHOLASTIC ACHIEVEMENT LEVEL OF GRADE SIX PUPILS IN ELEMENTARY MATHEMATICS OF CATBALOGAN III CENTRAL

	f	d	fd	fd^2
92 - 93	4	5	20	100
90 - 91	0	4	0	0
88 - 89	0	3	0	0
86 - 87	5	2	10	20
84 - 85	5	1	5	5
82 - 83	5	0	0	0
80 - 81	10	-1	-10	10
78 - 79	5	-2	-10	20
76 - 77	5	-3	-15	45
74 - 75	1	-4	-4	16
	N=40		Efd=-4	Efd^2=216

$$M = AM + \frac{Efd}{N} \times i$$

$$= 82.5 + \frac{-4}{40} \times 2$$

$$= 82.5 - .1 \times 2$$

$$= 82.5 - 0.2$$

M = 82.3 Satisfactory mathematical ability

$$SD = i \sqrt{\frac{Efd^2}{N} - \left(\frac{Efd}{N}\right)^2}$$

$$= 2 \sqrt{\frac{216}{40} - \left(\frac{-4}{40}\right)^2}$$

$$= 2 \sqrt{5.4 - (.1)^2}$$

$$= 2 \sqrt{5.4 - .01}$$

$$= 2 \sqrt{5.39}$$

$$= 2 \times 2.32$$

SD = 4.64 Homogeneously grouped

APPENDIX P

SCHOLASTIC ACHIEVEMENT LEVEL OF GRADE SIX PUPILS IN COMMUNICATION ARTS ENGLISH CATBALOGAN I CENTRAL SCHOOL

	f	d	fd	fd^2
89	2	6	12	72
88	3	5	15	75
87	1	4	4	16
86	4	3	12	36
85	4	2	8	16
84	5	1	5	5
83	10	0	0	0
82	3	-1	-3	3
81	4	-2	-8	16
80	1	-3	-3	9
79	1	-4	-4	16
78	2	-5	-10	50
	N=40		Efd=28	Efd^2=314

$$M = AM + \frac{Efd}{N} \times i$$

$$= 83 + \frac{28}{40} \times 1$$

$$= 83 + 0.7 \times 1$$

M = 83.7 Satisfactory language ability

$$SD = i\sqrt{\frac{Efd^2}{N} - \frac{Efd}{N}^2}$$

$$= 1\sqrt{\frac{314}{40} - \frac{28}{40}^2}$$

$$= 1\sqrt{7.85 - (0.7)^2}$$

$$= 1\sqrt{7.85 - 0.49}$$

$$= 1\sqrt{7.36}$$

$$= 1 \times 2.71$$

SD = 2.71 Homogeneously grouped

APPENDIX P-1

SCHOLASTIC ACHIEVEMENT LEVEL OF GRADE SIX PUPILS IN COMMUNICATION ARTS ENGLISH OF CATBALOGAN II CENTRAL

	f	d	fd	fd^2
92 -93	3	5	15	75
90 - 91	2	4	8	32
88 - 89	1	3	3	9
86 - 87	3	2	6	12
84 - 85	9	1	9	9
82 - 83	5	0	0	0
80 - 81	8	-1	-8	8
78 - 79	7	-2	-14	28
76 - 77	1	-3	-3	9
74 - 75	1	-4	-4	16
	N=40		Efd=12	Efd^2=198

$$M = AM + \frac{Efd}{N} \times i$$

$$= 82.5 + \frac{12}{40} \times 2$$

$$= 82.5 + 0.3 \times 2$$

$$= 82.5 + 0.6$$

$M = 83.1$ Satisfactory language ability

$$SD = i\sqrt{\frac{Efd^2}{N} - \left(\frac{Efd}{N}\right)^2}$$

$$= 2\sqrt{\frac{198}{40} - \left(\frac{12}{40}\right)^2}$$

$$= 2\sqrt{4.95 - (0.3)^2}$$

$$= 2\sqrt{4.95 - 0.09}$$

$$= 2\sqrt{4.86}$$

$$= 2 \times 2.20$$

$SD = 4.41$ Homogeneously grouped

APPENDIX P-2

SCHOLASTIC ACHIEVEMENT LEVEL OF GRADE SIX PUPILS IN COMMUNICATION ARTS ENGLISH OF CATBALOGAN III CENTRAL

	f	d	fd	fd^2
92 - 93	4	5	20	100
90 - 91	0	4	0	0
88 - 89	2	3	6	18
86 - 87	3	2	6	12
84 - 85	4	1	4	4
82 - 83	8	0	0	0
80 - 81	6	-1	-6	6
78 - 79	3	-2	-6	12
76 - 77	8	-3	-24	72
74 - 75	2	-4	-8	32
	N=40		Efd=-8	Efd^2=258

$$M = AM + \frac{Efd}{N} \times i$$

$$= 82.5 + \frac{-8}{40} \times 20$$

$$= 82.5 - 0.2 \times 2$$

$$= 82.5 - 0.4$$

M = 82.1 Satisfactory language ability

$$SD = i\sqrt{\frac{Efd^2}{N} - \left(\frac{Efd}{N}\right)^2}$$

$$= 2\sqrt{\frac{258}{40} - \left(\frac{-8}{40}\right)^2}$$

$$= 2\sqrt{6.45 - (0.2)^2}$$

$$= 2\sqrt{6.45 - 0.04}$$

$$= 2\sqrt{6.41}$$

$$= 2 \times 2.53$$

$$SD = 5.06$$

APPENDIX Q

SCATTERGRAM FOR THE ACHIEVEMENT SCORES AND THE SCHOLASTIC ACHIEVEMENT IN ELEMENTARY MATHEMATICS

	75-76	77-78	79-80	81-82	83-84	85-86	87-88	89-90	91-91	93-94	fy	y'	fy'	fy'^{2}	Ex'y'	Ex'
44-47				(-5) 1 -5	0 2 0	(5) 1 5		(15) 2 30	(20) 1 20	(25) 1 25	8	5	40	200	75	15
40-43			(-8) 3 -24	(-4) 1 -4	0 4 0	(4) 2 8	(8) 1 8		(16) 3 48	(20) 1 20	15	4	60	240	56	14
36-39		(-9) 2 -18	(-6) 5 -30	(-3) 3 -9	0 1 0	3 3 9		(9) 1 9			15	3	45	135	39	-13
32-35		(-6) 1 -6	(-4) 1 -4	(-2) 3 -6	0 1 0	(4) 1 4	(6) 1 6				8	2	16	32	-6	-3
28-31	(-4) 1 -4	(-3) 1 -3	(-2) 2 -4	(-1) 2 -2	0 2 0	(1) 5 5					13	1	13	13	-8	-8
24-27	0 1 0		0 5 0	0 8 0	0 4 0	0 3 0	0 1 0				22	0				-17
20-23		(3) 5 15	(2) 8 16	(1) 4 4	0 3 0	-1 1 -1					21	-1	-21	21	34	-34
16-19	(8) 1 8	(6) 1 6	(4) 7 28		0 2 0						11	-2	-22	44	42	-21
12-15			(6) 2 12	(3) 1 3	0 2 0						5	-3	-15	45	15	-5
8-11		(12) 1 12	(8) 1 8								2	-4	-8	32	20	-5
fx	3	11	34	23	21	15	3	4	4	2	120		108	762	189	-77
x	-4	-3	-2	-1	0	1	2	3	4	5						
fx'	-12	-33	-68	-23		15	6	12	16	10	-77					
fx'^{2}	48	99	136	23		15	12	36	64	50	483					
Ex'y'	4	6	2	-19	0	26	12	45	68	45	189					
Ey'	-1	-2	-1	19	20	26	6	15	17	9	108					

Legend:

x = Achievement score in Elementary Mathematics

y = Scholastic achievement rating in Elementary Mathematics

$$My' = \frac{Efy'}{N}$$

$$= \frac{108}{120}$$

$$My' = 0.9$$

$$Mx' = \frac{Efx'}{N}$$

$$= \frac{-77}{120}$$

$$Mx' = 0.642$$

$$Oy' = \sqrt{\frac{Efy'^2}{N} - My'}$$

$$= \sqrt{\frac{762}{120} - (0.9)^2}$$

$$= \sqrt{6.35 - 0.81}$$

$$= \sqrt{5.54}$$

$$Oy' = 2.35$$

$$Ox' = \sqrt{\frac{Efx'^2}{N} - Mx'}$$

$$= \sqrt{\frac{483}{120} - (-0.642)^2}$$

$$= \sqrt{4.025 - 0.4122}$$

$$= \sqrt{3.6128}$$

$$Ox' = 1.90$$

$$rxy = \frac{\frac{Ex'y'}{N} - My'(Mx')}{Oy'\ (Ox')}$$

$$= \frac{\frac{189}{120} - (0.9)(-0.642)}{2.35\ (1.90)}$$

$$= \frac{1.575 + 0.5778}{4.465}$$

$$= \frac{2.1528}{4.465}$$

$$rxy = 0.48$$ Substantial or moderate relationship

APPENDIX Q-1

COMPUTATIONS OF THE T-VALUE OF RELATIONSHIP BETWEEN ACHIEVEMENT SCORE AND SCHOLASTIC ACHIEVEMENT IN ELEMENTARY MATHEMATICS

$$t = \frac{r\sqrt{N-2}}{\sqrt{1-r^2}}$$

$$= \frac{0.48\sqrt{120-2}}{\sqrt{1-(0.48)^2}}$$

$$= \frac{0.48\sqrt{118}}{\sqrt{1-0.2304}}$$

$$= \frac{0.48\ (10.86)}{\sqrt{0.7696}}$$

$$= \frac{5.2128}{0.877}$$

$$t = 5.95$$

$$c.v. = 1.98$$

Interpretation. The computed t of 5.95 is greater than the tabular or critical value of 1.98, therefore H is rejected and H_i is accepted with .05 level of significance.

APPENDIX R

RELATIONSHIP BETWEEN ACHIEVEMENT SCORE AND SCHOLASTIC ACHIEVEMENT IN ENGLISH

	74-75	76-77	78-79	80-81	82-83	84-85	86-87	88-89	90-91	92-93	f	y	fy'	fy'^{2}	Ex'y'	Ex'
41-43		(15) 1 -15			0 2 0		(10) 2 20	(15) 1 15		(25) 2 50	8	5	40	200	70	14
38-40		(12) 2 -24	(-8) 1 -8	(-4) 3 -12	0 5 0	(4) 3 12	(8) 3 24	(12) 4 48	(16) 2 32	(20) 3 60	26	4	104	416	132	33
35-37	(-12) 1 -12	(-9) 4 -36	(-6) 1 -6	(-3) 3 -9	0 3 0	(3) 2 6	(6) 3 18	(9) 1 9		(15) 2 30	20	3	60	180	0	0
32-34	(-8) 1 -8	(-6) 1 -6	(-4) 1 -4	(-2) 1 -2	0 5 0	(2) 1 2	(4) 1 4				11	2	22	44	-14	-7
29-31		(-3) 1 -3	(-2) 1 -2	(-1) 3 -1	0 2 0	(1) 5 5	(2) 2 4				14	1	14	14	1	1
26-28			0 1 0	0 2 0	0 0 0	0 3 0	0 1 0	0 1 0			8	0				4
23-25			(2) 1 2		0 5 0	(-1) 4 -4		(-3) 1 -3			11	-1	-11	11	-5	5
20-22			(4) 1 4	(2) 3 6	0 2 0	(-2) 2 -4					8	-2	-16	32	6	-3
17-19			(6) 1 6	(3) 2 6	0 2 0	(-3) 1 -3					6	-3	-18	54	9	-3
14-16	(16) 1 16		(8) 3 24			(-4) 1 -4					5	-4	-20	80	36	-9
11-13			(10) 2 20	(5) 1 5							3	-5	-15	75	25	-5
f	3	9	13	18	26	22	12	8	2	7	120		160	1106	260	30
x	-4	-3	-2	-1	0	1	2	3	4	5						
fx'	-12	-27	-26	-18		22	24	24	8	35	30					
fx'^{2}	48	81	52	18		22	48	72	32	175	548					
Ex'y'	-4	-84	36	-9		10	70	69	32	140	260					
Ey'	1	28	-18	9	36	10	35	23	8	28	160					

Legend:

x = achievement score in English

y = Scholastic achievement rating in English

$$My' = \frac{Efy'}{N} \qquad Mx' = \frac{Efx'}{N}$$

$$= \frac{160}{120} \qquad = \frac{30}{120}$$

$$My' = 1.333 \qquad Mx' = 0.25$$

$$Oy' = \sqrt{\frac{Efy'}{N} - My'^2} \qquad Ox' = \sqrt{\frac{Efx'^2}{N} - Mx'^2}$$

$$= \sqrt{\frac{1106}{120} - (1.333)^2} \qquad = \sqrt{\frac{548}{120} - (0.25)^2}$$

$$= \sqrt{9.2167 - 1.7689} \qquad = \sqrt{4.5667 - 0.0625}$$

$$= \sqrt{7.4478} \qquad = \sqrt{4.5042}$$

$$Oy' = 2.729 \qquad Ox' = 2.122$$

$$rxy = \frac{\frac{Ex'y'}{N} - My'(Mx')}{Oy'(Ox')}$$

$$= \frac{\frac{260}{120} - 1.333\ (0.25)}{2.729\ (2.122)}$$

$$= \frac{2.1667 - 0.33325}{5.7909}$$

$$= \frac{1.83345}{5.7909}$$

$rxy = 0.32$ correlation present but slight

APPENDIX R-1

COMPUTATIONS OF T-VALUE OF RELATIONSHIP BETWEEN ACHIEVEMENT SCORE AND SCHOLASTIC ACHIEVEMENT IN COMMUNICATION ARTS ENGLISH

$$t = \frac{r\sqrt{N-2}}{\sqrt{1-r^2}}$$

$$= \frac{0.32\sqrt{120-2}}{\sqrt{1-(0.32)^2}}$$

$$= \frac{0.32\sqrt{118}}{\sqrt{1-0.1024}}$$

$$= \frac{0.32\ (10.86)}{\sqrt{0.8976}}$$

$$= \frac{3.4752}{.9474}$$

$$t = 3.67$$

$$c.v. = 1.98$$

Interpretation. The computed t of 3.67 is greater than the tabular or critical value of 1.98, therefore H_o is rejected and H_1 is accepted with .05 level of significance.

APPENDIX S

RELATIONSHIP BETWEEN ACHIEVEMENT SCORES IN ELEMENTARY MATHEMATICS AND IN COMMUNICATION ARTS ENGLISH

	11-13	14-16	17-19	20-22	23-25	26-28	29-31	32-34	35-37	38-40	41-43	f	y	fy'	fy'^{2}	Ey'x'	Ex'
44-47									(18) 2 36	(24) 5 20	(30) 1 30	8	6	48	228	186	81
40-43						0 1 0	(5) 1 5	(10) 1 10	(15) 2 30	(20) 8 160	(25) 3 75	16	5	80	400	280	56
36-39					(-4) 1 -4	0 1 0	(4) 2 8	(8) 2 16	(12) 4 24	(16) 3 48	(20) 1 20	14	4	56	224	136	34
32-35			(-9) 1 -9				(3) 1 3	(6) 3 18		(12) 2 24	(15) 1 15	8	3	24	72	51	17
28-31		(-8) 1 -8			(-2) 1 -2	0 1 0	(2) 2 4		(6) 3 18	(8) 5 40		13	2	26	52	52	26
24-27			(-3) 2 -6	(-2) 3 -6		0 3 0	(1) 2 2	(2) 3 6	(3) 4 12	(4) 2 8	(5) 2 10	21	1	21	21	26	26
20-23	0 2 0		0 2 0	0 1 0	0 4 0		0 4 0	0 1 0	0 5 0	0 1 0		0 20 0		0			3
16-19	(5) 1 5	(4) 2 8		(2) 2 4	(1) 2 2	0 2 0	(-1) 1 -1	(-2) 1 -2		(-4) 1 -4		12	-1	-12	12	12	-12
12-15		(8) 2 16		(4) 1 4	(2) 3 6							6	-2	-12	24	26	-13
8-11			(9) 1 9	(6) 1 6								2	-3	-6	18	15	-5
f	3	5	6	8	11	8	13	11	20	27	8	120		225	1111	784	163
x	-5	-4	-3	-2	-1	0	1	2	3	4	5						
fx'	-15	-20	-18	-16	-11		13	22	60	108	40	163					
fx'^{2}	75	80	54	32	11		13	44	180	432	200	1121					
Ex'y'	5	16	-6	8	2		21	48	144	396	150	784					
Ey'	-1	-4	2	-4	-2	12	21	24	48	99	30	225					

Legend:

x = Achievement score in English

y = Achievement score in Elementary Mathematics

$$My' = \frac{Efy'}{N} \qquad Mx' = \frac{Efx'}{N}$$

$$= \frac{225}{120} \qquad = \frac{163}{120}$$

$My' = 1.875$ or 1.88 $\qquad Mx' = 1.358$ or 1.36

$$Oy' = \sqrt{\frac{Efy'^2}{N} - My'^2} \qquad Ox' = \sqrt{\frac{Efx'^2}{N} - Mx'^2}$$

$$= \sqrt{\frac{1111}{120} - (1.88)^2} \qquad = \sqrt{\frac{1121}{120} - (1.36)^2}$$

$$= \sqrt{9.2583 - 3.5344} \qquad = \sqrt{9.3417 - 1.8496}$$

$$= \sqrt{5.7239} \qquad = \sqrt{7.4921}$$

$Oy' = 2.39$ $\qquad Ox' = 2.74$

$$rxy = \frac{\frac{Ex'y'}{N} - My'(Mx')}{Oy'(Ox')}$$

$$= \frac{\frac{784}{120} - 1.88(1.36)}{2.39(2.74)}$$

$$= \frac{6.5333 - 2.5568}{6.5486}$$

$$= \frac{3.9765}{6.5486}$$

$rxy = 0.61$ Substantial or moderate relationship

APPENDIX S-1

COMPUTATIONS OF T-VALUE OF RELATIONSHIP BETWEEN ACHIEVEMENT SCORES IN ELEMENTARY MATHEMATICS AND IN COMMUNICATION ARTS ENGLISH

$$t = \frac{r\sqrt{N-2}}{\sqrt{1-r^2}}$$

$$= \frac{0.61\sqrt{120-2}}{\sqrt{1-(0.61)^2}}$$

$$= \frac{0.61\sqrt{118}}{\sqrt{1-0.3721}}$$

$$= \frac{0.61\ (10.86)}{\sqrt{0.6279}}$$

$$= \frac{6.6246}{.7924}$$

$$t = 8.36$$

$$c.v. = 1.98$$

Interpretation. When the computed t of 8.36 is greater than the critical value of 1.98, H_o is rejected at .05 level of significance.

APPENDIX T

RELATIONSHIP BETWEEN SCHOLASTIC ACHIEVEMENTS IN ELEMENTARY MATHEMATICS AND IN COMMUNICATION ARTS ENGLISH

	75-76	77-78	79-80	81-82	83-84	85-86	87-88	89-90	91-92	93-94	f	y'	fy'	fy'^2	Ex'y'	Ex'
92-93				(-5) 1 -5				(15) 2 30	(20) 3 60	(25) 1 25	7	5	35	175	110	22
90-91						(4) 1 4			(16) 1 16		2	4	8	32	20	5
88-89				(-3) 2 -6	0 4 0		(6) 1 6			(15) 1 15	8	3	24	72	15	5
86-87			(-4) 1 -4	(-2) 4 -8	0 1 0	(2) 3 6	(4) 2 8	(6) 1 6			12	2	24	48	8	4
84-85		(-3) 1 -3	(-2) 4 -8	(-1) 6 -6	0 7 0	(1) 3 3		(3) 1 3			22	1	22	22	-11	-11
82-83		0 8 0	0 8 0	0 5 0	0 4 0		0 1 0				26	0				-17
80-81		(3) 5 15	(2) 6 12	(1) 3 3	0 3 0	(-1) 1 -1					18	-1	-18	18	29	-29
78-79	(8) 1 8	(6) 4 24	(4) 6 24		0 1 0	(-2) 1 -2					13	-2	-26	52	54	-27
76-77	(12) 2 24	(9) 1 9	(6) 6 36								9	-3	-27	81	69	-23
74-75		(12) 1 12	(8) 2 16								3	-4	-12	48	28	-7
f	3	12	33	24	21	13	3	5	4	2	120		30	548	322	-78
x'	-4	-3	-2	-1	0	1	2	3	4	5						
fx'	-12	-36	-66	-24		13	6	15	16	10	-78					
fx'^2	48	108	132	24		13	12	45	64	50	496					
Ex'y'	32	57	76	-22		10	14	39	76	40	322					
Ey'	-8	-19	-38	22	14	10	7	13	19	8	30					

Legend:

x = Scholastic Achievement in Elementary Mathematics

y = Scholastic Achievement in English

$$My' = \frac{Efy'}{N}$$

$$= \frac{30}{120}$$

$$My' = 0.25$$

$$Oy' = \sqrt{\frac{Efy'^2}{N} - (My')^2}$$

$$= \sqrt{\frac{548}{120} - (0.25)^2}$$

$$= \sqrt{4.5667 - 0.625}$$

$$= \sqrt{4.5042}$$

$$Oy' = 2.12$$

$$Mx' = \frac{Efx'}{N}$$

$$= \frac{-78}{120}$$

$$Mx' = -0.65$$

$$Ox' = \sqrt{\frac{Efx'^2}{N} - (Mx')^2}$$

$$= \sqrt{\frac{496}{120} - (-0.65)^2}$$

$$= \sqrt{4.1333 - 0.4225}$$

$$= \sqrt{3.7108}$$

$$Ox' = 1.93$$

$$rxy = \frac{\frac{Ex'y'}{N} - My' \cdot (Mx')}{Oy' \, (Ox')}$$

$$= \frac{\frac{322}{120} - 0.25 \, (-0.65)}{2.12 \, (1.93)}$$

$$= \frac{2.6833 - 1625}{4.0916}$$

$$= \frac{2.8458}{4.0916}$$

$$rxy = 0.70$$ Substantial or moderate relationship

APPENDIX T-1

COMPUTATIONS OF T-VALUE OF CORRELATION BETWEEN SCHOLASTIC ACHIEVEMENTS IN ELEMENTARY MATHEMATICS AND COMMUNICATION ARTS ENGLISH

$$t = \frac{r\sqrt{N-2}}{\sqrt{1-r^2}}$$

$$= \frac{0.70\sqrt{120-2}}{\sqrt{1-(0.70)^2}}$$

$$= \frac{0.70\sqrt{118}}{\sqrt{1-0.49}}$$

$$= \frac{0.70\sqrt{118}}{\sqrt{0.51}}$$

$$t = \frac{7.602}{.7151}$$

$$t = 10.64$$

$$c.v. = 1.98$$

Interpretation. Since the observed t of 10.64 is greater than the critical value of 1.98, H_o is rejected at .05 level of significance.

CURRICULUM VITAE

NAME	:	TOMASA RAFALES PEREZ
ADDRESS	:	Calbiga, Samar
DATE OF BIRTH	:	April 19, 1942
PRESENT POSITION	:	Elementary Grades Teacher
STATION	:	Salug Elementary School Catbalogan, Samar
CIVIL STATUS	:	Married

EDUCATIONAL BACKGROUND

Elementary	Calbiga Central School Calbiga, Samar
Secondary	Samar School of Arts and Trades Catbalogan, Samar
College	Bachelor of Science in Elementary Education Samar College Catbalogan, Samar 1966
	BSEED, 12 units Sacred Heart College Catbalogan, Samar 1963
	Bachelor of Science in Education, major in Mathematics 30 units, 1977-1979, 6 units 1979-Summer, Samar College Catbalogan, Samar
Curriculum Pursued	Master in Education
Major	Administration and Supervision

CIVIL SERVICE ELIGIBILITY

Civil Service Examination for Teachers Passed, March 1968.

POSITIONS HELD

Classroom Teacher . . . . . .Malinao Elementary School
Jiabong, Samar
1966-1970

Classroom Teacher . . . . . .Gandara I Central School
Gandara, Samar
July 1970 to Feb. 1971

Classroom Teacher . . . . . .Salug Elementary School
Catbalogan, Samar

HONORS RECEIVED

First Honorable Mention . . .Grade VI
Calbiga Central Elem. School
Calbiga, Samar

SCHOLARSHIP/STUDY GRANT

TSM-101 Principles and Practices of Classroom Testing and Measurement in Primary Science and Mathematics SEAMED-RECSAM, Penang, Malaysia.

Magna Carta for Teachers (RA 4670) Samar State Polytechnic College, Catbalogan, Samar, 1984-1985.

TRAININGS, SEMINARS AND WORKSHOPS

Division Summer Institute in Science and Mathematics, Catbalogan, Samar, June 13-26, 1986.

Training Basic Course in Girl Scouting, Catbalogan, Samar September 6-9, 1972.

Population Education Training Course for Elementary Grades Teacher, Catbalogan, Samar, Nov. 11-15, 1974.

Second Division Echo Seminar-Practicum in School Music Education, Catbalogan, Samar, July 7-8, 1975.

Level IV Teacher Development Program, Catbalogan I Elementary School, June 24 to October 22, 1977.

Division Girl Scout Leaders Workshop, Catbalogan, Samar December 7-10, 1977.

Mass Training of Grade III Teachers on the Effective Utilization of DEC Textbooks, Catbalogan, Samar, April 21, 1978 to May 5, 1978.

Division Seminar Workshop on Educational Technology, Catbalogan, Samar, January 8-13, 1979.

Division Seminar Workshop for Mathematics Teachers, Catbalogan, Samar, July 3-5, 1980.

Outdoor Leadership Course in Scouting, March 3-8, 1980.

Regional In-Service Education Program in Communication and Instructional Competences for Science and Mathematics Teachers (Level 2) People's Center and Library, Tacloban City, August 16-27, 1982.

CO-CURRICULAR ACTIVITIES

President	Salug Elementary School Teachers Club Catbalogan, Samar
President	Salug Elementary School Teachers Club Catbalogan, Samar 1985-1986
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LIST OF FIGURE AND TABLES

Figure

		Page
1	Conceptual Framework of the Study . .	4

Table

1	Pupils' Mean Achievement Scores in Elementary Mathematics by School . .	38
2	Pupils' Mean Achievement Scores in Communication Arts English by School	40
3	Pupils' Mean Scholastic Achievement Rating in Elementary Mathematics . .	42
4	Pupils' Mean Scholastic Achievement Rating in Communication Arts English	43
5	Relationship Between Mean Achievement Score and Mean Scholastic Achievement Rating in Elementary Mathematics	45
6	Relationship Between Mean Achievement Score and Mean Scholastic Achievement Rating in Communication Arts English .	46
7	Relationship Between Mean Achievement Scores in Elementary Mathematics and Communication Arts English	48
8	Relationship Between Mean Scholastic Achievement Ratings in Elementary Mathematics and in Communication Arts English	49