

A STUDY OF THE LOGICAL VERBAL RELATION OF  
CHILDREN IN FOUR PRIMARY SCHOOLS  
IN BANGKOK

THESIS

Presented in partial fulfillment of the requirements  
for the Master of Education degree  
at the College of Education  
in collaboration with  
the International Institute for Child Study

by

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March 1958

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## ACKNOWLEDGEMENT

The completion of this study depends upon the assistance of many persons. The writer is deeply indebted to Dr. Ernest E. Boesch, Director of the IICS, who gave valuable advice to the writer from the beginning to the end of this work. She is also especially grateful for the suggestions and criticisms she received from Dr. Lamainas Saradatta, and Dr. Sanoh Dhamrongartana, staff members of the IICS.

This study could not have been accomplished without the guidance in Statistics of Mr. Chiochan Kiengsiri. The writer wishes to thank him sincerely for his advice.

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## INTRODUCTION

It has been realized that any propagation of educational methods risks failure partly or entirely if it is not based on exact knowledge of the educational condition and the development of children in different cultures. It is felt as well that, such knowledge can help in a very important way to build bridges of understanding between different parts of the world.

The International Institute for Child Study (I I C S), Bangkok is one of the first attempts to promote international co-operation in gathering data about the development of children in different cultures. The two basic purposes of the IICS are to collect data about the developmental and educational status of Thai children and to organize a network of international co-operation for obtaining comparable and parallel data from other culture.

As already mentioned, we would attempt to obtain as much information about the children as possible. For this purpose, a certain number of tests and interview guides were developed. By means of these tests and interviews all aspects of behavior, such as interest, wishes, perception, imagination, emotion, and soci-ability could be studied.

The Verbal Development III Test was one of the tests being used in the research plan of the IICS, as one of the methods for measuring verbal development while other methods were designed for testing knowledge of words, sentence construction, and free expression. Our study was concerned with the ability to form logical verbal relations.

In certain special circumstances, the verbal test may give us the information we need,<sup>and</sup> even then it does not measure the whole range of a child's intelligence.<sup>1</sup>

This test (the "Foucault test" in the form used at the Institute Jean Jacques Rousseau in Geneva) had been modified in order to introduce gradually increasing difficulties, and had been translated into Thai.<sup>2</sup>

The verbal development of a child plays an important role in our study. It has been pointed out that the ability of the child<sup>to</sup> respond to verbal commands, in other words, his performance in verbal tests is an important aspect of his intelligence.<sup>3</sup>

When we ask a child for the reason for something and he does not know, he tends to simply invent, showing a desire to establish connexions between the most heterogenous objects. He always finds a justification for everything which to us is simply "given" without any reason.

Children are likely to make certain characteristic errors in reasoning because their attention is too unstable to permit concentrated thinking. They may have all the necessary facts for the solution of a problem, but unless some progress toward the solution becomes evident fairly soon, they are likely to lose sight of the goal, or are likely to become distracted by some trivial aspect of the problem.<sup>4</sup>

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<sup>1</sup> Horace B. English, Child Psychology. (New York: Henry Holt & Company, c 1951), p. 297.

<sup>2</sup> Research Bulletin. Supplementary No. 1, International Institute for Child Study, c/o College of Education (Bangkok: International Institute for Child Study, c 1957), p. 40.

<sup>3</sup> Manual of Child Psychology. Edited by Leonard Carmichael (New York: D. Appleton-Century Company, c 1946), p. 557.

<sup>4</sup> Winifred Rand, Mary E. Sweeny, and E. Lee Vincent, Grow and Development of the Young Child (London: W.B. Saunders Company, c 1948), p. 329.

Piaget, who has made some of the most extensive studies of the development of conceptual thinking in children, is of the opinion that true conceptualization is rarely present in early childhood. And, this interferes with the logical character of thought.<sup>1</sup>

There is, therefore, in a child's imagination an astonishing capacity for answering any question and disposing of any difficulty with unexpected reasons. This can be seen from the outcomes of this study. It is interesting to find out the role of logical verbal relation in a child's thought, whether it shows a consistent increase with age.

In summary, the purpose of this study was to examine the logical verbal relation of the child.

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<sup>1</sup> Jean Piaget, The Language and Thought of the Child. (London: Routledge & Kegan Paul Ltd., c 1952), p. 148.

CHAPTER I

METHODS AND TECHNIQUES

DESCRIPTION OF THE SAMPLES

In our investigation, the criterion for selecting the schools of our samples was the socio-economic background of the families. Four schools which seemed to represent a fairly typical sample of the general population were selected for our study. We designed them by A, B, C, and D.

It appeared that most of the children in school A came from families of higher income, while in school D, the majority came from families of lower income. The other two schools seemed to be intermediate in this respect.

For this study, it was decided to concentrate on the first four primary grades only, that is, from Pratom I to Pratom IV. But, we did not study all the grades in the same school because the schools might become overloaded with experimentation.

The distribution of the children covered in this study is shown in Table 1.

TABLE 1

NUMBER OF CHILDREN CLASSIFIED BY SCHOOL AND GRADE

School	Grade	Boys	Girls	Total
A	4	18	26	44
D	4	15	8	23
B	3	29	-	29
C	3	-	40	40
B	2	36	-	36
C	2	4	26	30
		102	100	202

From Table 1, we see that children of the first grade are not included. This is because this study was used as a group test and therefore could not be applied with the same technique to grade one.

Besides classifying the children by school and by grade, we also grouped them by age as shown in Table 2.

TABLE 2  
NUMBER OF CHILDREN CLASSIFIED BY AGE

Age Group	School and Grade						Total
	A <sub>4</sub>	B <sub>2</sub>	C <sub>2</sub>	B <sub>3</sub>	C <sub>3</sub>	D <sub>4</sub>	
6-9 TO 7-8	-	17	9	-	1	-	27
7-9 TO 8-8	-	9	19	22	16	-	66
8-9 TO 9-8	1	7	2	5	21	15	51
9-9 TO 10-8	5	3	-	2	1	7	18
10-9 TO 11-8	14	-	-	-	-	-	14
11-9 TO 12-8	16	-	-	-	-	1	17
12-9 TO 13-8	5	-	-	-	1	-	6
13-9 TO 14-8	3	-	-	-	-	-	3
TOTAL	44	36	30	29	40	23	202

We classified the children into eight age-groups. But, in the statistical application, it will be seen that only five age groups are left. This is because some of the groups which had too small numbers of children were combined together.

## MATERIALS

The test consisted of five sub-tests, each having two examples and ten test items. (See Appendix A, pp. 34-36).

## PROCEDURE

This test was administered as a group test. First of all, the forms were distributed, and the children were asked to write their names, surnames, their grades, and the date on the sheets. We then worked out the two examples of the first sub-test with the whole class, and after everybody had understood the two examples, the children were asked to complete the ten test items by themselves.

The other four sub-tests were worked out in the same way as mentioned above. The time limit for each sub-test for Pratom II was five minutes, and for Pratom III and Pratom IV four minutes.

The procedure in detail can be seen from Appendix B, pp. 37-38.

## STATISTICAL PROCEDURE

### METHODS OF TABULATING DATA

We first assigned a number to every child on his answer sheet, using pencils of different colors for different schools and for different grades.

For each test item, the frequencies obtained from different schools and grades were noted down on the same card.

Looking through further steps of the study, that is, analysis of the data, all responses of the same test items were kept together, but all of each sub-test were collected separately.

When we finished all of this, we had all of the responses of the whole test in our hand, as well as the frequencies of each response.

ANALYTICAL METHODS

The method of analysis was divided into two parts, which were:

a) Non-Statistical Application. We had now cards showing the frequencies in our hand. The next step was, to classify the responses to each sub-test.

The responses were classified according to the following categories:

Sub-Test I

(1) Correct answer

Example: ได้เป็นหัวหน้าของลูก.  
.....

(2) Too specific or too general answers.

(a) Too specific answers.

Example: ได้เป็นหัวหน้าของลูก.  
.....

(b) Too general answers.

Example: ได้เป็นหัวหน้าของลูก.  
.....

(3) Incorrect or no answers.

(a) Indicating the use of the given word.

Example: ได้เป็นหัวหน้าของลูก.  
.....

(b) Probable association with the given word.

Example: ได้เป็นหัวหน้าของลูก.  
.....

(c) Unrecognizable association with the given word.

Example: ได้เป็นหัวหน้าของลูก.  
.....

(d) Probable misreading or misinterpretation of the given word.

Example: ได้เป็นหัวหน้าของลูก.  
.....

- (e) Repetition of the given word.  
Example: เล็บเป็นส่วนหนึ่งของเล็บ.
- (f) No answer.

Sub-Test II

- (1) Correct answers.  
Example: เกาฉี่ไว้สำหรับนั่ง.
- (2) Too specific or too general answers.
  - (a) Too specific answers.  
Example: เกาฉี่ไว้สำหรับนั่งห่าวน.
  - (b) Too general answers.  
Example: เข็มมีไว้สำหรับเข็มของ.
- (3) Incorrect or no answers.
  - (a) Probable association with the given word.  
Example: เกาฉี่ไว้สำหรับเขียนหนังสือ.
  - (b) Unrecognizable association with the given word.  
Example: เข็มมีไว้สำหรับดู.
  - (c) Probable misreading or misinterpretation of the given word.  
Example: หมอนมีไว้สำหรับรักษา.

Sub-Test III

- (1) Correct answers.  
Example: คำกรงขามกับรองไห คือ หัวเราะ.
- (2) Incorrect or no answers.
  - (a) Giving synonym of the given word.  
Example: คำกรงขามกับรองไห คือ งอแง.

(b) Probable association with the given word.

Example: คำทรงขามกับร่องไห คือ เสียใจ.

(c) Unrecognizable association with the given word.

Example: คำทรงขามกับร่องไหคือ เย็น.

(d) Repetition of the given word.

Example: คำทรงขามกับร่องไห คือ ร่องไห.

(e) No answer.

Sub-Test IV

(1) Correct answers.

Example: กระจก เป็นเครื่องนุ่งห่ม.

(2) Too general answers.

Example: ผ้า เป็นเครื่องนุ่งห่ม.

(3) Incorrect or no answers.

(a) Probable association with the given word.

Example: กระจก เป็นเครื่องนุ่งห่ม.

(b) Uncognizable association with the given word.

Example: กระจก เป็นเครื่องนุ่งห่ม.

(c) Probable misreading or misinterpretation of the given word.

Example: กระจก เป็นกระดาษ.

(d) Repetition of the given word.

Example: กระจกนุ่งห่ม เป็นเครื่องนุ่งห่ม.

(e) No answer.

Sub-Test V

(1) Correct answers.

Example: รวบรวมงาน เหมือนตั้งแรงกับ.....

(2) In correct or no answers.

(a) Giving synonym of the given word.

Example: รวบรวมงาน เหมือนกับ.....

(b) Probable association with the given word.

Example: รวบรวมงาน เหมือนตั้งแรงกับ.....

(c) Unrecognizable association with the given word.

Example: รวบรวมงาน เหมือนตั้งแรงกับ.....

(d) Misreading or misinterpretation of the given word.

Example: รวบรวมงาน เหมือนนำ.....

(e) Repetition of the given word.

Example: รวบรวมงาน เหมือนตั้งแรงกับ.....

(f) No answer.

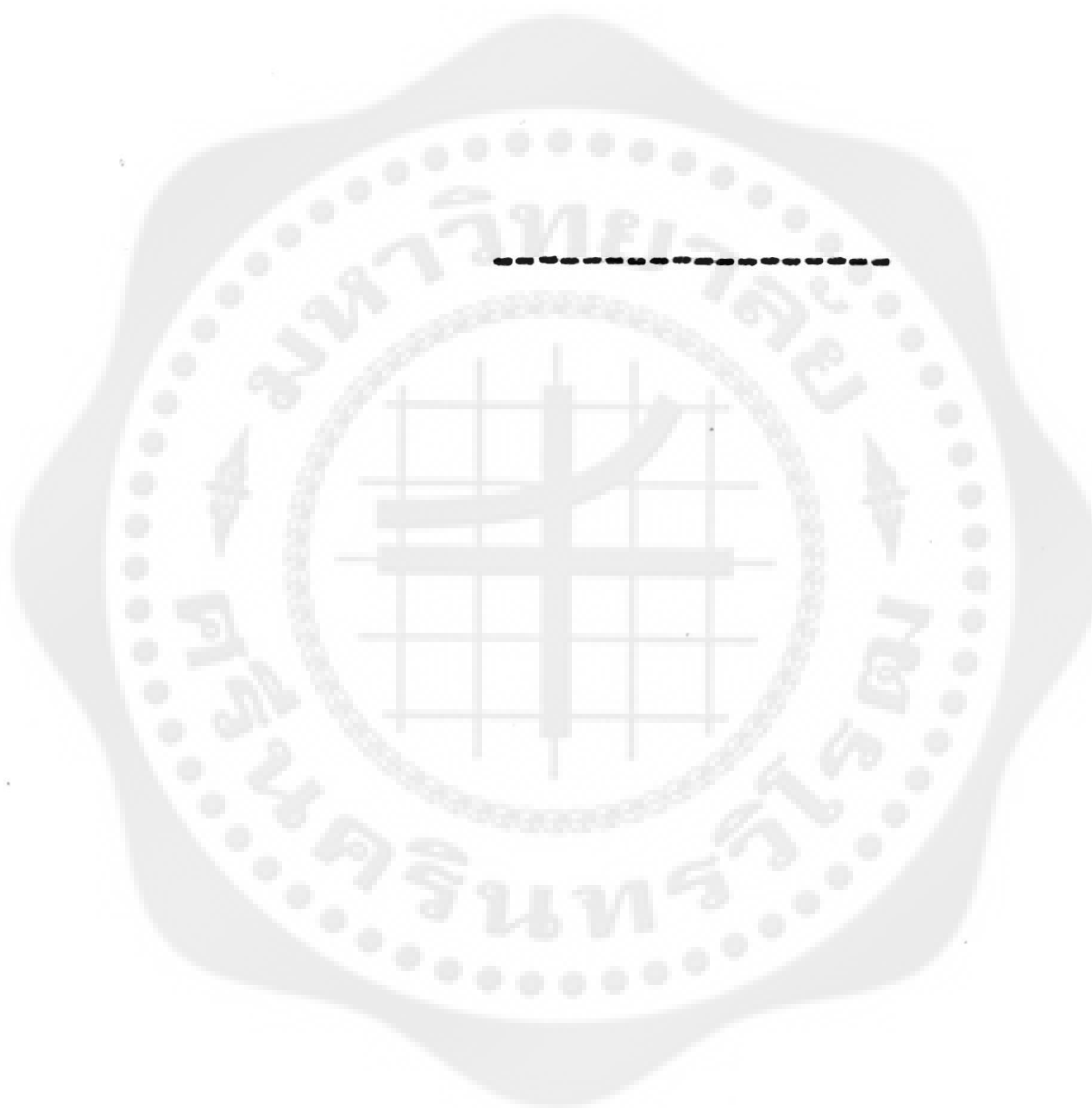
b) Statistical Application. The frequency of responses shown on the cards were tabulated. We thus knew the frequency of each item of each sub-test. And then, the percentage of responses classified by school and grade, and by age were computed. The data obtained in this way is shown on Appendix C and Appendix D, pp. 39-44.

There was one more purpose in our study, i.e., the purpose of finding the relationship between this test and the others. So, scoring the answers of the test seemed to be necessary.

We adopted the following scoring rules:

- (1) Two points for a correct answer.
- (2) One point for too specific or too general answers.
- (3) Zero point for incorrect or no answers.

As already mentioned, this test consisted of five sub-tests, and every sub-test contained ten test items. Therefore, the maximum points were one hundred.



CHAPTER II

THE RESULTS OF THE STUDY AND THEIR INTERPRETATION

39-44

From the data on pages 39-44, the percentages of different categories of responses to every sub-test classified by school and by grade were computed as indicated in Tables 3 - 7.

TABLE 3

PERCENTAGES OF DIFFERENT CATEGORIES OF RESPONSES TO SUB-TEST I  
CLASSIFIED BY SCHOOL AND BY GRADE

SCHOOL AND GRADE	<sup>2</sup> B	<sup>2</sup> C	TOTAL	<sup>3</sup> B	<sup>3</sup> C	TOTAL	<sup>4</sup> A	<sup>4</sup> D	TOTAL
CATEGORY OF RESPONSES:									
1	32.2	45.3	38.2	47.2	40.5	43.3	47.5	50.9	48.7
2									
a)	8.3	11.7	9.9	11.4	10.2	10.7	9.8	10.9	10.1
b)	6.7	8.0	7.3	7.2	12.2	10.2	12.7	13.5	13.0
3									
a)	0.3	2.0	1.1	1.7	0.5	1.0	-	-	-
b)	12.2	15.7	13.8	18.6	12.8	15.2	16.1	18.3	16.9
c)	7.2	8.0	7.6	6.6	11.3	9.3	11.4	3.9	8.8
d)	2.5	2.3	2.4	1.7	1.5	1.6	0.9	1.3	1.0
e)	2.5	4.3	3.3	0.4	0.8	0.6	0.7	-	0.5
f)	28.1	2.7	16.5	5.2	10.2	8.1	0.9	1.3	1.0

In Sub-Test I of Table 3, from the percentage shown in the first category, we will see that D<sub>4</sub> did the best, and B<sub>3</sub> did nearly as well as A<sub>4</sub>. For School C, it is noticed that the children of Pratom II could do better than Pratom III.

For the second categories, the high and the low percentages are mixed among schools and grades. If we look at the "category of incorrect or no answers", it will show a different aspect in these categories. This will be explained next.

First, in Category 3a, there is not any response from Pratom IV, while there is a small difference in average percentages between Pratom III and Pratom II. For the Categories 3b and 3c, the percentages increase from grade to grade. And, it should also be noted that, the percentages of the category of incorrect or no answers decrease with grade.

Table 4, which belongs to Sub-Test II will be presented next.

TABLE 4  
PERCENTAGES OF DIFFERENT CATEGORIES OF RESPONSES TO SUB-TEST II  
CLASSIFIED BY SCHOOL AND BY GRADE

SCHOOL AND GRADE:	B <sub>2</sub>	C <sub>2</sub>	TOTAL	B <sub>2</sub>	C <sub>3</sub>	TOTAL	A <sub>4</sub>	D <sub>4</sub>	TOTAL
CATEGORY OF RESPONSES:									
1	41.9	60.7	50.5	52.1	56.5	54.6	52.5	62.6	56.0
2									
a)	18.6	10.0	14.7	19.3	13.8	16.1	26.1	11.3	21.0
b)	13.6	14.3	13.9	11.0	15.8	13.8	9.6	15.7	11.6
3									
a)	11.4	12.0	11.7	13.1	10.8	11.7	10.2	10.4	10.3
b)	2.8	2.0	2.4	2.8	2.2	2.5	0.9	-	0.6
c)	1.1	0.7	0.9	1.0	0.5	0.7	0.7	-	0.5
d)	10.6	0.3	5.9	0.7	0.5	0.6	-	-	-

Table 4 shows the same statistical aspect as shown in Table 3.

TABLE 5

PERCENTAGES OF DIFFERENT CATEGORIES OF RESPONSES TO SUB-TEST III  
CLASSIFIED BY SCHOOL AND BY GRADE

SCHOOL AND GRADE:	B <sub>2</sub>	C <sub>2</sub>	TOTAL	B <sub>3</sub>	C <sub>3</sub>	TOTAL	A <sub>4</sub>	D <sub>4</sub>	TOTAL
CATEGORY OF RESPONSES:									
1	14.7	34.7	23.8	12.8	28.2	21.7	33.2	51.7	39.6
2									
a)	1.7	1.0	1.4	6.9	3.8	5.1	3.2	2.2	2.8
b)	11.1	17.7	14.1	24.8	16.2	19.9	15.7	14.4	15.2
c)	10.0	17.0	13.2	14.8	11.2	12.8	13.4	7.0	11.2
d)	21.7	16.0	19.1	20.0	20.8	20.4	20.9	18.7	20.2
e)	40.8	13.7	28.5	20.7	19.8	20.1	13.6	6.1	11.1

The results shown in Table 5 seem to be different from those in the two former tables.

Looking at the percentages of the correct answers, we see that the percentages do not increase from grade to grade; the highest falls in Pratom IV, and Pratom III shows the lowest one.

For the high percentages of incorrect or no answers, some falls in Pratom II and some falls in Pratom III.

TABLE 6

PERCENTAGES OF DIFFERENTS CATEGORIES OF RESPONSES TO SUB-TEST IV  
CLASSIFIED BY SCHOOL AND BY GRADE

SCHOOL AND GRADE:	B <sub>2</sub>	C <sub>2</sub>	TOTAL	B <sub>3</sub>	C <sub>3</sub>	TOTAL	A <sub>4</sub>	D <sub>4</sub>	TOTAL
CATEGORY OF RESPONSES:									
1	40.8	63.0	50.9	56.9	57.8	57.4	58.4	79.1	65.5
2	3.9	7.7	5.6	7.2	7.2	7.3	12.1	9.6	11.2
3									
a)	12.8	15.0	13.8	12.1	10.2	11.0	15.0	5.2	11.6
b)	11.9	9.3	10.8	12.8	11.8	12.2	9.8	2.6	7.3
c)	0.3	0.3	0.3	0.7	0.8	0.7	1.4	0.4	1.1
d)	2.5	1.3	2.0	1.0	0.8	0.9	0.9	0.4	0.8
e)	27.8	3.3	16.7	9.3	11.5	10.6	2.5	2.6	2.5

Table 6 shows the results in general aspect, i.e., the percentages of correct responses increase from grade to grade; the highest of incorrect or no answers falls in the low grade, while the lowest falls in the high grade.

From Table 7, it will be seen that the results of our study are similar to the results shown in Table 5.

Pratom IV gets the highest percentages of the correct responses, while Pratom III gets the lowest. Looking at the incorrect or missing responses, it appears that most of the highest percentages belong to Pratom III.

Considering as a whole, from Table 3 to Table 7, we may conclude that the percentages of correct responses of every sub-test, except Sub-Test III

TABLE 7

PERCENTAGES OF DIFFERENT CATEGORIES OF RESPONSES TO SUB-TEST V  
CLASSIFIED BY SCHOOL AND BY GRADE

SCHOOL AND GRADE:	B <sub>2</sub>	C <sub>2</sub>	TOTAL	B <sub>3</sub>	C <sub>3</sub>	TOTAL	A <sub>4</sub>	D <sub>4</sub>	TOTAL
CATEGORIES OF RESPONSES:									
1	12.5	31.7	21.2	18.3	22.8	20.9	27.7	49.1	35.1
2									
a)	0.6	-	0.3	2.1	1.0	1.4	0.9	0.4	0.8
b)	8.3	19.3	13.3	10.7	10.5	10.6	18.2	18.3	18.2
c)	0.3	0.7	0.5	-	0.2	0.1	1.1	0.9	1.1
d)	27.2	29.3	28.2	33.1	28.8	30.6	28.4	19.1	25.2
e)	13.1	15.0	13.9	17.9	17.5	17.7	11.4	5.7	9.4
f)	38.1	4.0	22.6	17.9	19.2	18.7	12.3	6.5	10.3

and V, increased from grade to grade. Children in higher grades could do better than those in the lower ones. As for Sub-Test III and V, the responses of Pratom III as a whole seemed to be of a lower level than those of Pratom II.

The classification of responses according to the ages of the subjects had also been done. From <sup>the</sup> data on Appendix D, pp. 42-44, they were calculated in percentages as before, the results are presented in Tables 8 - 12.

TABLE 8

PERCENTAGES OF DIFFERENT CATEGORIES OF RESPONSES TO SUB-TEST I  
CLASSIFIED BY AGE

AGE-GROUP:	$\frac{6}{9} - \frac{7}{8}$	$\frac{7}{9} - \frac{8}{8}$	$\frac{8}{9} - \frac{9}{8}$	$\frac{9}{9} - \frac{11}{8}$	$\frac{11}{9} - \frac{14}{8}$
CATEGORIES OF RESPONSES:					
1	35.6	42.1	46.9	45.3	45.0
2					
a)	8.9	11.3	11.2	9.7	8.5
b)	8.9	7.3	11.6	13.4	11.2
3					
a)	0.4	1.8	0.2	-	-
b)	12.2	15.2	15.7	16.9	17.3
c)	8.9	8.0	6.9	7.2	14.2
d)	2.6	1.8	0.8	2.2	1.2
e)	2.6	2.3	0.2	0.9	1.5
f)	20.0	10.2	6.7	4.4	1.2

TABLE 9

PERCENTAGES OF DIFFERENT CATEGORIES OF RESPONSES TO SUB-TEST II  
CLASSIFIED BY AGE

AGE-GROUP:	$\frac{6}{9} - \frac{7}{8}$	$\frac{7}{9} - \frac{8}{8}$	$\frac{8}{9} - \frac{9}{8}$	$\frac{9}{9} - \frac{11}{8}$	$\frac{11}{9} - \frac{14}{8}$
CATEGORY OF RESPONSES:					
1	49.3	55.3	55.1	53.1	52.7
2					
a)	12.2	14.2	16.1	24.4	23.5
b)	14.1	13.0	15.1	9.7	12.7
3					
a)	14.1	12.1	9.8	11.9	8.1
b)	2.2	2.6	1.6	0.6	1.5
c)	1.1	1.1	0.2	0.3	0.8
d)	7.0	1.7	2.2	-	0.8

TABLE 10

PERCENTAGES OF DIFFERENT CATEGORIES OF RESPONSES TO SUB-TEST III

AGE-GROUP:	$\frac{6}{9} - \frac{7}{8}$	$\frac{7}{9} - \frac{8}{8}$	$\frac{8}{9} - \frac{9}{8}$	$\frac{9}{9} - \frac{11}{8}$	$\frac{11}{9} - \frac{14}{8}$
CATEGORY OF RESPONSES:					
1	25.6	24.8	35.1	33.4	31.9
2					
a)	1.1	3.5	3.1	4.1	3.1
b)	10.4	17.9	19.0	15.0	16.2
c)	13.7	14.2	9.0	10.0	16.9
d)	18.2	17.6	19.2	20.6	20.0
e)	31.1	22.0	14.5	16.9	11.9

TABLE 11

PERCENTAGES OF DIFFERENT CATEGORIES OF RESPONSES TO SUB-TEST IV  
CLASSIFIED BY AGE

AGE-GROUP:	$\frac{6}{9} - \frac{7}{8}$	$\frac{7}{9} - \frac{8}{8}$	$\frac{8}{9} - \frac{9}{8}$	$\frac{9}{9} - \frac{11}{8}$	$\frac{11}{9} - \frac{14}{8}$
CATEGORY OF RESPONSES:					
1	45.2	55.5	65.7	61.3	58.5
2	5.6	6.5	9.0	10.3	10.4
3					
a)	13.3	13.2	8.4	12.8	14.6
b)	11.5	12.1	7.1	9.7	9.6
c)	0.4	0.5	0.6	1.3	1.2
d)	2.9	1.2	0.4	0.6	1.2
e)	21.1	11.1	8.8	4.1	4.6

TABLE 12

PERCENTAGES OF DIFFERENT CATEGORIES OF RESPONSES TO SUB-TEST V  
CLASSIFIED BY AGE

AGE-GROUP:	$\frac{6}{9} - \frac{7}{8}$	$\frac{7}{9} - \frac{8}{8}$	$\frac{8}{9} - \frac{9}{8}$	$\frac{9}{9} - \frac{11}{8}$	$\frac{11}{9} - \frac{14}{8}$
CATEGORY OF RESPONSES:					
1	18.5	21.4	33.3	28.1	26.1
2					
a)	-	1.5	0.6	0.6	1.2
b)	8.9	13.0	14.5	15.6	18.5
c)	-	0.5	0.4	0.9	1.2
d)	25.9	30.3	25.7	27.2	30.0
e)	14.8	16.5	12.4	10.6	11.9
f)	31.9	16.8	13.1	16.9	11.2

Considering the results classified by age as shown in Tables 8 - 12, the trend in all sub-tests seemed to be that the older the child was, the better he could perform. However, the results of the last two age-groups were exceptions. This might be because of the very small number of the children in each of these two age-groups. The socio-economic status of the children might also play a role in the results.

It appears that most of the children aged 10/9 years to 14/8 years are enrolled in school D, as seen in Table 2, p. 5. And, as already mentioned, the children of school D came from families of low income.

To find some measure of the distribution of the scores, the percentiles and the semi-interquartile range were computed as indicated in Tables 13 - 14.

TABLE 13  
PERCENTILES AND SEMI-INTERQUARTILE RANGES OF THE TOTAL RESPONSES,  
PER CLASS AND PER GRADE

SCHOOL AND GRADE:	B <sub>2</sub>	C <sub>2</sub>	TOTAL	B <sub>3</sub>	C <sub>3</sub>	TOTAL	A <sub>4</sub>	D <sub>4</sub>	TOTAL
PERCENTILE AND SEMI-INTERQUARTILE RANGE:									
P 90	56.3	64.5	61.2	59.7	61.5	60.9	64.7	77.9	74.8
P 80	47.1	60.8	57.6	54.7	57.5	56.3	59.8	75.2	68.1
P 70	41.3	58.5	53.4	51.8	54.2	53.2	57.2	72.4	63.8
P 60	37.0	56.3	48.3	48.3	51.5	50.5	54.5	69.7	59.8
P 50 (Mdn)	32.7	53.5	42.7	42.8	48.5	46.5	51.9	67.1	55.8
P 40	28.9	50.5	37.8	38.4	44.5	42.3	49.2	65.1	52.1
P 30	25.3	46.5	32.8	34.7	41.2	38.8	45.4	63.1	48.2
P 20	20.9	41.5	27.4	30.9	38.2	33.3	41.3	53.1	43.8
P 10	12.3	35.5	20.2	23.9	28.5	26.4	33.9	44.4	38.1
S I Q	10.2	7.7	12.8	10.2	8.4	8.4	7.5	5.9	10.0

Table 13 gives the critical values between the percentiles and the semi-interquartile ranges of the schools and grades.

it can be seen that the percentile values of two schools at the same grade are different from each other; every percentile value increases from grade to grade except P 70, P 80 and P 90. For example, P 50 (median) of Pratom II, Pratom III, and Pratom IV are 42.7, 46.5, and 55.8 respectively. According to the application of percentile, from these three values, they are indicated that 50 % of the children of Pratom IV scored higher than Pratom III, and Pratom IV scored higher than Pratom II. This is the same for every percentile except the three mentioned above.

The semi-interquartile ranges show a good measure of density of the scores around the middle of the distribution. We will see from this table that the performance scores of Pratom II are widely scattered, while the scores of Pratom III are less scattered.

TABLE 14  
PERCENTILES AND SEMI-INTERQUARTILE RANGES OF THE TOTAL RESPONSES,  
PER AGE-GROUP

AGE-GROUP:	$\frac{6}{9} - \frac{7}{8}$	$\frac{7}{9} - \frac{8}{8}$	$\frac{8}{9} - \frac{9}{8}$	$\frac{9}{9} - \frac{11}{8}$	$\frac{11}{9} - \frac{14}{8}$
PERCENTILE AND SEMI-INTERQUARTILE RANGE:					
P 90	59.5	62.0	73.4	63.9	68.7
P 80	56.2	57.8	68.3	59.7	63.1
P 70	49.2	54.0	63.8	57.3	56.1
P 60	42.3	50.4	58.6	55.0	51.9
P 50 (Min)	38.3	45.2	53.6	52.8	48.6
P 40	33.1	40.1	49.8	50.7	46.4
P 30	27.7	35.6	44.8	46.7	44.2
P 20	23.1	31.6	41.0	40.3	39.9
P 10	17.7	26.0	37.6	32.1	27.3
S I Q	14.1	11.1	11.7	7.5	8.8

The percentile values shown in Table 14 do not need much comment. They show clear progress with age along the lines which we have known from Tables 8 - 12, i.e., all percentile values increased from grade to grade, and the last two age-groups were also exceptions as already shown.

By the value of S I Q, we will see that the scores of the first age-group are more widely scattered than those of the other, and those of the fourth age-group are the least scattered.

For our purpose, it seems sufficient to present the distribution of the scores based on the percentile values and the semi-interquartile ranges. These were computed from the data on Appendices E and F, on pp. 45-52, and are graphically represented in Figures 1 - 2.

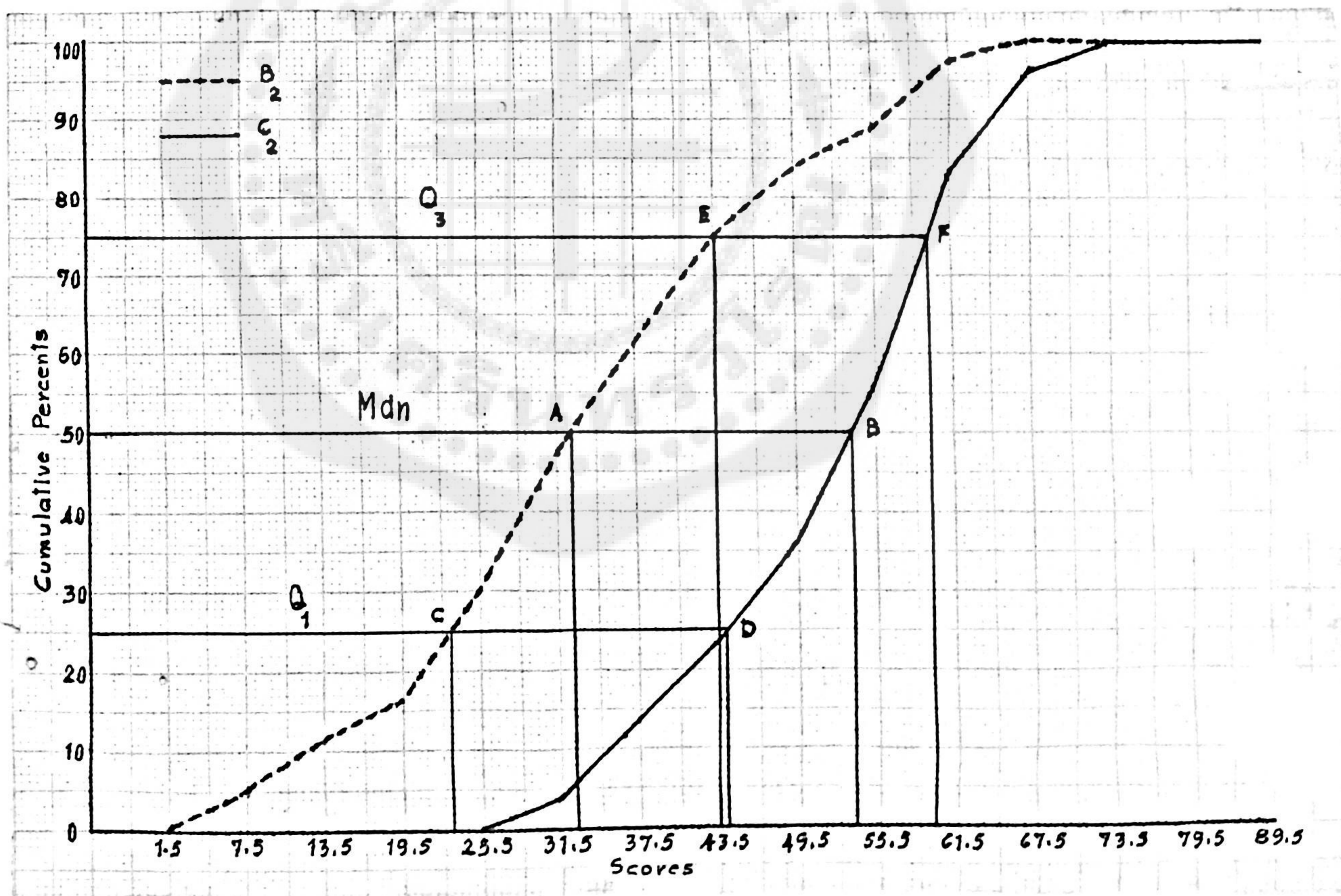


FIGURE 1

OCIVES REPRESENTING SCORES MADE BY THE CHILDREN OF PRATOM II

Several interesting observations can be made from Figure I. For example,  $C_2$ 's ogive lies to the right of the  $B_2$ 's over the entire range showing that the  $C_2$ 's scores were consistently higher than  $B_2$ .

The differences in achievement between the two schools are shown by the distances separating the two curves at various levels. And, it is clear that the difference between the very high scores is not as great as the difference between the middle range and the very low scores.

A more detailed analysis of the achievements of these two groups comes out in a comparison of certain points in the distribution.  $C_2$ 's median is approximately 53, the  $B_2$ 's 33; the difference between the measure is presented by the line AB. The differences of  $Q_1$  (P 25) and  $Q_3$  (P 75) are shown by the lines CD and EF respectively.

On the whole, the scores of  $C_2$  were consistently higher than <sup>those</sup> of  $B_2$ .

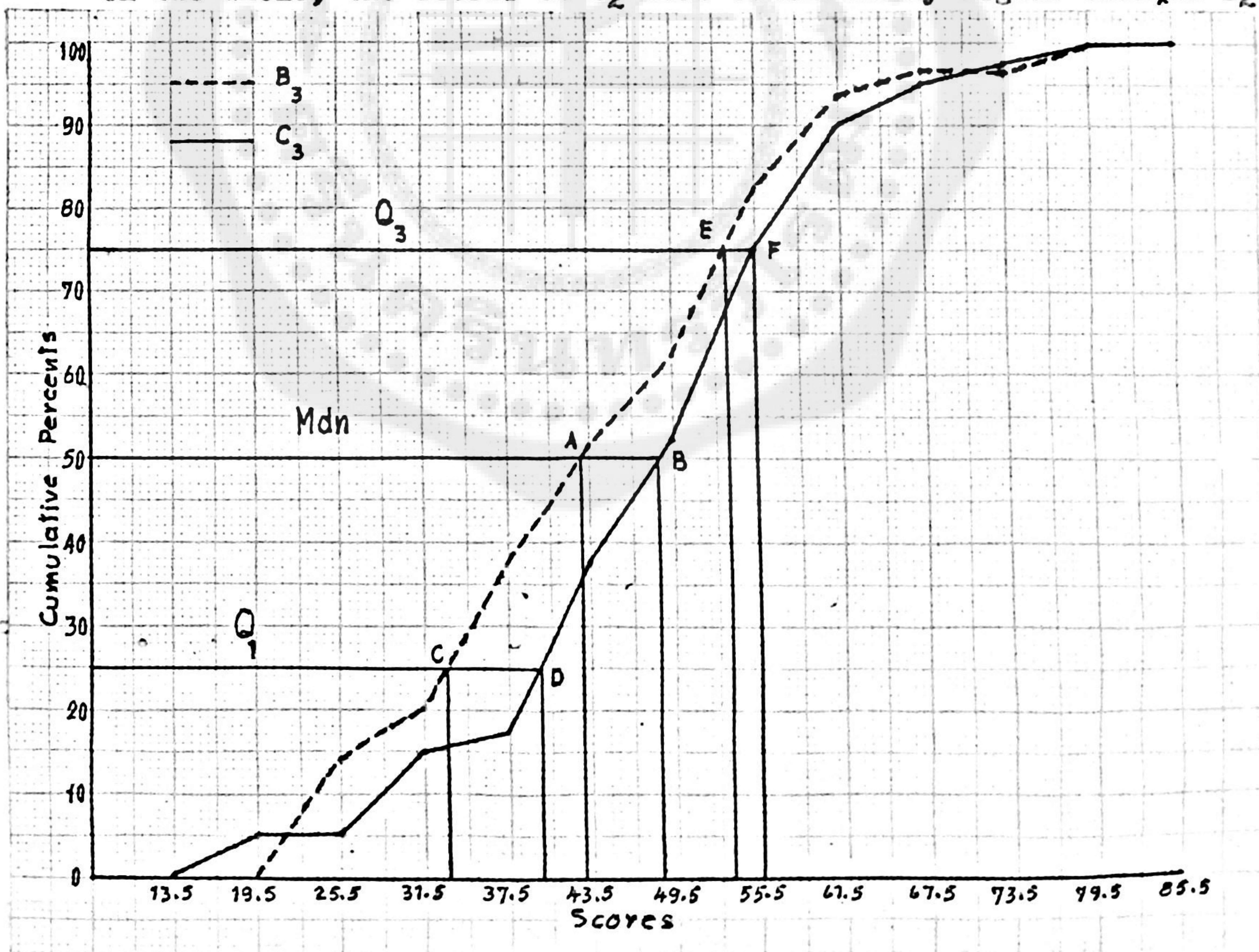


FIGURE 2

OGIVES REPRESENTING SCORES MADE BY THE CHILDREN OF PRATOM III

The ogives in Figure 2 show that there are less differences in the achievement between the two schools at Pratom III than between those at Pratom II. Furthermore, it also shows that, most of the performance scores of school C were higher than those of school B. Some more interesting observations are that, C's median is approximately 48, while B's is 43. From these values it is shown that the differences between the medians of B<sub>3</sub> and C<sub>3</sub> is less than <sup>those</sup> A<sub>2</sub> and C<sub>2</sub>. The lines C D and E F show the difference between Q<sub>1</sub> and Q<sub>3</sub> as shown in the Figure 1.

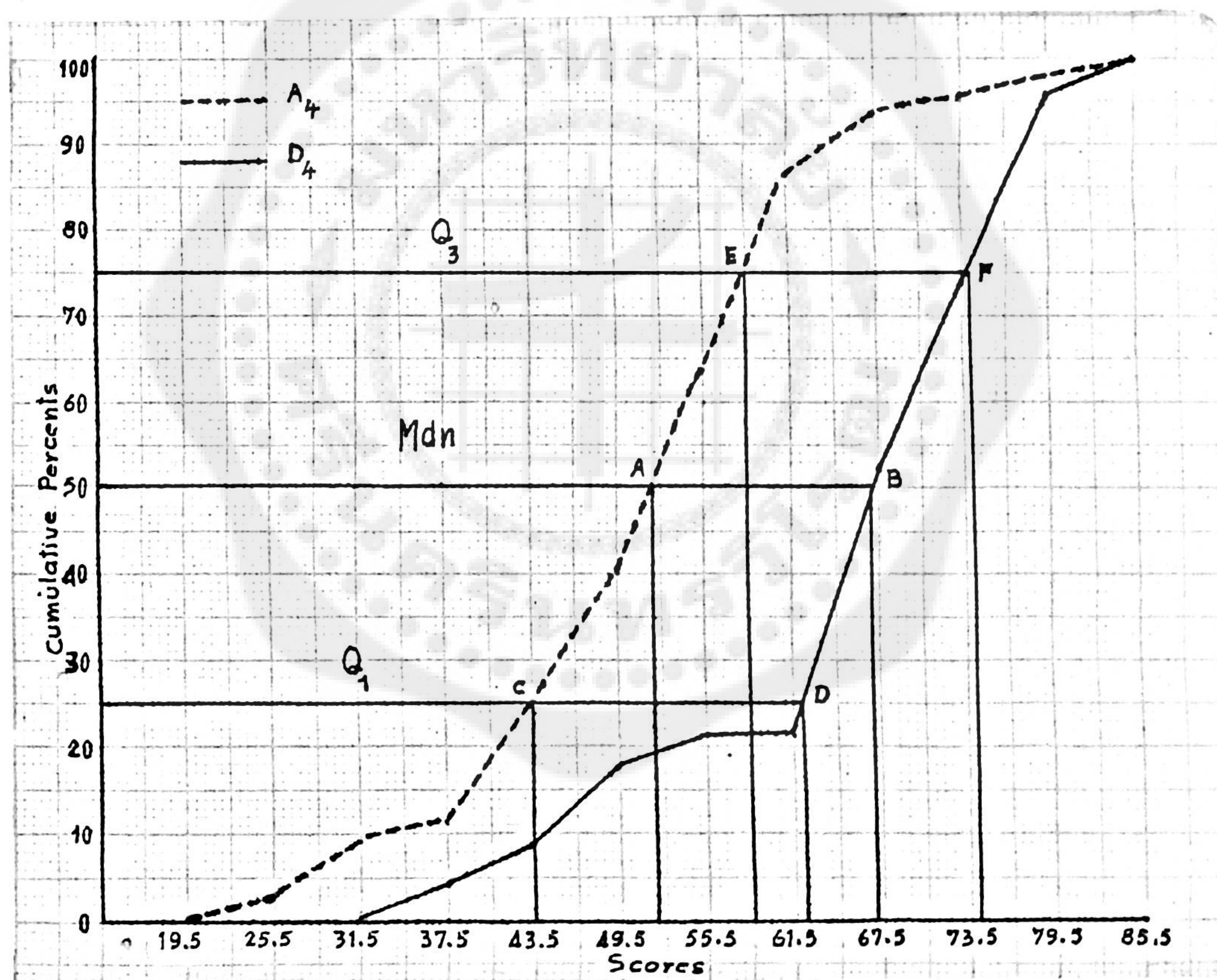


FIGURE 3

OGIVES REPRESENTING SCORES MADE BY THE CHILDREN OF PRATOM IV

The ogives in Figure 3 show that Pratom IV children in school D did

better than those of the same grade in school A. We also see that the differences at the extremes--between the very high scoring and the very low scoring--are not as great as the differences over the middle range. For a comparison in the distribution, it appears that the differences between  $Q_1$ 's of  $A_4$  and  $D_4$  are higher than  $Q_3$ 's and medians. These are shown by the lines as mentioned in the former figures.

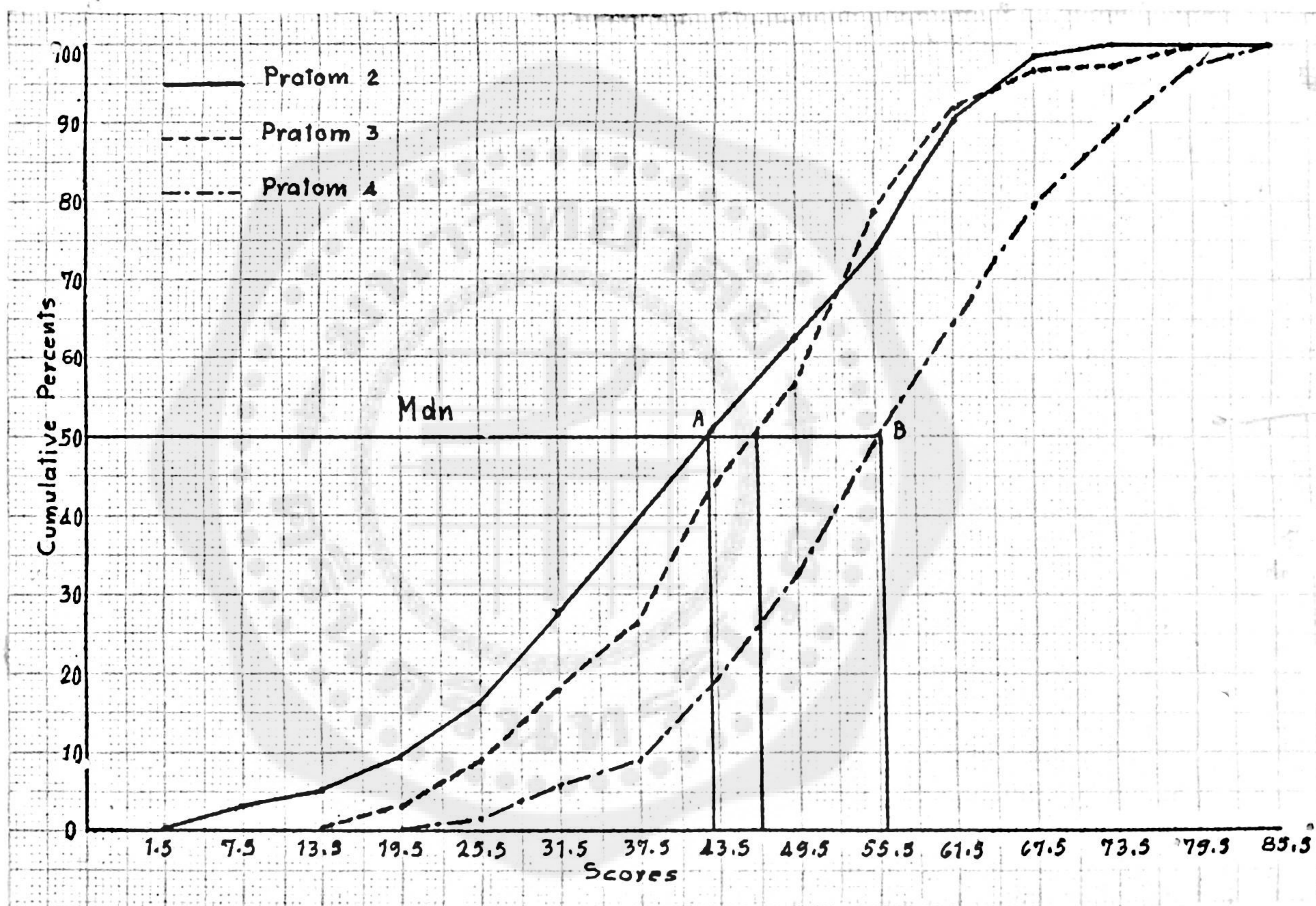


FIGURE 4  
OGIVES REPRESENTING SCORES MADE BY THE CHILDREN OF  
PRATOM II, PRATOM III, AND PRATOM IV

It can be noted from Figure 4 that the children of Pratom IV could do better than children of the other grades.

For Pratom II and Pratom III, some parts of the ogives show that the children of Pratom III could do the test better than the Pratom II, i.e. when Pratom III's ogive lay on the right side of Pratom II's; sometimes the children of Pratom II could do the test better than Pratom III, i.e. when Pratom II's ogive lay on the right side of Pratom III's.

Figures 1 - 3 showed us the differences between schools, while Figure 4 shows the differences among grades.

Comparing the achievements of the three grades, there are bigger differences between Pratom III and Pratom IV than between Pratom III and Pratom II, as indicated by the distance separating the two ogives of Pratom III and Pratom IV, which are wider than the distance between the two ogives of Pratom III and Pratom II.

Ogives representing scores made by the children of different age-groups are shown in Figure 5.

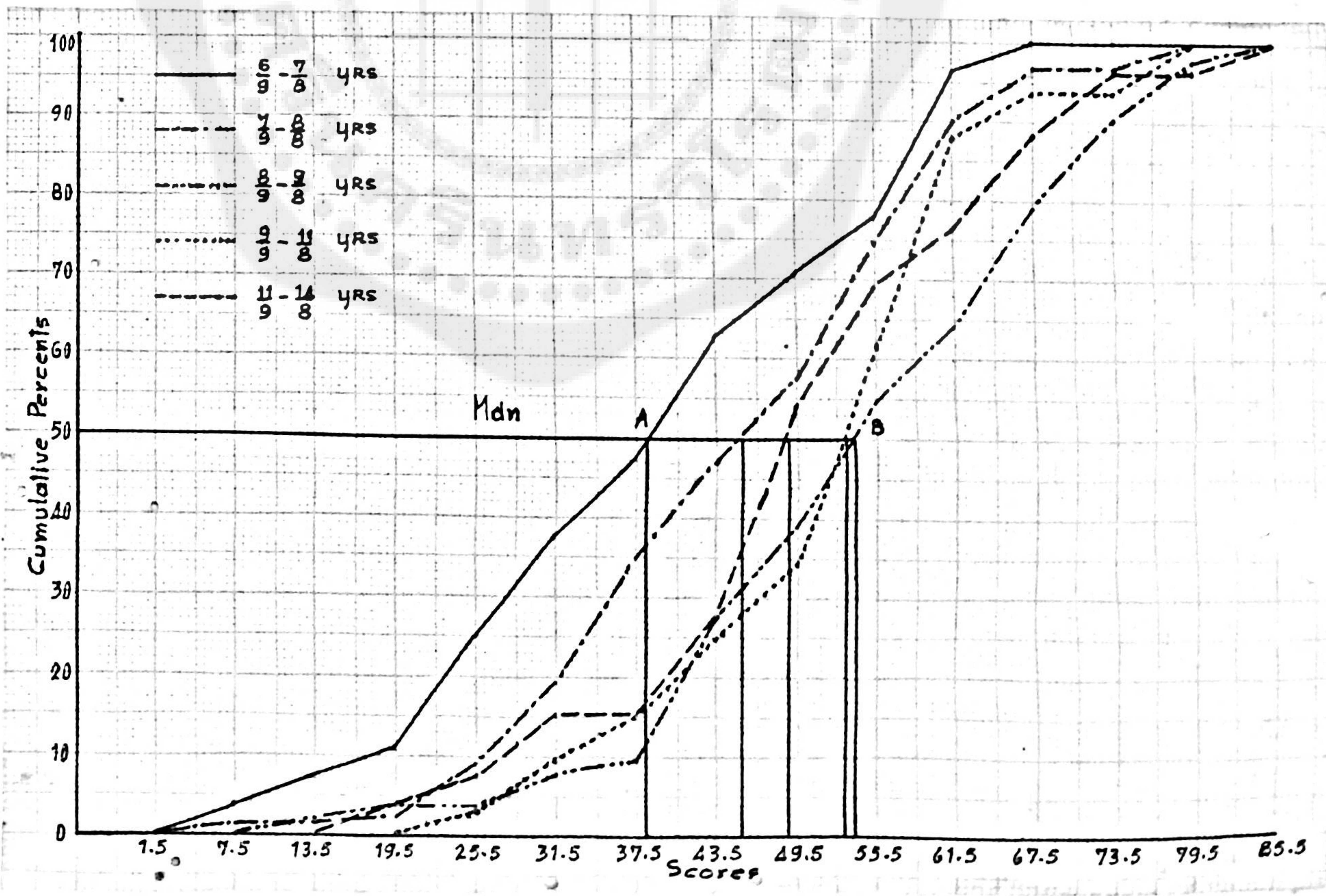


FIGURE 5

OGIVES REPRESENTING SCORES MADE BY THE CHILDREN OF DIFFERENT AGE-GROUPS

The curves in Figure 5 indicate the differences in achievement among the five age-groups. By the same way of giving a criterion as that used in Figures 1 - 4, that is, the high performance scores are shown by the right-hand curves, and the low scores shown by the left-hand. The difference in achievement among the age-groups can be seen from the distances separating the curves at various levels. It is clearly seen from this figure that the first age-group showed the lowest performance. For the second and the third age-groups, the curves show that most of the children in the third did better than the second, except some small part of the third's curve that is near to the lowest scoring, which shows that the children in the second age-group did better than the third, i.e., when the second's curve lay on the right side of the third. For the last two age-group, it is seen that the scores of each one are unstable sometimes high, and sometimes low.

On the whole, we can say that there are no age-groups which consistently got the highest scores.

We have already shown the measure designed to represent the performance of the groups. It is also important to examine the relationship between the scores in this test and the final examination marks in the Thai language.

From the data on Appendix G, pp. 53 - 58 the correlations between the performance scores from the Verbal Development III Test and the final examination marks in the Thai language were computed by the product-moment formula. These are presented in Table 15.

Table 15 shows that there is a positive relationship between our results and the final examination marks in the Thai language. Thus, on the whole, the child who did well in Verbal Development III Test can be expected to do

also wall in school achievement in the Thai Language too.

TABLE 15

PRODUCT-MOMENT COEFFICIENT OF CORRELATION BETWEEN PERFORMANCE SCORES  
OBTAINED FROM THE VERBAL DEVELOPMENT III TEST  
AND THE FINAL EXAMINATION MARKS IN THAI LANGUAGE

SCHOOL AND GRADE:	B <sub>2</sub>	C <sub>2</sub>	B <sub>3</sub>	C <sub>3</sub>	A <sub>4</sub>	D <sub>4</sub>
r :	+ 0.7	+ 0.6	+ 0.7	+ 0.8	+ 0.5	+ 0.6

In the interpretation of  $r$ 's value we have to be conscious that "a coefficient of correlation falling between 0.00 and 1.00 always implies some degree of positive association, the degree of the association depending upon the size of the coefficient."<sup>1</sup>

From this table, it is noticed that the correlation coefficient denoting high relationship (0.8) falls on C<sub>3</sub>, while the slightly low belongs to A<sub>4</sub>. The average values of  $r$  of Pratom II, Pratom III, and Pratom IV are 0.65, 0.75, and 0.55 respectively. These values indicate that the highest correlation between Verbal Development III Test and School achievement in the Thai language belongs to Pratom III, while Pratom IV shows the lowest.

In conclusion, we may say that all of the results can serve the purpose of our study. Even though there is no reliable evidence concerning the socio - economic status of the children's families, our findings still show trends of development.

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<sup>1</sup> Henry E. Garrett, Statistics in Psychology and Education. (New York: Longman, Green & Co., C 1947), p. 270.

## CHAPTER III

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### Summary and Conclusions

The present study is concerned with one type of intelligence test, examining formation of logical verbal relations of Thai children.

The test used in this study consisted of five sub-tests, in each of which were ten test items.

The following findings emerged from this study:

1. The percentages of correct responses for the first, the second, and the fourth sub-tests increased from grade to grade.
2. For the third and the fifth sub-tests which were more difficult than the others, the correct responses did not increase similarly.
3. In all sub-tests, the older the child, the better he could perform. However, the fourth and the fifth age-groups were exceptions.

#### Recommendations

The methods and techniques used to serve the purposes of our study are rather good, but it could still be improved. The following are suggestions for improvement:

1. Every sheet of Verbal Development III Test should be checked before distribution, because there might be some words on the sheets which are not clear, e.g.  $\eta$  and  $\eta$ . Such errors might lead to misreading or misinterpreting the given word.

2. The experimenter should be the same person for all schools and all grades so that instructions may be uniform. If different experimenters are used, some might concentrate on the instructions, and others might not. In this way, the number of correct responses of the groups may vary according to the instruction.
3. For our study, it had been mentioned that we centered more on the use of basic logical relation than on the use of language. However, all of the responses should be checked as soon as possible after the date of testing. Unclear responses, if left for a long time, might be forgotten by the child even if we attempt to check them with him.

Considering the materials and the time used in our study, it shows that every test item is well-graded according to difficulty, and the time limit for each sub-test is also reasonable. All of the children could finish the test in the time limit.

The sequence of the sub-tests seems to be good from the psychological point of view. The third and the fifth sub-tests which were rather difficult, were not put one after the other. If they were so arranged, the child might get bored by having to do difficult things successively. Having finished the first and the second sub-tests which were not difficult, the child might find a more difficult sub-test stimulating. After that, the child will get relaxation when doing the fourth sub-test which was an easy one. The last sub-test which was the most difficult was set for pushing the child to the goal, the completion of the test.

With regard to the samples, although the number of children tester<sup>1</sup> was only two hundred, it is sufficient because this study was only a kind of "problem survey".

The following are suggestions for further study and the use of our study for the educators.

Generally speaking, the responses of school B were lower than those of school C in the same grade as seen from Tables 3 - 7. This might be because of the lower socio-economic status of the family. And, it has already been said that the children of school B came from the families of lower income.

According to Miller, it is said that "children in families of low income tend to be neglected, and their verbal retardation is the most noticeable aspect of their generally retarded development. Children in favoured homes develop verbalization much faster. Children who are associated primarily with adults develop rapidly, and thus single children outstrip children with many brothers and sisters, and children from multiple births are often retarded."<sup>1</sup>

The difference in performance between school A and school D might also be due to the same cause.

However, since reliable data concerning family status are not available, we had to base our judgment on school records. It is hoped that, by means of visiting the children's homes and interviewing the parents, we would know more precisely about these children's social and economic background.

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<sup>1</sup> George A. Miller, Language and Communication. (New York: Mc Graw-Hill Book Company, Inc., c 1951), p. 157.

The problem concerning the factor of age is also raised in this study. From Tables 8 - 12, it was seen that the performance of the fourth and the fifth age-groups was not in the same direction as that of the other groups. The factor related to this problem might be the same as mentioned in the problem of schools C and B. Most of the children of these two age-groups were enrolled in school D, which was of about the same socio-economic level as school B.

For educators, it has been known that verbal development is closely related to general intelligence. Therefore, in studying a child who has difficulty in learning, the findings of this study may be helpful. Or, there might be a problem concerning the child's intelligence. If we use this test we will know whether the performance of a child is higher or lower than the average. After getting the result from testing, if the child's scores are lower than the average, the teacher will not expect too much from the child.

The child's concept is very vague. Because of this, we often find that he justifies the most unexpected combination, e.g. "swim goes with water, like fly goes with bird".

By analogy, the children usually "reason" when they begin to think closely about things, that is, they jump from one idea to another by a kind of intuition of resemblance.<sup>1</sup>

All of these are suggestions for further study. It is hoped that the findings of this study will be useful for educationists.

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<sup>1</sup>A.F. Watts, The Language and Mental Development of Children (London: George G. Harrap & Co. Ltd., c 1950), p. 208.

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A. Answer sheet of Verbal Development III test.  
International Institute for Child Study, Bangkok

Verbal Development III

ชื่อ.....

ชั้น.....

วันที่.....

ก. ตัวอย่าง

หงิกเป็นส่วนหนึ่งของ .....

จุกเป็นส่วนหนึ่งของ .....

๑. เล็บเป็นส่วนหนึ่งของ .....

๒. ลูกกลเป็นส่วนหนึ่งของ .....

๓. งาเป็นส่วนหนึ่งของ .....

๔. กระสุนเป็นส่วนหนึ่งของ .....

๕. เกษเป็นส่วนหนึ่งของ .....

๖. ครีบเป็นส่วนหนึ่งของ .....

๗. ทายเป็นส่วนหนึ่งของ .....

๘. ไบคานเป็นส่วนหนึ่งของ .....

๙. วันเป็นส่วนหนึ่งของ .....

๑๐. โตะเป็นส่วนหนึ่งของ .....

ข. ตัวอย่าง

มีดมีไว้สำหรับ .....

ขวามีไว้สำหรับ .....

๑. เก้าอี้มีไว้สำหรับ .....

๒. บ้านมีไว้สำหรับ .....

๓. หนังสือมีไว้สำหรับ .....

๔. เข็มมีไว้สำหรับ .....

๕. ค้อนมีไว้สำหรับ .....

- ๖. ไม้มีไว้สำหรับ .....
- ๗. ตะเกียงมีไว้สำหรับ .....
- ๘. หมอนมีไว้สำหรับ .....
- ๙. นาฬิกามีไว้สำหรับ .....
- ๑๐. ขามีไว้สำหรับ .....

ค. ตัวอย่าง

- คำกริยารูปนาม สละสลวย คือ .....
- คำกริยารูปนาม อิ่ม คือ .....

- ๑. คำกริยารูปนาม หนา คือ .....
- ๒. คำกริยารูปนาม โง่ คือ .....
- ๓. คำกริยารูปนาม กล้าหาญ คือ .....
- ๔. คำกริยารูปนาม ทุกราย คือ .....
- ๕. คำกริยารูปนาม เปียก คือ .....
- ๖. คำกริยารูปนาม ร่องไห คือ .....
- ๗. คำกริยารูปนาม เกือบค คือ .....
- ๘. คำกริยารูปนาม คอ คือ .....
- ๙. คำกริยารูปนาม ทุงกัน คือ .....
- ๑๐. คำกริยารูปนาม สู คือ .....

ง. ตัวอย่าง

- ..... เป็นสัตว์
- ..... เป็นผลไม้
- ๑. .... เป็นเครื่องนุ่งห่ม
- ๒. .... เป็นยานพาหนะ
- ๓. .... เป็นเครื่องมือทำสวน
- ๔. .... เป็นเครื่องดนตรี

- ๕. .... เป็นเครื่องกั้น
- ๖. .... เป็นอาชีพ
- ๗. .... เป็นนาย
- ๘. .... เป็นชื่อโรค
- ๙. .... เป็นกีฬา
- ๑๐. .... เป็นความดี

๑. ตัวอย่าง

ตากุ้งปลา เหมือนหูกับ .....

ใหญ่กับเล็ก เหมือนขาวกับ .....

๑. รวยกับจน เหมือนแข็งแรงกับ .....

๒. เทากับรองเท้า เหมือนหัวกับ .....

๓. โกงกับตรง เหมือนเปิดกับ .....

๔. พลัดกับนม เหมือนอยู่กับ .....

๕. เกี่ยวกับฟัน เหมือนคนกับ .....

๖. ขาวกับจาง เหมือนน้ำกับ .....

๗. วานน้ำกับน้ำ เหมือนบินกับ .....

๘. เล่นหมากเก็บกับถอนหิน เหมือนเขียนหนังสือกับ .....

๙. พยายามกับสำเร็จ เหมือนทอสุกับ .....

๑๐. สอนกับช่างไม้ เหมือนกรรไกรกับ .....

B. Instructions of the Verbal Development III. Test.

Test of Verbal Development, III

Materials: Sheets Verbal Development III, pencils.

Instructions: (แจกกระดาษทำทาบกว่าหมาลง) อธิบายเพียงพริกกระดาษจนกว่าจะบอก ท้ายกระดาษนั้นดูหน้าแรก เขียนชื่อ นามสกุล ชั้น วันที่ ทุกคนวางดินสอดเขียนก่อนแล้วจึงทำนี้ให้ที ๆ ตอนบนเขาจะเห็นเขียนไว้ว่า

ก. ตัวอย่าง แล้วมีคำพูดอีกสองประโยค ประโยคทั้งสองนี้ยังไม่ได้อ่านครบถ้วน จะต้องเติมคำอะไรลงไปอีกประโยคละคำหนึ่งจึงจะได้อ่าน ประโยคที่หนึ่งเขียนไว้ว่า หลังจากที่เป็นส่วนหนึ่งของ แล้วเว้นช่องว่างไว้ เธอว่า หลังจากที่ เป็นส่วนหนึ่งของอะไร ..... ถูกแล้ว หลังจากที่เป็นส่วนหนึ่งของบ้าน ถ้าถึงนั้นทุกคนเติมคำว่า บ้าน ลงไปในช่องที่เว้นว่างไว้ ประโยคต่อไปเขียนไว้ว่า จุก เป็นส่วนหนึ่งของ แล้วเว้นช่องว่างไว้ เธอว่าของอะไร ..... นั้นถูกแล้ว จุกเป็นส่วนหนึ่งของหน้า เมื่อเป็นดังนี้ เขียนคำว่า หน้า ลงไปในช่องที่เว้นว่างไว้ (ถ้าเด็กตอบว่า ตัว แทนคำว่า หน้า ให้อธิบายว่าถูกเหมือนกัน แทนคำว่า หน้า ถูกกว่าตัว) ทำต่อไปจนจบหน้า แล้ววางดินสอด อธิบายอีกหน้าต่อไปจนกว่าจะบอก

ข. คราวนี้ พริกกระดาษต่อไป ต่อจากที่เขียนว่า ตัวอย่าง เธอจะเห็นเขียนไว้ว่า นึกมีไว้สำหรับ แล้วเว้นช่องว่างไว้ ไหนใครบอกใครว่า นึกมีไว้สำหรับทำอะไร ..... ถูกแล้ว นึกมีไว้สำหรับกัด เขียนคำว่า กัด ลงไปในช่องที่เว้นว่างไว้ แล้วหา นึกมีไว้สำหรับทำอะไร ..... ถูก ชาวมีไว้สำหรับกิน เติมคำว่า กิน ลงไป ทำต่อไปจนจบหน้าแล้ววางดินสอด อธิบายอีกหน้าต่อไปจนกว่าจะบอก

ค. พริกกระดาษต่อไป เราจะหาคำกรงขามเก็บในช่องว่าง ถ้าไม่สะดวก มันเป็นอย่างไร ..... ถูก มันสกปรก ดังนั้น คำกรงขามกับสะดวก คือ สกปรก เติมคำสกปรกลงไป แล้วเมื่อเธอไม่อ่าน เธอเป็นอย่างไร ..... หิว ถูกแล้ว คำกรงขามกับหิวคือ หิว เติมคำ หิว ลงไป ดังนั้นในตอนนี้เธอจะต้องหาคำกรงขามเติมลงไปเสมอ แต่จำไว้ว่า คำกรงขามหมายถึงคำที่มีความหมาย

ตรงตาม จะใช้เก็บคำว่า ไม่ เช่น ไม่สะอาด ไม่ดี อย่างนี้ไม่ได้ ทำต่อไปจนจบ  
แล้ววางกิ้นสอ อย่างพลิกหน้าต่อไปจนกว่าครูจะบอก

ง. คราวนี้ ลองบอกชื่อสัตว์มาดูทีละตัวว่าเธอรู้จักสัตว์อะไรบ้าง พอละ เราจะเลือกเขียนชื่อ  
เดียวลงในช่องว่าง เธอสัตว์อะไรก็ได้ เราก็จะโต้ตอบว่า สุนัข (หรือวัว ฯลฯ)  
เป็นสัตว์ เขียนลงไปที่นี่เธอลองบอกชื่อผลไม้มาดูทีละตัวว่ามีอะไรบ้าง เราจะเลือก  
เขียนลงชื่อเดียวเป็นตัวอย่าง ๆ ประโยคเมื่อกล่าว สม (หรือกล้วย ฯลฯ) เป็นผลไม้  
เขียนลงไป ทำต่อไปจนจบหน้าแล้ววางกิ้นสอ อย่างพลิกหน้าต่อไปจนกว่าครูจะบอก

จ. คราวนี้ ตากกับดู เหมือนรูปกับ แล้วเว้นช่องว่างไว้ คิดดูว่า เราใช้คำสำหรับดู  
เราใช้คำสำหรับทำอะไร ..... ดูแล้ว เราใช้รูปทรง ค้างเห็น ตากกับดู เหมือน  
รูปกับทรง นี่ก็เป็นประโยคโลกความครบถ้วน เขียนลงไป ต่อไป ใหญ่กับเล็ก เหมือน  
ยาวกับ ..... (เขียนวงกลมใหญ่ และวงกลมเล็ก และเส้นยาวเส้นหนึ่งบน  
กระดาษคำ) เราเรียกดูว่า วงกลมใหญ่ และรูปนี้ว่า วงกลมเล็ก เส้นนี้เรา  
เรียกว่าเส้นยาว เธอคิดว่าเส้นที่เขียนต่อไปเราจะเรียกว่าเส้นอะไร .....  
ดูแล้ว (เขียนเส้นสั้นบนกระดาษคำ) ทำต่อไปจนจบหน้าแล้ววางกิ้นสอ

Time: for every sub-test: Pratom III, and IV 4', Pratom II 5'.  
Note: The examples should be worked out with the whole class.

C. Number of Responses in Different Categories Classified  
by School and by Grade.

C.1 Number of Responses to Sub-Test I in Different Categories

Category	Pratom IV		Total	Pratom III		Total	Pratom II		Total
	A	D		B	C		B	C	
1	209	117	326	137	162	299	116	136	252
2.a	43	25	68	33	41	74	30	35	65
2.b	56	31	87	21	49	70	24	24	48
3.a	-	-	-	5	2	7	1	6	7
3.b	71	42	113	54	51	105	44	47	91
3.c	50	9	59	19	45	64	26	24	50
3.d	4	3	7	5	6	11	9	7	16
3.e	3	-	3	1	3	4	9	13	22
3.f	4	3	7	15	41	56	101	8	109

C.2 Numbers of Responses to Sub-Test II in Different Categories

Category	Pratom IV		Total	Pratom III		Total	Pratom II		Total
	A	D		B	C		B	C	
1	231	144	375	151	226	377	151	182	333
2.a	115	56	171	56	55	111	67	30	97
2.b	42	36	78	32	63	95	49	43	92
3.a	45	24	69	38	43	81	41	36	77
3.b	4	-	4	8	9	17	10	6	16
3.c	3	-	3	3	2	5	4	2	6
3.d	-	-	-	2	2	4	38	1	39

C.3 Number of Responses to Sub-Test III in Different Categories

Category	Pratom IV		Total	Pratom III		Total	Pratom II		Total
	A	D		B	C		B	C	
1	146	119	265	37	113	150	53	104	157
2.a	14	5	19	20	15	35	6	3	9
2.b	69	33	102	72	65	137	40	53	93
2.c	59	16	75	43	45	88	36	51	87
2.d	92	43	135	58	83	141	78	48	126
2.e	60	14	74	60	79	139	147	41	188

C.4 Number of Responses to Sub-Test IV in Different Categories

Category	Pratom IV		Total	Pratom III		Total	Pratom II		Total
	A	D		B	C		B	C	
1	257	182	439	165	231	396	147	189	336
2	53	22	75	21	29	50	14	23	37
3.a	66	12	78	35	41	76	46	45	91
3.b	43	6	49	37	47	84	43	28	71
3.c	6	1	7	2	3	5	1	1	2
3.d	4	1	5	3	3	6	9	4	13
3.e	11	6	17	27	46	73	100	10	110

C.5 Number of Responses to Sub-Test V in Different Categories

Category	Pratom IV		Total	Pratom III		Total	Pratom II		Total
	A	D		B	C		B	C	
1	122	113	235	53	91	144	45	95	140
2.a	4	1	5	6	4	10	2	-	2
2.b	80	42	122	31	42	73	30	58	88
2.c	5	2	7	-	1	1	1	2	3
2.d	125	44	169	96	115	211	98	88	186
2.e	50	13	63	52	70	122	47	45	92
2.f	54	15	69	52	77	129	137	12	149

F. Number of Responses in Different Categories Classified by Age.

D.1 Number of Responses to Sub-Test I in Different Categories

Category	6 - 7		7 - 8		8 - 9		9 - 10		10 - 11		11 - 12		12 - 13		13 - 14		Total
	9	8	9	8	9	8	9	8	9	8	9	8	9	8			
1	96		278		239		76		69		82		23		12		875
2.a	24		75		57		18		13		14		2		6		209
2.b	24		48		59		24		19		18		6		5		203
3.a	1		12		1		-		-		-		-		-		14
3.b	33		100		80		35		19		32		10		3		312
3.c	24		53		35		8		15		19		15		3		172
3.d	7		12		4		6		1		1		1		1		33
3.e	7		15		1		3		-		4		-		-		30
3.f	54		67		34		10		4		-		3		-		172

D.2 Number of Responses to Sub-Test II in Different Categories

Category	6 - 7		7 - 8		8 - 9		9 - 10		10 - 11		11 - 12		12 - 13		13 - 14		Total
	9	8	9	8	9	8	9	8	9	8	9	8	9	8			
1	133		365		281		103		67		93		30		14		1086
2.a	33		94		82		33		45		39		13		9		348
2.b	38		86		77		20		11		18		10		5		365
3.a	33		80		50		23		15		16		3		2		227
3.b	6		17		8		1		1		3		1		-		37
3.c	3		7		1		-		1		1		1		-		14
3.d	19		11		11		-		-		-		2		-		43

D.3 Number of Responses to Sub-Test III in Different Categories

Category	$\frac{6}{9} - \frac{7}{8}$	$\frac{7}{9} - \frac{8}{8}$	$\frac{8}{9} - \frac{9}{8}$	$\frac{9}{9} - \frac{10}{8}$	$\frac{10}{9} - \frac{11}{8}$	$\frac{11}{9} - \frac{12}{8}$	$\frac{12}{9} - \frac{13}{8}$	$\frac{13}{9} - \frac{14}{8}$	Total
1	69	164	179	57	50	63	10	10	602
2.a	3	23	16	10	3	7	-	1	63
2.b	28	118	97	33	15	25	11	6	333
2.d	49	116	98	30	36	28	18	6	381
2.c	37	94	46	19	13	32	10	2	253
2.e	84	145	74	31	23	15	11	5	388

D.4 Number of Responses to Sub-Test IV in Different Categories

Category	$\frac{6}{9} - \frac{7}{8}$	$\frac{7}{9} - \frac{8}{8}$	$\frac{8}{9} - \frac{9}{8}$	$\frac{9}{9} - \frac{10}{8}$	$\frac{10}{9} - \frac{11}{8}$	$\frac{11}{9} - \frac{12}{8}$	$\frac{12}{9} - \frac{13}{8}$	$\frac{13}{9} - \frac{14}{8}$	Total
1	50	141	170	51	39	49	12	7	519
2.a	-	10	3	1	1	3	-	-	18
2.b	24	86	74	22	28	36	6	6	282
2.e	40	109	63	18	16	20	7	4	277
2.d	70	200	131	49	38	42	27	9	566
2.c	-	3	2	1	2	2	1	-	11
2.f	86	111	67	38	16	18	7	4	347

Number of Responses to Sub-Test V in Different Categories

D.5

Category	$\frac{6}{9} - \frac{7}{8}$	$\frac{7}{9} - \frac{8}{8}$	$\frac{8}{9} - \frac{9}{8}$	$\frac{9}{9} - \frac{10}{8}$	$\frac{10}{9} - \frac{11}{8}$	$\frac{11}{9} - \frac{12}{8}$	$\frac{12}{9} - \frac{13}{8}$	$\frac{13}{9} - \frac{14}{8}$	Total
1	122	366	335	121	75	107	27	18	1171
2	15	43	46	14	19	19	5	3	164
3.a	36	87	43	23	18	22	9	7	245
3.d	8	8	2	2	-	3	-	-	23
3.b	31	80	36	12	19	14	10	1	203
3.c	1	3	3	1	3	1	2	-	14
7.e	57	73	45	7	6	4	7	1	200

E. Frequency Distribution of the Scores Made by the Children of  
Various Grades and Schools.

E.1 FREQUENCY DISTRIBUTION OF THE SCORES MADE BY THE CHILDREN  
OF PRATOM IV

Scores	School A			School D			Total		
	f	Cum. f	Cum % f	f	Cum. f	Cum % f	f	Cum. f	Cum % f
80 - 85	1	44	100.0	1	23	100.0	2	67	100.0
74 - 79	1	43	97.7	5	22	95.6	6	65	97.0
68 - 73	1	42	95.4	5	17	73.9	6	59	88.1
62 - 67	3	41	93.2	7	12	52.2	10	53	79.1
56 - 61	10	38	86.4	0	5	21.7	10	43	64.2
50 - 55	10	28	63.6	1	5	21.7	11	33	49.2
44 - 49	7	18	40.9	2	4	17.4	9	22	32.8
38 - 43	6	11	25.0	1	2	8.7	7	13	19.4
32 - 37	1	5	11.4	1	1	4.3	2	6	9.0
26 - 31	3	4	9.1	0	0	0	3	4	6.0
20 - 25	1	1	2.3	0	0	0	1	1	1.5
14 - 19	0	0	0	0	0	0	0	0	0
8 - 13	0	0	0	0	0	0	0	0	0
2 - 7	0	0	0	0	0	0	0	0	0
	N=44			N=23			N=67		

E.2 FREQUENCY DISTRIBUTION OF THE SCORES MADE BY THE CHILDREN  
OF PRATOM III

Scores	School B			School C			Total		
	f	Cum.f	Cum % f	f	Cum.f	Cum % f	f	Cum f	Cum % f
80 - 85	0	29	100.0	0	40	100.0	0	69	100.0
74 - 79	1	29	100.0	1	40	100.0	2	69	100.0
68 - 73	0	28	96.6	1	39	97.5	1	67	97.1
62 - 67	1	28	96.6	2	38	95.0	3	66	95.6
56 - 61	3	27	93.1	6	36	90.0	9	63	91.3
50 - 55	6	24	82.7	9	30	75.0	15	54	78.3
44 - 49	3	18	62.1	6	21	52.5	9	39	56.5
38 - 43	4	15	51.7	8	15	37.5	12	30	43.5
32 - 37	5	11	37.9	1	7	17.5	6	18	26.1
26 - 31	2	6	20.7	4	6	15.0	6	12	17.4
20 - 25	4	4	13.8	0	2	5.0	4	6	8.7
14 - 19	0	0	0	2	2	5.0	2	2	2.9
8 - 13	0	0	0	0	0	0	0	0	0
2 - 7	0	0	0	0	0	0	0	0	0
	N=29			N=40			N=69		

E.3

FREQUENCY DISTRIBUTION OF THE SCORES MADE BY THE CHILDREN

OF PRATOM II

Scores	School B			School C			Total		
	f	Cum. f	Cum.% f	f	Cum.f	Cum.% f	f	Cum.f	Cum.% f
80 - 85	0	36	100.0	0	30	100.0	0	66	100.0
74 - 79	0	36	100.0	0	30	100.0	0	66	100.0
68 - 73	0	36	100.0	1	30	100.0	1	66	100.0
62 - 67	1	36	100.0	4	29	96.7	5	65	98.5
56 - 61	3	35	97.2	8	25	83.3	11	60	90.9
50 - 55	2	32	88.9	6	17	56.7	8	49	74.2
44 - 49	3	30	83.3	4	11	36.7	7	41	62.1
38 - 43	5	27	75.0	3	7	23.3	8	34	51.5
32 - 37	5	22	61.1	3	4	13.3	8	26	39.4
26 - 31	6	17	47.2	1	1	3.3	7	18	27.3
20 - 25	5	11	30.6	0	0	0	5	11	16.7
14 - 19	2	6	16.7	0	0	0	2	6	9.1
8 - 13	2	4	11.1	0	0	0	2	4	6.1
2 - 9	2	2	5.6	0	0	0	2	2	3.0
	N=36			N=30			N=66		

F. Frequency Distribution of the Scores Made by the Children of Various Age-Groups.

F.1 FREQUENCY DISTRIBUTION OF THE SCORES MADE BY THE CHILDREN OF AGE

$\frac{6}{9}$  -  $\frac{7}{8}$  YEARS

Scores	f	Cum.f	Cum. % f
80 - 85	-	27	100.0
74 - 79	-	27	100.0
68 - 73	-	27	100.0
62 - 67	1	27	100.0
56 - 61	5	26	96.3
50 - 55	2	21	77.8
44 - 49	2	19	70.4
38 - 43	4	17	63.0
32 - 37	3	13	48.1
26 - 31	3	10	37.0
20 - 25	4	7	25.9
14 - 19	1	3	11.1
8 - 13	1	2	7.4
2 - 7	1	1	3.7
	N = 27		

F.2 FREQUENCY DISTRIBUTION OF THE SCORES MADE BY THE CHILDREN OF AGE

 $\frac{7}{9} - \frac{8}{8}$  YEARS

Scores	f	Cum.f	Cum. % f
80 - 85	-	66	100.0
74 - 79	2	66	100.0
68 - 73	-	64	97.0
62 - 67	5	64	97.0
56 - 61	10	59	89.4
50 - 55	11	49	74.2
44 - 49	7	38	57.6
38 - 43	8	31	47.0
32 - 37	10	23	34.8
26 - 31	7	13	19.7
20 - 25	4	6	9.1
14 - 19	1	2	3.0
8 - 13	-	1	1.5
2 - 7	1	1	1.5
	N = 66		

F.3 FREQUENCY DISTRIBUTION OF THE SCORES MADE BY THE CHILDREN OF AGE

$\frac{8}{9} - \frac{9}{8}$  YEARS

Scores	f	Cum.f	Cum. % f
80 - 85	1	51	100.0
74 - 79	4	50	98.0
68 - 73	6	46	90.2
62 - 67	7	40	78.4
56 - 61	5	33	64.7
50 - 55	8	28	54.9
44 - 49	6	20	39.2
38 - 43	9	14	27.4
32 - 37	1	5	9.8
26 - 31	2	4	7.8
20 - 25	0	2	3.9
14 - 19	1	2	3.9
8 - 13	1	1	2.0
2 - 7	-	0	0
	N = 51		

F.4 FREQUENCY DISTRIBUTION OF THE SCORES MADE BY THE CHILDREN OF AGE

$\frac{9}{9} - \frac{11}{8}$  YEARS

Scores	f	Cum. f	Cum. % f
80 - 85	-	32	100.0
74 - 79	2	32	100.0
68 - 73	-	30	93.8
62 - 67	2	30	93.8
56 - 61	8	28	87.5
50 - 55	9	20	62.5
44 - 49	3	11	34.4
38 - 43	3	8	25.0
32 - 37	2	5	15.6
26 - 31	2	3	9.4
20 - 25	1	1	3.1
14 - 19	-	0	0
8 - 13	-	0	0
2 - 7	-	0	0
	N = 32		

F.5 FREQUENCY DISTRIBUTION OF THE SCORES MADE BY THE CHILDREN OF AGE

$\frac{11}{9} - \frac{14}{8}$  YEARS

Scores	f	Cum.f	Cum. % f
80 - 85	1	26	100.0
74 - 79	-	25	96.2
68 - 73	2	25	96.2
62 - 67	3	23	88.5
56 - 61	2	20	76.9
50 - 55	4	18	69.2
44 - 49	7	14	53.8
38 - 43	3	7	26.9
32 - 37	-	4	15.4
26 - 31	2	4	15.4
20 - 25	1	2	7.7
14 - 19	1	1	3.9
8 - 13	-	0	0
2 - 7	-	0	0
	N = 26		

G. Scores of Verbal Development III Test and the Final Examination Marks  
 in the Thai Language Made by <sup>THE CHILDREN OF</sup> Various Grades and Schools.

G.1 SCORES OF VERBAL DEVELOPMENT III TEST AND THE FINAL EXAMINATION MARKS

IN THE THAI LANGUAGE

MADE BY THE CHILDREN OF PRATOM IV OF SCHOOL A

Subjects	Verb. Test Total=100	Thai Language Total=190	Subjects	Verb. Test Total=100	Thai Language Total=190
S1	51	136	S23	63	158
S2	56	156	S24	40	134
S3	59	154	S25	63	140
S4	46	142	S26	54	161
S5	50	136	S27	53	158
S6	52	146	S28	74	135
S7	53	146	S29	25	138
S8	53	147	S30	-	-
S9	53	144	S31	61	134
S10	47	132	S32	-	-
S11	35	137	S33	53	149
S12	39	140	S34	47	139
S13	60	159	S35	57	130
S14	83	154	S36	38	141
S15	38	125	S37	57	157
S16	43	131	S38	31	97
S17	51	153	S39	58	143
S18	68	156	S40	57	162
S19	43	132	S41	60	137
S20	63	156	S42	47	130
S21	44	141	S43	28	124
S22	30	136	S44	55	152
			S45	49	141
			S46	47	143

G.2 SCORES OF VERBAL DEVELOPMENT III TEST AND THE FINAL EXAMINATION MARKS  
IN THE THAI LANGUAGE

MADE BY THE CHILDREN OF PHATOM IV OF SCHOOL D

Subjects	Verb. Test Total=100	Thai Language Total=190
S1	76	141
S2	59	148
S3	64	141
S4	65	154
S5	66	139
S6	70	140
S7	77	142
S8	48	139
S9	47	116
S10	80	137
S11	74	148
S12	65	132
S13	71	134
S14	64	137
S15	55	117
S16	67	135
S17	70	152
S18	42	121
S19	35	110
S20	72	130
S21	74	135
S22	-	-
S23	79	166
S24	62	120

N = 23

G.3 SCORES OF VERBAL DEVELOPMENT III TEST AND THE FINAL EXAMINATION MARKS  
IN THE THAI LANGUAGE

MADE BY THE CHILDREN OF PRATOM III OF SCHOOL B

Subjects	Verb. Test Total=100	Thai Language Total = 190	Subject	Verb. Test Total=100	Thai Language Total = 190
S1	57	177	S19	52	165
S2	47	164	S20	32	153
S3	-	-	S21	39	160
S4	45	159	S22	50	171
S5	75	174	S23	-	-
S6	31	170	S24	23	150
S7	52	171	S25	34	145
S8	30	154	S26	55	176
S9	-	-	S27	51	163
S10	-	-	S28	34	159
S11	25	161	S29	-	-
S12	39	169	S30	57	167
S13	33	158	S31	60	168
S14	33	155	S32	66	182
S15	23	154	S33	23	149
S16	-	-	S34	-	-
S17	40	185	S35	41	174
S18	54	183	S36	47	182

G.4 SCORES OF VERBAL DEVELOPMENT III TEST AND THE FINAL EXAMINATION MARKS

IN THE THAI LANGUAGE

MADE BY THE CHILDREN OF PRATOM III OF SCHOOL C

Subjects	Verb. Test Total=100	Thai Language Total = 190	Subjects	Verb. Test Total=100	Thai Language Total = 190
S1	54	136	S22	54	149
S2	33	136	S23	46	145
S3	46	145	S24	68	146
S4	60	154	S25	-	-
S5	56	156	S26	50	138
S6	41	122	S27	58	158
S7	17	90	S28	59	128
S8	55	132	S29	42	151
S9	19	85	S30	46	142
S10	44	116	S31	61	142
S11	55	169	S32	66	146
S12	63	146	S33	39	139
S13	30	108	S34	39	134
S14	38	127	S35	40	119
S15	43	122	S36	49	143
S16	28	102	S37	42	106
S17	54	145	S38	50	147
S18	26	110	S39	30	129
S19	-	-	S40	51	137
S20	51	124	S41	48	147
S21	75	138	S42	57	156

N = 40

G.5 SCORES OF VERBAL DEVELOPMENT III TEST AND THE FINAL EXAMINATION MARKS  
IN THE THAI LANGUAGE

MADE BY THE CHILDREN OF PRATOM II OF SCHOOL B

Subjects	Verb. Test Total=100	Thai Language Total = 120	Subject	Verb. Test Total=100	Thai Language Total = 120
S1	32	99	S19	24	81
S2	58	95	S20	11	71
S3	39	102	S21	38	106
S4	21	96	S22	33	109
S5	30	103	S23	21	100
S6	2	66	S24	67	113
S7	42	89	S25	27	98
S8	47	102	S26	30	93
S9	28	100	S27	43	109
S10	32	95	S28	11	75
S11	21	58	S29	53	107
S12	36	111	S30	25	97
S13	27	86	S31	46	110
S14	41	112	S32	51	116
S15	35	106	S33	61	98
S16	15	89	S34	29	111
S17	47	105	S35	19	91
S18	5	61	S36	59	108

G.6

SCORES OF VERBAL DEVELOPMENT III TEST AND THE FINAL EXAMINATION MARKS

IN THE THAI LANGUAGE

MADE BY THE CHILDREN OF PRATOM II OF SCHOOL C

Subjects	Verb. Test Total=100	Thai Language Total = 180	Subjects	Verb. Test Total = 100	Thai Language Total=180
S1	55	153	S17	57	148
S2	56	152	S18	62	152
S3	37	131	S19	39	140
S4	65	160	S20	31	130
S5	-	-	S21	63	168
S6	43	140	S22	48	132
S7	-	-	S23	54	153
S8	37	145	S24	60	129
S9	60	123	S25	55	155
S10	55	143	S26	58	161
S11	68	156	S27	36	133
S12	47	127	S28	58	151
S13	64	147	S29	61	143
S14	51	143	S30	53	135
S15	48	155	S31	58	149
S16	39	128	S32	49	145

N = 30