Chapter Four

Presentation and Analysis of Data

Patterns and Trends in Performance

4.0 Introduction

In a large scale research study, quantitative and qualitative data that has been amassed can be summarized for maximum effect in interpretation. Data can be summarized systematically in order to,

(a) identify patterns

(b) detect trends

(c) compare two or more sets of scores

(d) present the data to the readers and an audience in a more meaningful manner.

The performance level of the students can be evaluated using the test scores. Use of summaries, figures and indicators such as; frequency distribution, histogram, frequency polygon, skewness, ogive, percentiles, interquartile range, mean values, percentage of students below and above the mean value are meaningful in such an exercise. These measures can be made use of in making more meaningful interpretations. All the tests (First Language, Mathematics and English Language) administered, were constructed using pre-tested items with facility values ranging from 0.98 to 0.65. Therefore the obtained scores are suitable to determine the "Level of Mastery" of the students in relation to each subject. An analysis of the level of mastery in the main subject as well as its sub-skills will pave way for further interpretation of the test results.

In this chapter, patterns, trends and comparisons using the various indices are discussed under a few themes, i.e. distribution of scores, achievement levels, providing equal opportunities in basic education, comparison of the performance and measures of correlation.

4.1 What the Distributions of Scores Reveal

The distribution of scores in a test can be represented by the frequency polygon. When the frequencies of scores are normally distributed, the frequency polygon takes the shape of a bell which is symmetrical in nature. To achieve this normal distribution in scores the test has to be constructed accordingly, using the number of items with different facility values as is advocated by researchers in the field of test construction. As the tests used in this survey are constructed using items with facility values ranging from 0.65 to 0.98, the frequency polygon expected in the sets of scores need to be skewed to the left. That is, they have to be negatively skewed. **When the shape of this frequency polygon and the skewness of the curve are taken together, the patterns and trends evident in relation to pupil performance can be easily identified.**

> ***"The skewness"*** *in distribution refers to the trailing off of frequencies towards extreme scores in one direction, away from the bulk of cases. A skew value of +1 shows rather extreme positive skewness and a value of –1 rather negative skewness.*
>
> *-Gilbert Sax -*

Figure 4.1 given below outlines the nature of the distribution of all island scores in the three subjects tested.

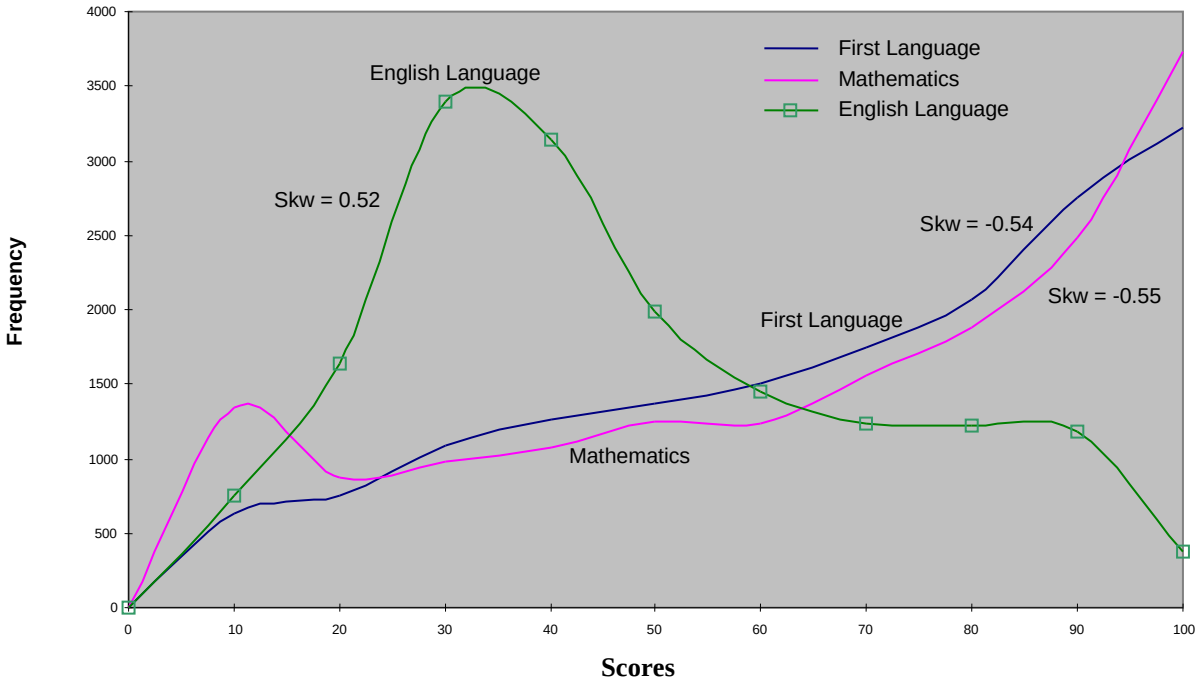


Figure 4.1 – All Island Distribution of Scores – First Language, Mathematics and English Language

The frequency polygon related to First Language is negatively skewed. The skewness of the distribution is – 0.54, which means that the relative concentration of the scores is more at the right tail of the distribution. This indicates that **more students are scoring high marks and less students are scoring low marks in first language**.

The same pattern is evident in Mathematics, with one exception. The frequency curve is skewed to the left (negatively) with a skewness value of – 0.55, but with a mode around 09. This means that though the pattern is more students scoring high marks and less students scoring low marks, there is a large group of students who score very low marks. As the frequency distribution reveals, the percentage of students within the class interval of 0-9 takes a higher value of 8.2 percent, where as in first language it is 3.9 percent and in English it is 4.6 percent. According to the distribution the exception is that **there is a large group of students who are very poor in Mathematics**, who had not acquired the basic skills that were needed to work in Grade 04 in the previous year, and who are now not ready or do not have the entry behaviour level that is needed to study in Grade 05 next year. Undoubtedly this group is liable to be repeaters.

The distribution of **English Language** scores is quite different from that of the two other subjects. The frequency polygon is skewed to the right, with a positive skewness value of 0.52. This means that **more students are scoring low marks and less students are scoring high marks**. A percentage of 40.6 is within the range of 20-39 marks. A group of 54.5 percent has scored below 40 marks. **On the whole, the trend evident in the distribution of scores is that the performance levels in First Language and Mathematics are relatively better than that of English Language, with the exception of a group of students who are very poor in mathematics**.

4.2 Achievement in First Language

The level of a student's achievement in the First Language, after four years of formal schooling, can be considered as a **highly valid indicator to assess the level of literacy**. If a student at this grade level is sufficiently literate he/she should,

- have a good vocabulary.
- be able to read and understand (comprehend) short phrases, simple sentences, short notices, general instructions etc. that may be needed and be useful in day to day activities.
- be capable of writing simple sentences of three to five words, to express or communicate his/her feelings and ideas.

> *A nine year old child should be able to use reading and writing skills to meet the needs of everyday life. ..... should be able to read and understand a verity of texts appropriate to his age level and write legibly, clearly and correctly, words, phrases and sentences to convey required information.*
>
> *-Mauritius MLA Project-*

At the stage of completing grade 04 (Key stage 02) the student is expected to write these sentences using very simple grammatical structures necessary in written language.

The distribution of the all island scores in first language is given in Table 4.1. A very clear pattern is evident when this Table and the Figure 4.2 are studied together. The number of cases or the **percentages of students falling in each class interval is seen in an ascending order when taken from the lowest to the highest**.

> *The idea of a **frequency distribution** is to tell us, the number of cases in each category. Percentages will tell the proportion of cases contained within each frequency. ie. relative frequency.*
>
> *-Bryman and Cramer-*

Table 4.1 : Distribution of Scores in First Language

Class Interval	*Frequency*	*Percentage*	*Cumulative Percentage*
90 - 100	3227	19.7	100.0
80 - 89	2746	16.8	80.3
70 - 79	2061	12.6	63.6
60 - 69	1750	10.7	51.0
50 - 59	1505	9.2	40.3
40 - 49	1369	8.4	31.1
30 - 39	1256	7.7	22.7
20 - 29	1081	6.6	15.1
10 - 19	751	4.6	8.5
0 - 9	637	3.9	3.9
Total	16383	100.0	

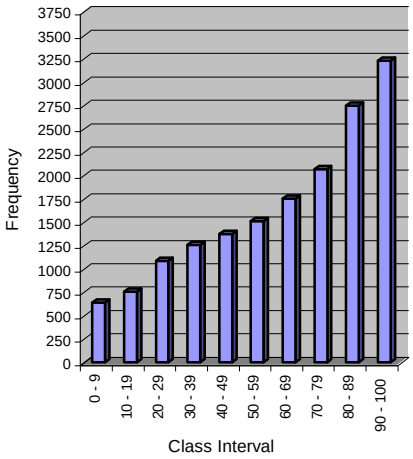


Figure 4.2 : Distribution of Scores in First Language- (All Island Histogram)

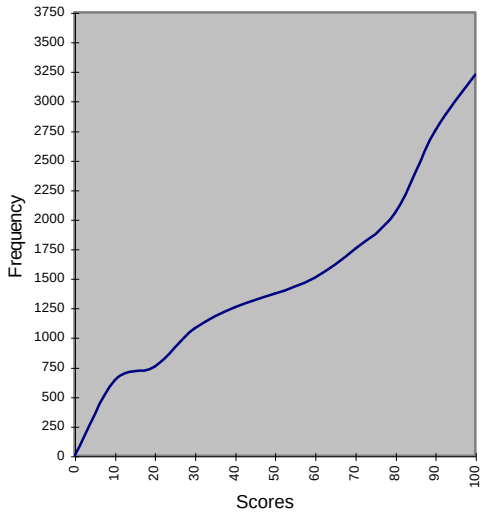


Figure 4.3 : Achievement in First Language- Frequency Polygon for All Island scores

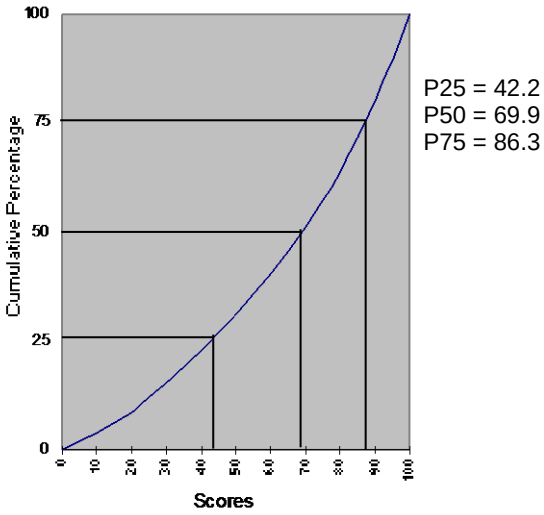


Figure 4.4 : Achievement in First Language- Ogive for All Island Scores

The percentage of students scoring 60 marks and above is around 59.7. A percentage of 49 students fall within the three highest class intervals. This is a satisfactory level of achievement. (Yet, it should be noted that the test included only the items that had facility values ranging from 0.98 up to 0.65).

This success story in achievement is confirmed by the higher percentile values identified using the ogive. Twenty five percent of the marks in First Language, lie below the score of 42.2 and seventy five percent lie below the score of 86.3.

> ***"Percentile"*** *is the score below which any other percentage of group falls.*
>
> *-Thorndike and Hagen -*

The frequency polygon for all island scores can be compared with those of the 09 provinces. Figures 4.5 to 4.13 present the position of the provinces. When the shape of the curves and the skewness values are compared it is found that the **Western province is the best in performance. Southern and Sabaragamuwa provinces show a satisfactory level than the all island level. Very poor performance is evident in Northern and Eastern provinces.** Their frequency polygons are closer to rectangular shapes having somewhat similar frequencies in the class intervals, except a very few. The performance of other

provinces, i.e. Central, North Western, North Central and Uva are in between, but not at satisfactory levels.

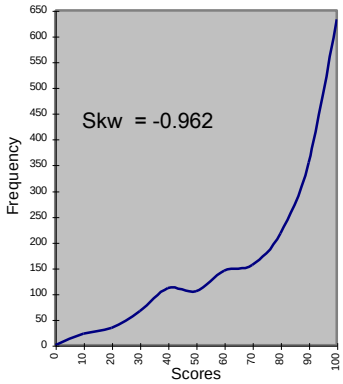


Figure 4.5: Achievement in First Language Western Province (Frequency Polygon)

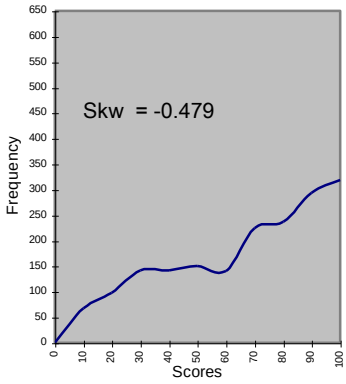


Figure 4.6: Achievement in First Language Central Province (Frequency Polygon)

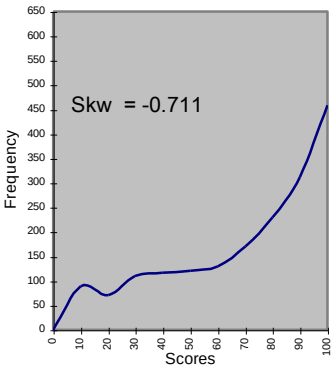


Figure 4.7: Achievement in First Language Southern Province (Frequency Polygon)

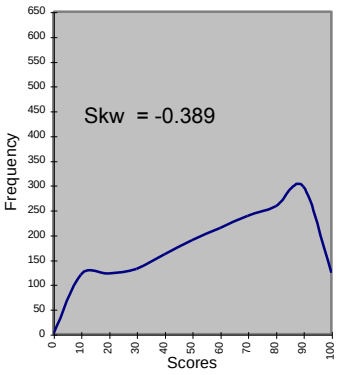


Figure 4.8: Achievement in First Language Northern Province (Frequency Polygon)

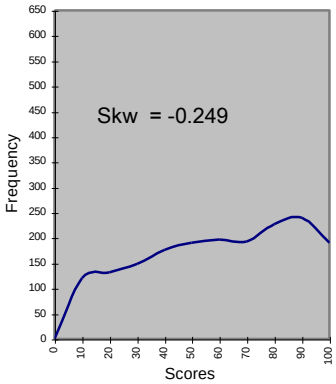


Figure 4.9: Achievement in First Language Eastern Province (Frequency Polygon)

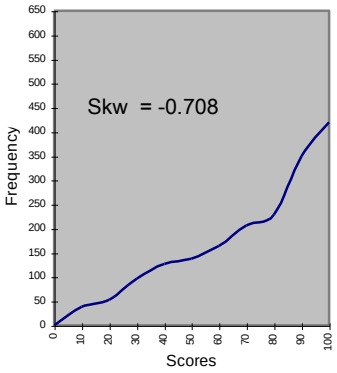


Figure 4.10: Achievement in First Language North Western Province (Frequency Polygon)

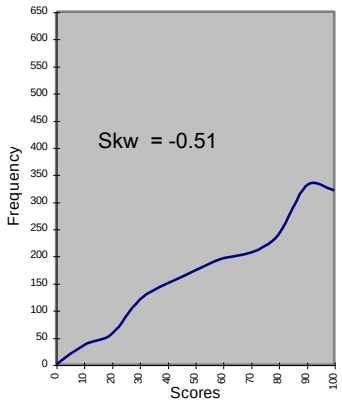


Figure 4.11: Achievement in First Language North Central Province (Frequency Polygon)

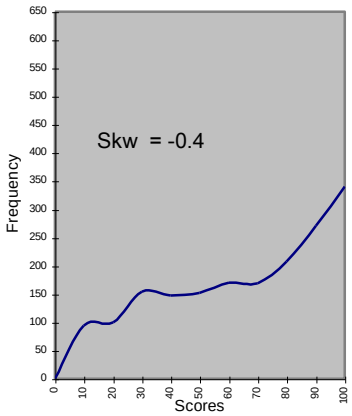


Figure 4.12: Achievement in First Language Uva Province (Frequency Polygon)

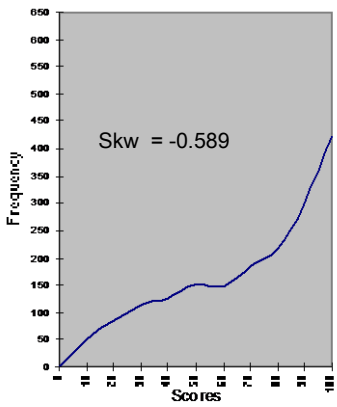


Figure 4.13: Achievement in First Language Sabaragamuwa Province (Frequency Polygon)

Identifying the mean values of the tests is very useful in interpreting the performance level of the group of students under consideration. **The overall performance level in First Language seems to be of a satisfactory standard**. The mean value of 62.32 with a Standard Deviation of 27.3 confirms this status.

> ***"Mean"*** *is a simple measure to represent a group of scores.*
>
> *-Douglas M. McIntosh-*
>
> *It is a measure of central tendency. This indicator describes points on a distribution that represents the average.*
>
> *- Gilbert Sax-*

Table 4.2 outlines the all island as well as the provincial mean values related to first language.

Table 4.2: Mean Values in First Language

Province	No. of Students	Mean	SD	Percentage above mean	Percentage below mean
Western	1842	72.8	24.0	48.1	51.9
North Western	1820	66.7	25.3	41.2	58.8
Southern	1808	65.1	28.5	42.3	57.7
Sabaragamuwa	1739	64.3	27.2	41.7	58.3
North Central	1828	63.4	25.0	43.0	57.0
Central	1816	60.9	27.4	43.1	56.9
Uva	1805	59.3	28.6	39.1	60.9
Northern	1857	54.4	26.3	39.7	60.3
Eastern	1814	53.9	27.6	38.4	61.6
All Island	**16383**	**62.32**	**27.3**	**57.2**	**42.8**

To achieve this status of performance, Western province students have contributed significantly. The students from North Western, Southern, Sabaragamuwa and North Central provinces have contributed equally to achieve this level of overall performance. This status is supported by the fact that all these provinces have mean values above the all island mean value. The other provinces that have mean values below the all island value, namely; Central, Uva, Northern and Eastern should concentrate on improving their first language teaching, learning and monitoring programmes.

The all island **percentage achieving mastery, scoring 80 percent of total marks or above, is only 36.5**. The performance shown by the pupils in the main skills tested through the question paper is illustrative of their respective contribution to the composite status.

The First Language test measures the level of achievement related to vocabulary, comprehension, syntax and writing. Of the 40 questions, 10 are aimed at measuring vocabulary. Eleven questions measure the ability to comprehend information. The ability related to syntax is measured using 10 questions. All the questions are of selection type. Nine very short supply type questions are used to measure the writing ability.

> ***"Literacy"*** *includes four basic competencies; vocabulary, reading, comprehension and writing.*
>
> *-Joint Unesco Unicef Monitoring Learning Achievement Project -*

The values given in figure 4.14 indicate that the students have shown highest performance in vocabulary and the lowest in the sub skill of writing.

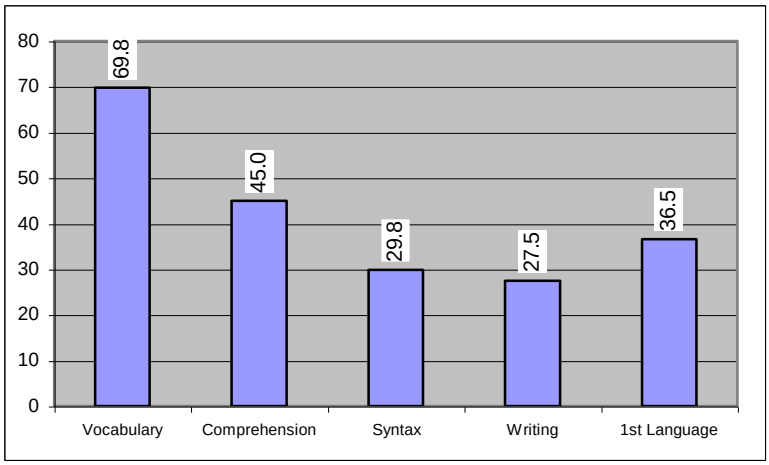


Figure 4.14 : All Island Percentage Achieving Mastery - First Language sub -skills

As the sub skills become more complex, the performance of the students is lower. The percentage of students who have reached the level of mastery in comprehension is only 45. The target percentage achieving mastery has to be 80. The teachers in the primary cycle have to concentrate more on students' comprehension skills development. They have to engage students in learning activities involving comprehension of information and in writing using very simple language patterns used in day to day living.

4.3 Achievement in Mathematics

The Mathematics test administered to the grade 04 students has very high content validity. All the themes given in the grade 04 Mathematics syllabus; number, addition, subtraction, multiplication, division, meters, centimeters, shapes, graphs, tables, kilograms, grams, liters, milliliters, fractions, decimals, angles, directions, time, money, Roman figures, number series and area have been covered by the test paper. The 40 questions provide adequate coverage of the whole syllabus.

> *Numeracy is more than knowing about numbers and number operations. It includes the ability and inclination to solve numerical problems, including those involving money or measures. It requires familiarity with the ways in which ……. information is presented in tables, charts and graphs.*
>
> *- National Numeracy Project London (1997)-*

In general, the test measures abilities, in the three areas, concepts, procedures and problem solving, giving a balanced weightage to the three areas. Facility values of the pre-tested test items range from 0.98 to 0.65. These items are arranged from the easiest to the hardest. The student can beat the test up to the level that suits his/her ability. If the student knows the basic mathematical concepts, then he can move to procedures. Making use of concepts and procedures, the student will be able to solve problems. Using these simple concepts, procedures and problem solving abilities needed in day to day living is considered as Numerical Ability. In other words, the test that was used in the survey **measures the numerical ability of grade 04 students**.

Table 4.3 : Distribution of Scores in Mathematics

Class Interval	*Frequency*	*Percentage*	*Cumulative Percentage*
90 - 100	3731	22.7	100.0
80 - 89	2484	15.2	77.3
70 - 79	1881	11.5	62.1
60 - 69	1551	9.5	50.6
50 - 59	1241	7.6	41.1
40 - 49	1242	7.6	33.6
30 - 39	1072	6.5	26.0
20 - 29	976	6.0	19.4
10 - 19	886	5.3	13.5
0 - 9	1339	8.2	8.2
Total	16383	100.0	

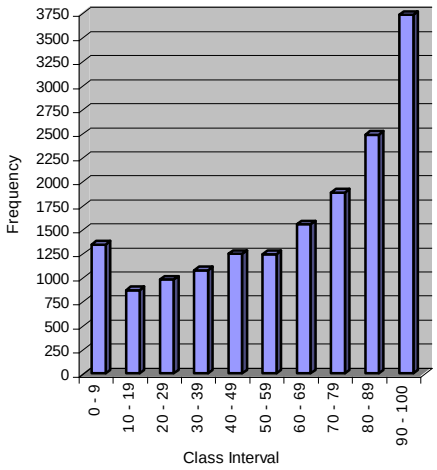


Figure 4.15 : Distribution of Scores in Mathematics- (All Island Histogram)

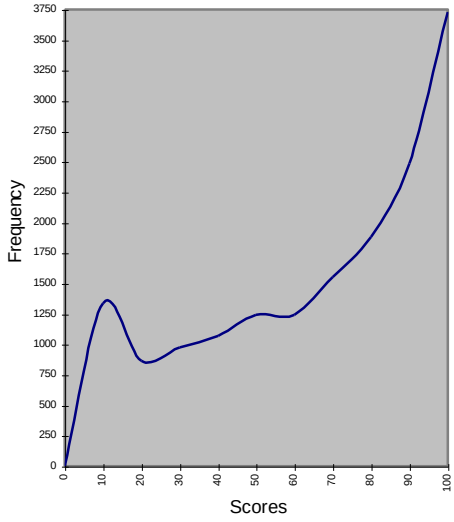


Figure 4.16 : Achievement in Mathematics- Frequency Polygon for All Island Scores

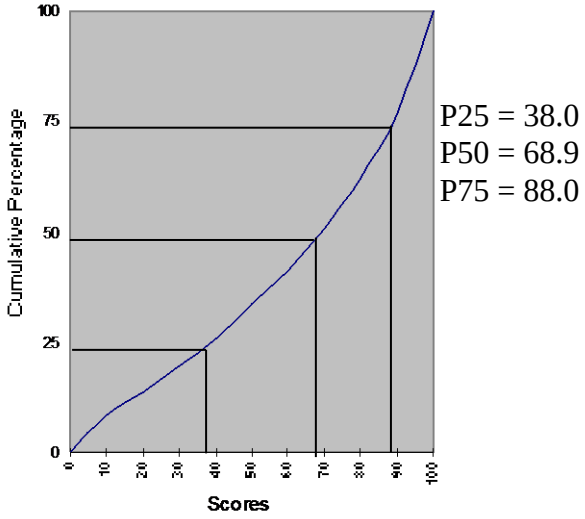


Figure 4.17 : Achievement in Mathematics- Ogive for All Island Scores

Table 4.3 and the Figures 4.15, 4.16, 4.17 give an overall picture of the performance of the students in Mathematics at all island level. The distribution of scores is very similar to that of First Language, except for one feature. **Starting from the 2nd class interval, the percentage of scores falling in each class interval seems to be in an ascending order**. The percentage of students falling in the last three higher class intervals range from 11.5 to 22.7 percent. As a result, the **percentage achieving mastery scoring 80 marks or above has gone up to 37.9**, which is comparatively the highest of the three subjects.

Having a high percentage of 8.2 students in the first class interval of 0-09 marks, is the special feature that needs to be focused on. This percentage of students is very poor in mathematics. It may be that they have entered grade 04 without the level of readiness needed to study mathematics in grade 04. Referring to the ogive, it is evident that 75 percent of the scores lie below the score of 88. Twenty five percent of the scores are below the score of 38.

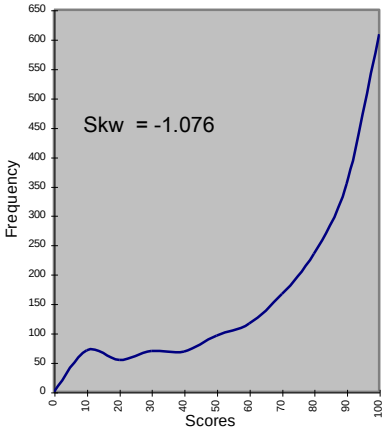


Figure 4.18: Achievement in Mathematics Western Province (Frequency Polygon)

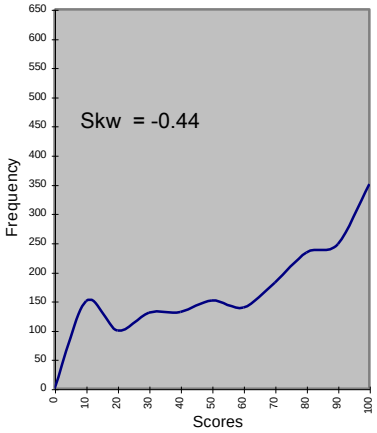


Figure 4.19: Achievement in Mathematics Central Province (Frequency Polygon)

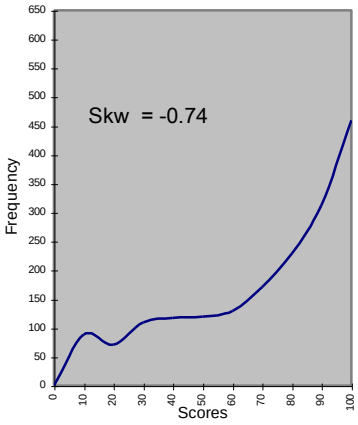


Figure 4.20: Achievement in Mathematics Southern Province (Frequency Polygon)

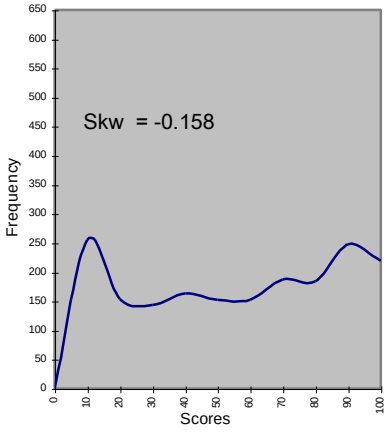


Figure 4.21: Achievement in Mathematics Northern Province (Frequency Polygon)

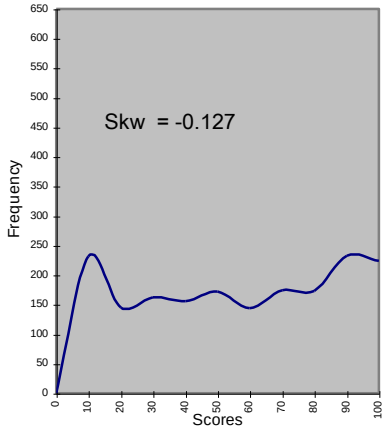


Figure 4.22: Achievement in Mathematics Eastern Province (Frequency Polygon)

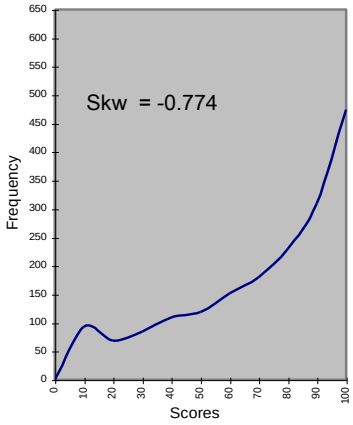


Figure 4.23: Achievement in Mathematics North Western Province (Frequency Polygon)

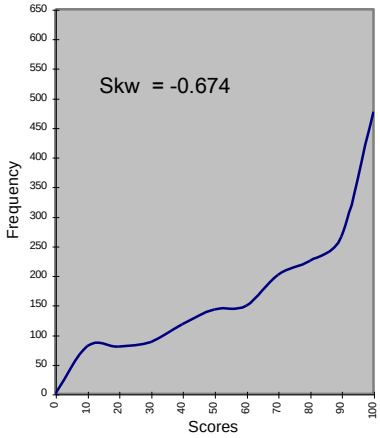


Figure 4.24: Achievement in Mathematics North Central Province (Frequency Polygon)

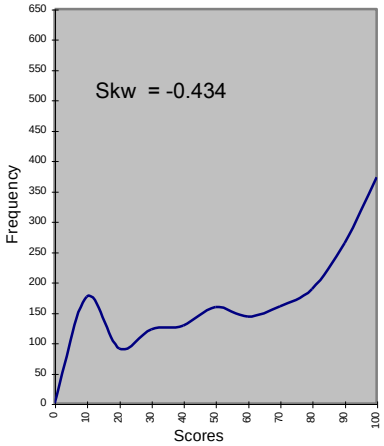


Figure 4.25: Achievement in Mathematics Uva Province (Frequency Polygon)

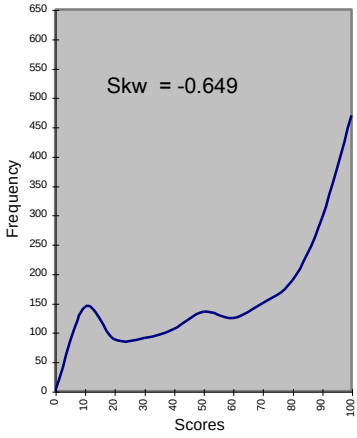


Figure 4.26: Achievement in Mathematics Sabaragamuwa Province (Frequency Polygon)

The skewness of the all island frequency polygon in mathematics is negative with a value of -0.35 which indicates that more students are scoring higher marks and less students are scoring lower marks, with the exception of a large number of students gathered in the range between 00 to 09.

When the provincial level frequency polygons and the skewness values are compared with that of the all island level, it is evident that the nature of the distribution of scores in **Western province is very satisfactory**. **There seems to be more similarity** in the shapes of the curves in the **North Western, North Central, Southern and Sabaragamuwa provinces**. Also, the skewness values range from -0.64 to -0.77 in these provinces, denoting a higher percentage of students scoring high marks. In mathematics too, the shapes of the frequency polygons of **Northern and Eastern Provinces are closer to a rectangular curve, having similar percentages in many of the class intervals**. In addition, having high percentages within the first class interval is a common feature in Central, Southern, Northern, Eastern, Uva and Sabaragamuwa provinces. This reveals that a large number of students do not have the required entry behaviour level to learn Mathematics in grade 05. The accountability of the class teachers remains challenged. The numerical ability of a group of students has been neglected.

The all island and provincial mean values in the Mathematics scores of 16383 grade 04 pupils in the sample, represent the average level of performance in the subject. Table 4.4 details out the mean values as well as some other related indices that gives a clear picture of the level of performance in Mathematics.

Table 4.4 Mean values in Mathematics

Rank	Province	No. of Students		Mean	SD	Percentage above Mean	Percentage below Mean
1	Western	1842		71.1	26.5	61.5	38.5
2	North Western	1820		65.9	27.9	58.7	41.3
3	North Central	1828		65.0	27.8	56.3	43.7
4	Southern	1808		64.7	30.4	60.8	39.2
5	Sabaragamuwa	1793		62.9	30.5	59.4	40.6
6	Central	1816		58.6	29.9	55.9	44.1
7	Uva	1805		58.2	30.9	54.6	45.4
8	Eastern	1814		50.5	30.8	50.6	49.4
9	Northern	1857		50.3	31.1	40.1	59.9
All Island		**16383**		**60.8**	**30.3**	**56.7**	**43.3**

The all island mean value of 60.8 shows that **the overall performance level in Mathematics is satisfactory.** The Western province, showing the highest mean value of 71.1 has contributed largely to the success. As was identified earlier in relation to the distribution of scores, North Western, Southern, North Central and Sabaragamuwa provinces can be categorized as one group having mean values ranging from 62.9 to 65.9. This group shows an average performance level, because the facility values of items in the test range from 0.98 to 0.65. Both Eastern and Northern provinces have mean values around 50, showing the lowest level of performance, of the 09 provinces.

The overall performance level of the students depends on how well they perform in the sub skills tested. The percentages of students achieving mastery in the three sub skills, concepts procedures and problem solving are indicated in Figure 4.27

> *When the objective is to measure competence in mathematics, the three elements; conceptual, computational and problem solving skills have to be assessed, analyzed and reported.*
>
> ***-Greaney and Kellaghan-***

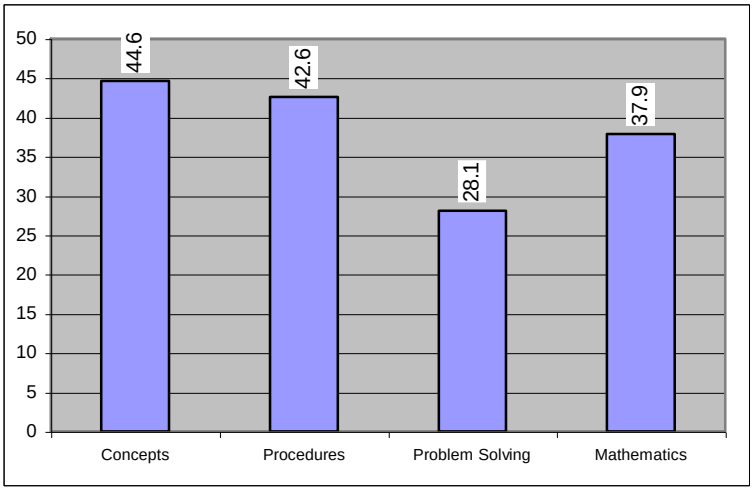


Figure 4.27: All Island Percentage Achieving Mastery - Mathematics

The highest value is in the element concepts, which is the easiest of the skills needed in answering the questions given. **The percentage achieving mastery in problem solving is the lowest,** as it is a more complex ability. The Mathematics teachers have to concentrate more on improving the problem solving abilities of the students, as these abilities are more useful in day to day living.

4.4 Achievement in English Language

With the introduction of Swabhasha (mother tongue) as the medium of instruction in the forties, English has been taught as the "Second Language" within the formal school system of Sri Lanka. In the basic education syllabus extending from Grade 01 to 09, English is treated as a compulsory subject. As a part of educational reforms implemented in the last few years, an Activity Based Oral English progrmme has been introduced from Grade 01. At the Key Stage 02, the programme covers reading and writing too.

> *English will be used as a means of communication from Grade 01. The formal teaching of English will commence at Grade 03.*
>
> *-Angela W. Little-*

The English Language test administered in this research study included 40 items. Test items were designed to measure skills in vocabulary, comprehension, syntax and writing. To suit the grade level of the students, there is more emphasis on vocabulary and comprehension, and lesser emphasis on syntax and writing skills. A larger number of items are of the selection type. Only a very few items that need writing have been included. The facility value of test items selected for the test were within the range of 0.95 to 0.65. Items are arranged in the order of difficulty.

The distribution of scores in English Language is quite different from that of the other two subjects. **In comparison, the all island performance in English Language is poor**, which is clearly portrayed in Table 4.5 and Figures 4.28, 4.29 and 4.30. A very high percentage of students are within the class intervals 20-29 and 30-39. The percentage of scores in the highest class interval is only 2.3 percent. The percentage of students scoring below 20 marks is 14.6, which confirms that a large percentage of students are very weak in the subject. Twenty five percent of the scores are below the mark 24.5. Seventy five percent of the scores are below the mark 59. The skewness of the frequency polygon is 0.52, which indicates that more scores are on the left side of the curve. The positive skewness confirms that a **larger number of students score lower marks and the percentage scoring higher marks is low.**

Table 4.5: Distribution of Scores in English - All Island Frequency

Class Interval	*Frequency*	*Percentage*	*Cumulative Percentage*
90 - 100	375	2.3	100.0
80 – 89	1185	7.2	97.7
70 – 79	1226	7.5	90.5
60 – 69	1239	7.6	83.0
50 – 59	1444	8.8	75.4
40 – 49	1985	12.1	66.6
30 – 39	3145	19.2	54.5
20 – 29	3395	20.7	35.3
10 – 19	1638	10.0	14.6
0 – 9	751	4.6	4.6
Total	16383	100.0	

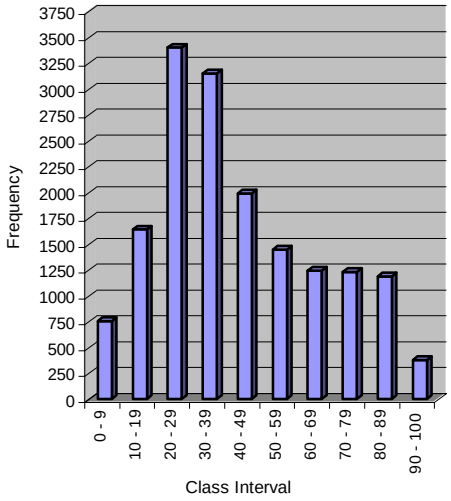


Figure 4.28: Distribution of Scores in English Language– (All Island Histogram)

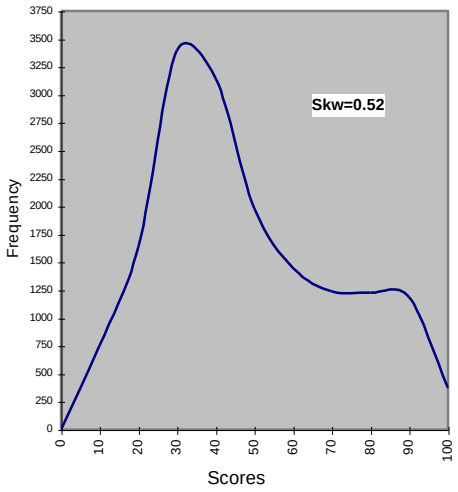
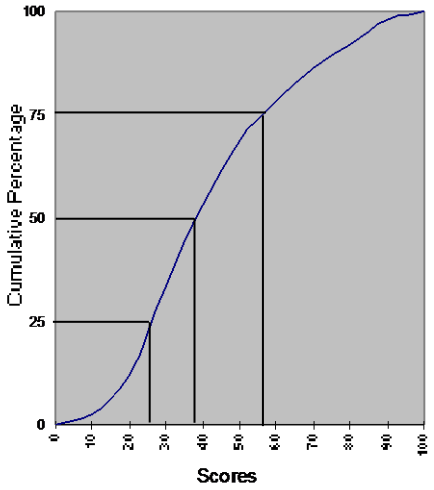


Figure 4.29: Achievement in English – Frequency for Polygon All Island Scores



P25 = 24.5
P50 = 37.1
P75 = 59.0

Figure 4.30: Achievement in English – Ogive for All Island Scores

This level of poor performance is common throughout the country, as indicated in the provincial level frequency polygons.

In Western Province there are two groups of students, achievers and non-achievers. The group of non-achievers is larger than the achievers group. Also, in all other provinces, a similar pattern is evident. In addition, all the other provinces differ from the Western Province, in having the highest percentage of frequencies within the third class interval. This same pattern is evident in all the provinces having a higher percentage of students

scoring below 50 marks. The percentage who score more than 50 marks is low in all the provinces. This status of poor performance is conformed by the fact that only **9.5 percent is reaching the level of mastery, scoring 80 marks and above.**

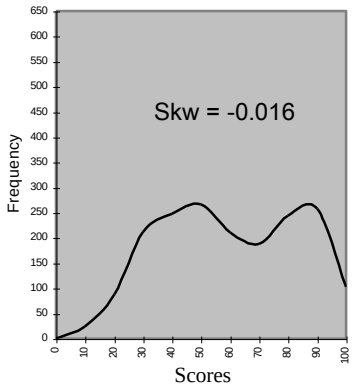


Figure 4.31: Achievement in English Language Western Province (Frequency Polygon)

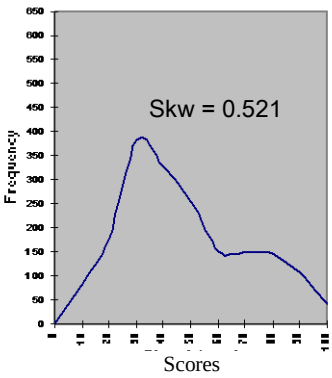


Figure 4.32: Achievement in English Language Central Province (Frequency Polygon)

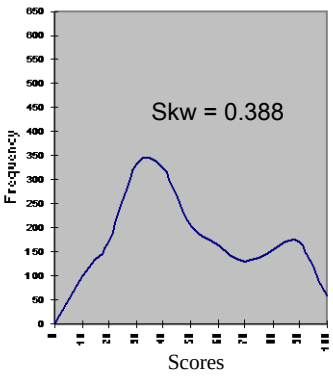


Figure 4.33: Achievement in English Language Southern Province (Frequency Polygon)

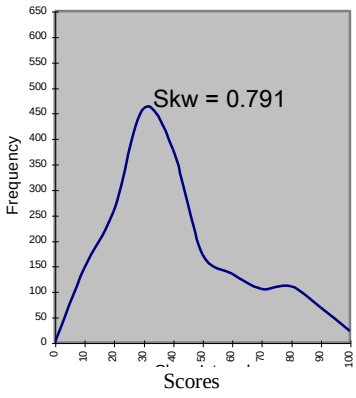


Figure 4.34: Achievement in English Language Northern Province (Frequency Polygon)

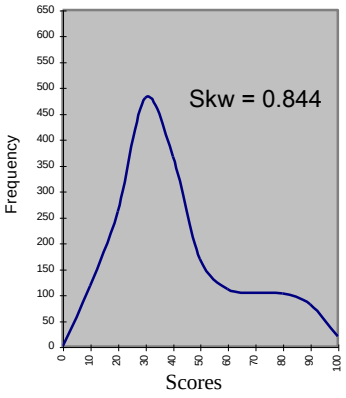


Figure 4.35: Achievement in English Language Eastern Province (Frequency Polygon)

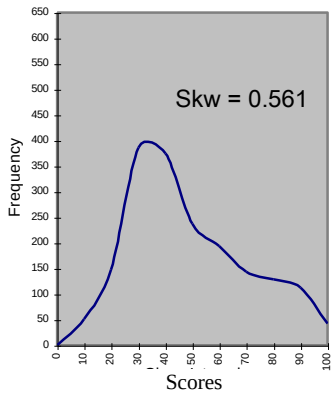


Figure 4.36: Achievement in English Language North Western Province (Frequency Polygon)

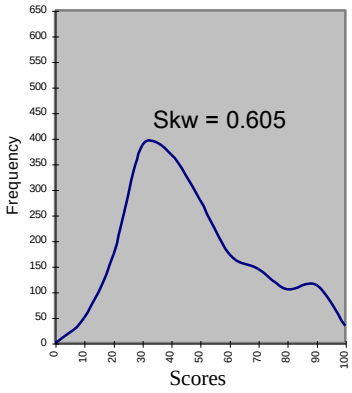


Figure 4.37: Achievement in English Language North Central Province (Frequency Polygon)

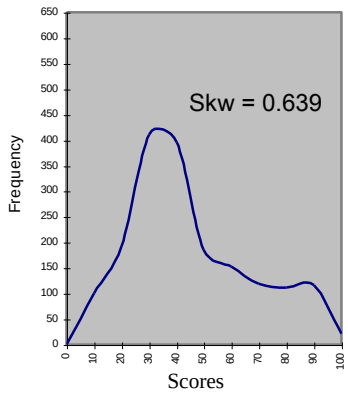


Figure 4.38: Achievement in English Language Uva Province (Frequency Polygon)

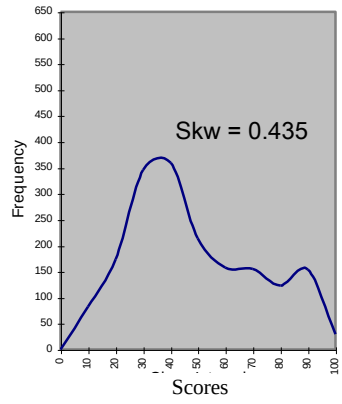


Figure 4.39: Achievement in English Language Sabaragamuwa Province (Frequency Polygon)

The all Island mean value in English Language is 41.9, which is the lowest of the three subjects. As usual, Western Province has shown the best performance.

Table 4.6: Mean Values in English Language

Rank	Province	No. of Students	Mean	SD	Percentage above Mean	Percentage below Mean
1	Western	1842	54.3	23.9	48.1	51.9
2	Southern	1808	44.0	24.9	42.3	57.7
3	North Western	1820	42.6	22.2	41.2	57.7
4	Sabaragamuwa	1793	42.4	23.3	41.7	58.3
5	Central	1816	41.9	23.0	43.1	56.9
6	North Central	1828	41.6	21.6	43	57
7	Uva	1805	39.1	22.3	39.1	60.9
8	Northern	1857	35.6	21.6	39.7	60.3
9	Eastern	1814	35.6	21.7	38.4	60.3
All Island		16383	41.9	23.3	42.5	57.5

Eastern and Northern Provinces show the lowest performance. Other districts lie in between. This same pattern is evident in the other two subjects also.

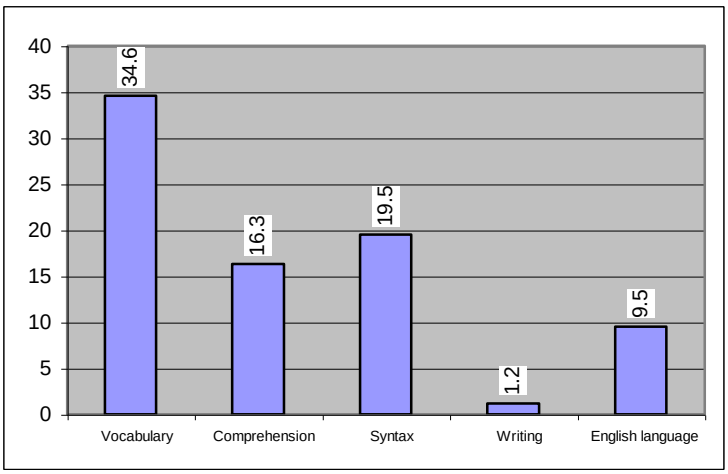


Figure 4.40: All Island Percentage Achieving Mastery – English Language

The most critical factor that has led to the poor performance in English Language is the **very poor performance in writing**. In addition, the performance shown in comprehension is insufficient.

Learning and teaching of English as a second language in government schools has to be improved and pushed forward without further delay.

4.5 Equity in Basic Education

4.5.0 Introduction

In this Grade 04 National Assessment Study, a wealth of data is available, to identify the prevailing patterns and trends in respect of the provision of equal opportunities in basic education in Sri Lanka. For more meaningful interpretation and discussion, there is emphasis on the following:

(a) **equality of outcomes** – that is the average level of achievement and the percentage achieving mastery.

(b) **opportunities provided** by school type, gender, medium of instruction, location and province.

At a more meaningful level, ***equal opportunities*** *can refer to the following*

* *equality of access – ensuring that people have same opportunities as are available to others.*
* *equality of outcomes – an attempt to ensure that a particular group (eg. boys) reach levels of achievement equal to another group (eg. girls)*
* *equivalent experience – enabling each person to fulfil their potential .*

- Michael Farrel-

In order to assess the equality of outcomes, means of the test scores were compared. Mean differences were identified; F test and Sheffe post-hoc analysis were used to find out whether the mean differences were significant at the level of 95% confidence, which enables identification of whether same opportunities have been provided.

4.5.1 Differences in Achievement by School Type

Figure 4.41 represents the all island mean values of First Language, Mathematics and English Language scores of the four school types; namely 1AB, 1C, Type 02 and Type 03. The clustered vertical bars in the Figure highlight the differences very well. The clustered vertical bars in the Figure highlight the differences very well.

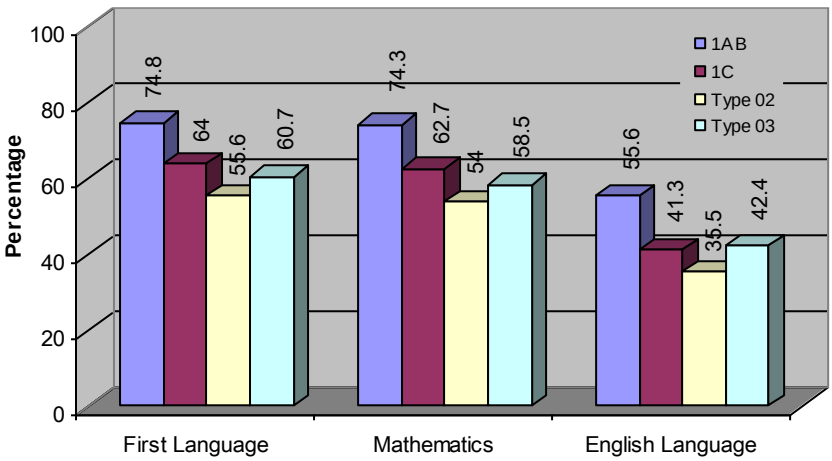


Figure 4.41: Relative Differences in All Island Mean Values – by School Type

Table 4.7 gives detailed information on the differences between mean values and their level of significance.

Table 4.7: Significance of Differences Between Means by School Type, in the Three Subjects

School Type (i)	School Type (j)	First Language			Mathematics			English Language		
		Mean Difference (i - j)	Std Error	Sig	Mean Difference (i - j)	Std Error	Sig	Mean Difference (i - j)	Std Error	Sig
IAB	1C	10.80	0.70	0.000	11.60	0.78	0.000	14.36	0.59	0.000
IAB	Type 2	19.20	0.71	0.000	20.30	0.79	0.000	20.13	0.60	0.000
1AB	Type 3	14.10	0.76	0.000	15.80	0.85	0.000	13.23	0.64	0.000
1C	Type 2	8.40	0.53	0.000	8.70	0.59	0.000	5.77	0.44	0.000
1C	Type 3	3.30	0.60	0.003	4.20	0.66	0.000	-1.13	0.50	0.018
Type 2	Type 3	-5.10	0.60	0.000	-4.50	0.67	0.000	-6.90	0.51	0.000

(Level of Confidence – 95%)

Figure 4.41 and Table 4.7 confirm that the differences between mean values are very high. In First Language the differences range from 3.30 to 19.20, in Mathematics the range of differences is from 4.20 - 20.30. The highest range of mean differences is in English Language, from 1.13 to 20.13. In all three subjects, the maximum differences, i.e. 19.20, 20.30, 20.13 in First Language, Mathematics and English Language respectively, is between 1AB and Type 02 schools.

Figure 4.42 gives details of percentages of students who have reached the level of mastery, scoring 80% marks or above, in the three subjects tested.

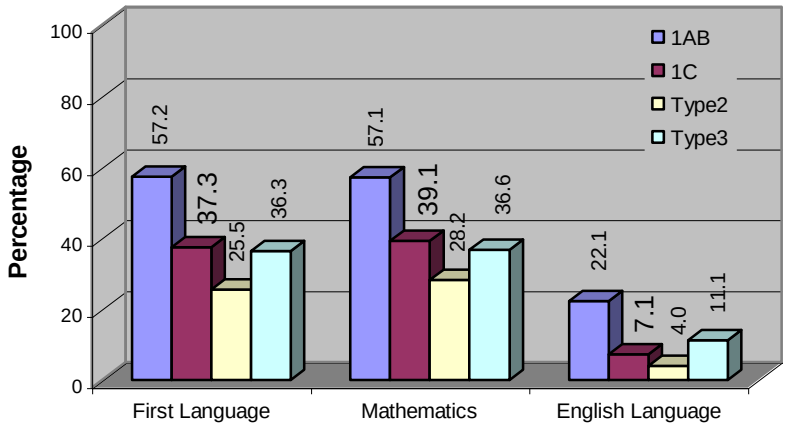


Figure 4.42: All Island Percentage Achieving Mastery in the Three Subjects - by School Type

As the data reveals, when 57.2 percent of pupils in 1AB schools reach the level of mastery, only 25.5 percent of students in Type 02 schools reach the level of mastery in First Language. The difference in percentage is 31.7 percent. When 1AB schools are compared with 1C and Type 03 schools the differences are less. Why is it that an unequal percentage of students in these four school types reach the level of mastery, in the relevant subjects? It is because there is disparity in provision of opportunities for basic education, by different school types.

The data reveals that opportunities for Basic Education provided by the different school types in Sri Lanka are unequal. Those attending 1AB schools have the most opportunities (both qualitative and quantitative) and those attending Type 02 schools have the least opportunities. The students attending 1AB schools comprise only 16 percent of the Grade 04 cohort. They enjoy more opportunities where as the other 84 percent of students in the other three school types enjoy lesser opportunities. The Type 02 school students, who happen to be 33.8 percent of the Grade 04 cohort, have the least opportunities. **The pattern of 1AB schools providing more opportunities, Type 02 schools providing least opportunities, type 1C and 03 schools providing a quantum of opportunities that lie in between is a trend in the education system that reflects disparities in provision of basic education by the 04 school types in Sri Lanka.**

In order to understand the factors behind this very prominent pattern of unequal performance by students in different school types, a smaller sample of schools was studied as a separate project, the report of which would be issued separately. However, some of the characteristics of Type 02 schools emerging from that study may be stated here.

1. Indeterminate Continuance

   Commencing in 1996 a programme to close or amalgamate small schools as 'uneconomical' units was operative until it was suspended by the Ministry of Education at the request of the National Education Commission in 2003. These schools suffered from falling student numbers, imbalance between staff and students, decaying plant and accessories, lack of new inputs and official neglect and apathy. Any school showing these signs was taken as due for closure and allowed to suffer in silence. Some schools involved in the 2002 assessment had been earmarked for closure and granted a reprieve at the last moment.

2. Remoteness and Difficulty of Access

   Many schools are located in remote areas away from facilities as hospital/dispensary, police station, post office, shops or even a bus route. Even if the school happen to be bordering or lying close to a bus route it may happen that a bus runs only once a day or at long intervals such as at 6.30 a.m., 10.30 a.m., and 1.30 p.m. If a teacher or a student misses the first bus at 6.30 a.m. or if the bus suffers a breakdown one can hope to arrive at the school around 11.00 a.m. Sometimes there is no bus service at all to the village. This sort of remoteness and difficulty of access discourages both teachers and students and also officers of the Ministry/Department of Education and In-Service Advisors who have legitimate duties to be carried out at the school.

3. School Infrastructure

   Permanent buildings with partitioned classrooms were not available in all schools. In unpartitioned school halls, classes and teachers disturb one another. Teaching methodologies advocated by the Department of Education involving movement

and activities cannot be tried out in these classes. Maps, charts, students' work etc. cannot be displayed in such classes. Very often teachers conduct their classes in the school compound, under shady trees etc. where they are not disturbed by other teachers and classes.

4. Repair Status

Most of the buildings were not in an adequate state of maintenance and were in need of repairs, for which the schools depend solely on the grant from the Zonal Office. These schools do not have the benefit of the Past Pupils' Associations or School Development Societies that support the school. Whenever there is some problem that needs urgent attention, in some schools, the teachers pool their own resources to get it done.

5. Furniture and Equipment

Furniture, though not the sturdiest and most comfortable was generally available. Some schools had cement blackboards built on to the wall while others had wooden blackboards, very often perched on discarded desks. Some schools did not have cupboards, racks or other storage devices, either at all or in sufficient numbers.

6. Teaching Aids

One school had a globe and one or two other schools had a few simple teacher-improvised teaching aids. "Chalk and talk" was still the most common teaching methodology, white chalk at a premium and coloured chalk generally unavailable.

7. Facilities

All the schools had not been provided with electricity. Some schools had been wired but the supply was not connected. In a few others the supply had been disconnected.

Two schools did not have even a supply of well water within the premises. Students had to fetch water from houses close by. Two schools did not have toilets either for staff or for students.

8. Distribution of Free School Textbooks

Schools in locations close to Colombo, such as Kalutara receive the major portion of the textbooks in time. Items like workbooks tend to get omitted in the first round. However, as we move away from Colombo and its environs the distribution of free school textbooks becomes unsatisfactory; either books are not distributed on the scheduled dates before the commencement of classes and/or all the items are not provided at the same time, the items most often omitted being the student workbooks. The two schools in the Eastern province had faced the worst in this respect. They had not received these textbooks until well into the year sometimes 4-5 months, on account of the security situation that prevailed at the time.

9. Multigrade Teaching

In the Colombo schools included in this limited study there was an excess of two teachers. However, in the other schools the number of teachers just sufficed or was insufficient. Under conditions of inadequate supply of teachers and/or of classrooms the school resorts to multigrade teaching where grade 1 and 2, and 3 and 4 are combined. Multigrade teaching appears to be a very inefficient method of teaching which does no good to the higher grade students, especially when undertaken by teachers who had not been specially trained in the use of this method, as in these schools. At least five schools had adopted this strategy to overcome the shortage of teachers and/or classrooms. In these five schools the grade 04 students who faced the national assessment in 2004 were receiving multigrade teaching along with the grade 03 students even on the day of the national assessment.

10. In-service Training of Teachers

This does not seem to have benefited all the schools or all the teachers. The teachers appear to have attended an unequal number of training sessions conducted by the Zonal Office. The In-service Advisor's visits to the schools have become less and infrequent, with increasing distance and remoteness of the school. In one school (at the time of assessment) grade 04 was being taught by an untrained teacher who had attended 08 training sessions conducted by the Zonal Office. In another school grade 04 was taught in 2002 by a voluntary teacher.

4.5.2 Differences in Achievement by Gender

Providing equal opportunities in basic education for all the citizens, irrespective of gender, is a duty of the state. **Receiving basic education, free of charge, by the state, on an equity basis irrespective of gender, is a right of every pupil**. In the total study sample of 16383 pupils, 8265 were boys and 8118 were girls. The percentages were 50.4% and 49.6% respectively.

Figure 4.43 provides information on the mean values of the scores of boys and girls, in First Language, Mathematics and English Language. The bars give a visual picture of the differences between males, and females in their average scores.

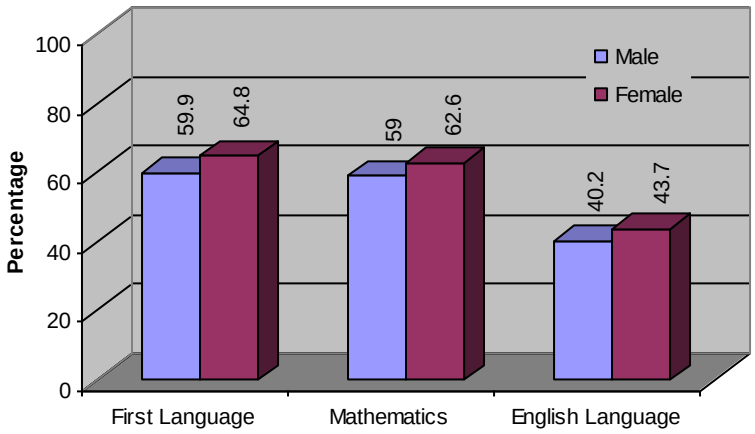


Figure 4.43 : Relative Differences in All Island Mean Values in First Language, Mathematics and English Language, by Gender

Table 4.8 confirms that these differences are significant at the level of 95 percent confidence.

Table 4.8 : Significance Differences Between Means in the Three Subjects by Gender

Subject	Difference Between Means	F	Significance
First Language	4.9	132.40	0.000
Mathematics	3.6	59.72	0.000
English Language	3.5	59.72	0.000

(Level of confidence – 95%)

Figure 4.44 highlights the differences in percentages achieving mastery, by gender.

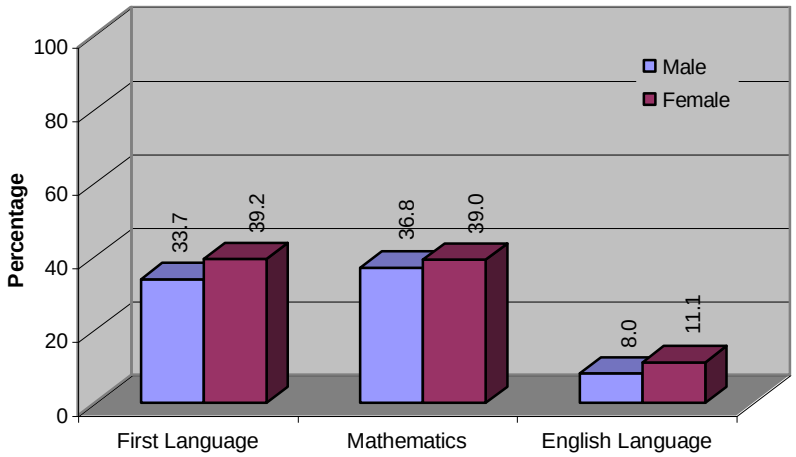


Figure 4.44. : Percentage of Pupils Achieving Mastery in the Three Subjects, by Gender

As revealed in average scores, when mastery levels are considered, in all three subjects girls have performed better. Female students have profited more by the basic education opportunities provided than the male students. This is an emerging trend, confirmed by other research findings. The lower performance levels of male students is a cause for concern, which should be probed further.

In Sri Lanka, there is equality of access to basic education, for males and females. As is evident in other research findings as well, **in Sri Lanka girls are performing better than boys, which means that, on the basis of equality of outcomes, boys benefit less than girls,**

from basic education. This trend is common in the three subjects under consideration. This is a trend that needs to be studied indepth.

4.5.3 Differences in Achievement by Medium of Instructions

Every pupil has a right to learn in his/her mother tongue. This human right is given priority, by the state. As a result, the medium of instruction in government schools in Sri Lanka is either Sinhala or Tamil. Tamil students and Muslim students who opt for Tamil medium, are provided instruction in the Tamil medium. Some Tamil and Muslim students learn in the Sinhala medium and some Sinhala students, in the Tamil medium. In the study sample, 11355 students, 69.3 percent, received Sinhala medium instruction. A total number of 5028, 30.7 percent students received instruction in the Tamil medium.

There are some features of note, in the distribution of the sample. Not a single student in the sample, from the Northern province, received instruction in the Sinhala medium. Excluding one district in Eastern province and five in Northern province, i.e. Jaffna, Kilinochchi, Mannar, Mulativu, Vauniya and Batticaloa, where there are no Sinhala medium schools, in 19 of the 25 districts in the island Sinhala medium instruction is provided in schools. This needs to be investigated further. Are the Sinhala students in the six other districts deprived of their right to have basic education in their mother tongue Sinhala, as no Sinhala medium schools are available in the locality? Are they deprived of a human right by not being provided equal opportunities in basic education, offered in the mother tongue? It is noteworthy that in all 09 provinces and 25 districts in the country, Tamil medium instruction is offered in at least a few schools.

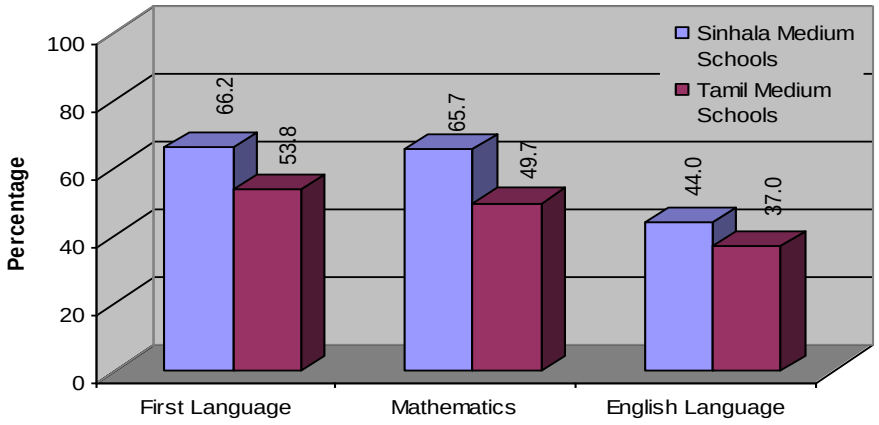


Figure 4.45: Relative Differences in All Island Mean Values – by Medium of Instruction

It is evident from the above Figure 4.45 that average scores obtained by the two groups differ, in all three subjects.

Table 4.9 : Significance of Differences Between Means – by Medium of Instruction

Medium of Instruction	First Language			Mathematics			English Language		
	Mean Difference	F	Sig	Mean Difference	F	Sig	Mean Difference	F	Sig
Sinhala	12.4	375.13	0.000	16.0	58.29	0.000	7.0	166.99	0.000
Tamil									

Table 4.9 confirms that the mean differences by the medium of instruction are significant at the level of 95% confidence.

Percentages achieving mastery in the three subjects, by medium of instruction are given in Figure 4.46. The figures and vertical bars show the difference in performance, of Sinhala and Tamil medium students.

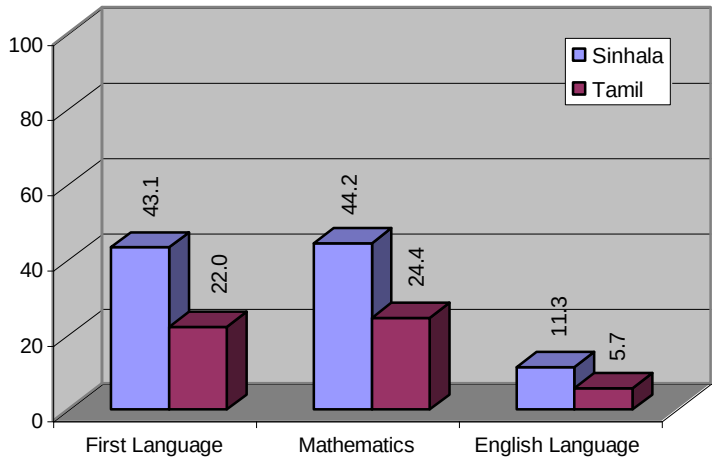


Figure 4.46 : All Island Percentage Achieving Mastery in the Three Subjects by Sinhala Medium and Tamil Medium Students

In all the three subjects, the percentage of Tamil medium students achieving mastery are around half the comparable percentage of Sinhala medium students. The goal of providing equal opportunities by medium of instruction has not been achieved.

There is disparity, by **medium of instruction, in provision of opportunities in basic education**. There have been some special programmes to improve the quality of the Tamil medium schools. Yet, the disparity persists. Educational planners and programme implementers have to take serious note of this disparity, adopt remedial measures.

4.5.4 Differences in Achievement Among Tamil Medium Schools

As the Tamil medium schools show lower achievement levels, a further analysis was carried out to identify the **patterns evident within the Tamil medium schools** in the sample. For purposes of analysis, these schools were grouped as Eastern province, Northern province, plantation area and other Tamil schools.

Figures 4.47 and 4.48 provide information on the mean values and percentages achieving mastery in Tamil Language, in the four groups of schools.

When the mean values are compared, it is seen that the **Tamil medium schools functioning in the 'other area' category show the highest performance. Plantation area schools show the lowest performance. Eastern and Northern provinces lie in between**. The very same pattern is seen when the percentages achieving mastery in Tamil Language are considered. **Opportunities provided by plantation schools are the poorest**. Other area schools provide more opportunities, than the other three groups. Eastern and Northern provinces have not been able to provide opportunities to pupils equal to the 'other area schools' to develop their literacy levels.

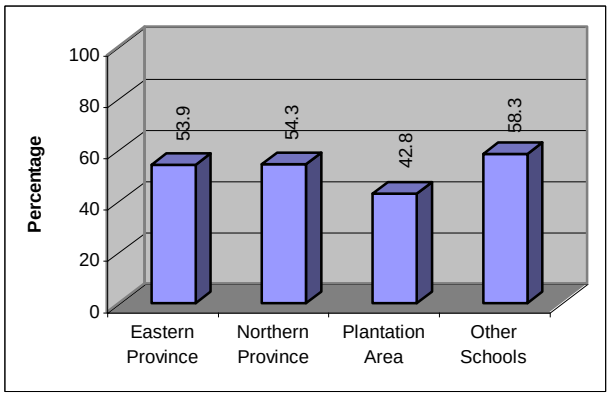


Figure 4.47: Mean values in Tamil Language – (in respect of the four groups)

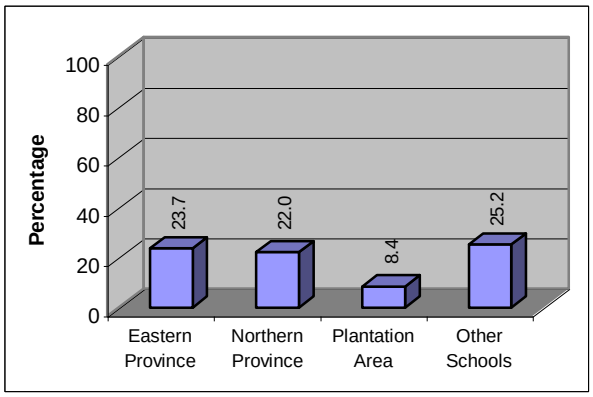


Figure 4.48: Percentage achieving mastery in Tamil Language – (in respect of the four groups).

Data on achievement levels in Mathematics is presented in Figures, 4.49 and 4.50.

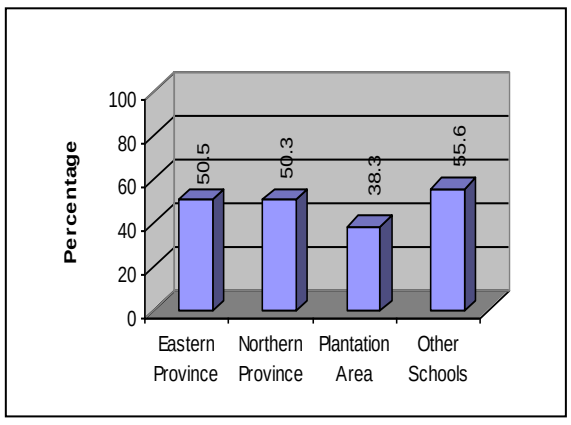


Figure 4.49 – Mean values in Mathematics (in respect of the four groups)

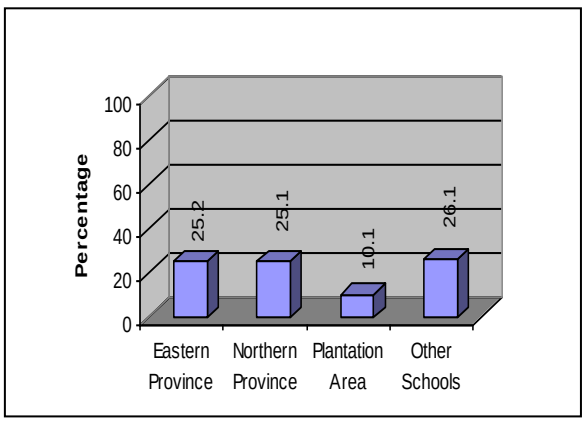


Figure 4.50 – Percentage Achieving Mastery in Mathematics (in respect of the four groups)

A pattern of performance similar to performance in Tamil Language is seen in Mathematics. More opportunities are provided by the group of 'other area schools'. The plantation schools have provided the least opportunities to students to develop their numerical abilities. The quantum of opportunities to learn Mathematics provided by Eastern and Northern province schools lies in between, with achievement levels also ranging in between.

The same pattern is seen in the provision of opportunities to learn English as a Second Language.

Two patterns emerge, in the analysis of data in Figures 4.51 and 4.52. One is that all four groups of schools provide relatively lesser opportunities to learn English Language, when compared to Tamil Language and Mathematics.

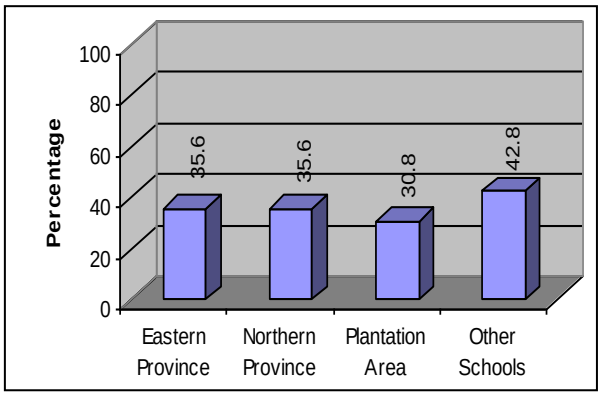


Figure 4.51: Mean Values in English Language (in respect of the four groups)

The second pattern that emerges is that as is usual, 'the other area group of schools' has provided more opportunities to learn English Language to the Tamil medium students. Plantation area schools have provided the least opportunities. Eastern and Northern provinces have provided lesser opportunities than the 'other area group' of schools, but more than the plantation area schools. Though there have been special programmes to improve the quality of plantation area schools, still the disparity persists. Both short and long term measures have to be adopted by the relevant authorities, to ensure that equal opportunities are provided, and achievement levels of students raised considerably.

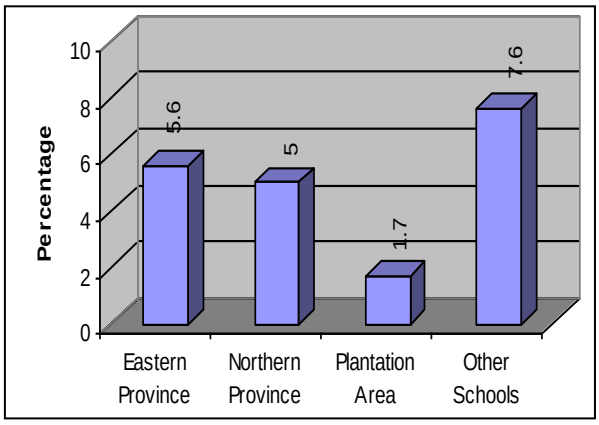


Figure 4.52 : Percentage achieving mastery in English Language (related to the four groups)

Clues to interpret the pattern of lower performance in plantation area Tamil medium schools and relatively higher performance in other Tamil medium schools are provided when the nature of the distribution of scores is analysed. The frequency polygons highlight the pattern of performance of students in Tamil Language.

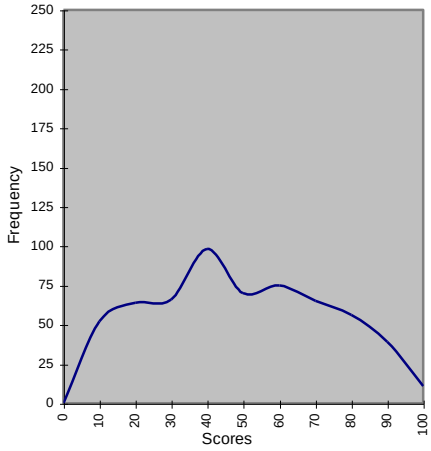


Figure 4.53 : Achievement in Tamil Language – Plantation area Schools (Frequency Polygon)

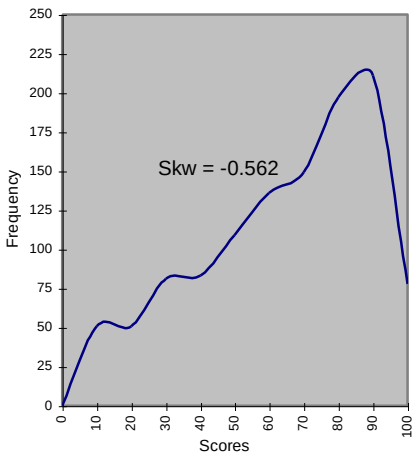


Figure 4.54 : Achievement in Tamil Language – Other Tamil schools (Frequency Polygon)

The plantation area schools' test score distribution is almost playkurtic. They seem to have very few higher scores. The larger percentage of scores fall within the 30-39 class interval. Only 1.8 percent of students are in the highest class interval.

Fifty eight percent of the students have scored below 50 marks. In other area Tamil medium schools, the percentage of students scoring below 50 marks is only 32.8 percent. There are 6.8 percent of students in the highest class interval. In the next two higher class intervals there are 18.4 and 17.2 percent of students, showing a marked difference from plantation area schools.

Table 4.10. : Frequency Distribution of scores
Tamil Language – Plantation area schools

Class Interval	Frequency	Percentage	Percentage
90-100	11	1.8	100.0
80-89	39	6.5	98.1
70-79	56	9.4	91.6
60-69	65	10.9	82.2
50-59	75	12.6	71.3
40-49	70	11.7	58.7
30-39	98	16.4	47.0
20-29	66	11.1	30.5
10-19	64	10.7	19.4
0-9	52	8.7	8.7
Total	596	100.0	

Table 4.11 : Frequency Distribution of scores
Tamil Language- other Tamil schools

Class Interval	Frequency	Percentage	Percentage
90-100	78	6.8	100.0
80-89	211	18.4	93.2
70-79	197	17.2	74.8
60-69	149	13.0	57.6
50-59	136	11.9	44.6
40-49	109	9.5	32.8
30-39	83	7.2	23.3
20-29	81	7.1	16.0
10-19	51	4.5	9.0
0-9	51	4.5	4.5
Total	1146	100.0	

The nature of the distribution of Mathematics scores in the two groups of schools is illustrated in the frequency polygons in Figures 4.55 and 4.56.

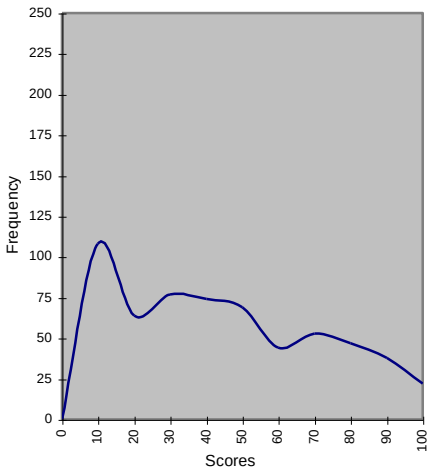


Figure 4.55 : Achievement in Mathematics –
Plantation area Tamil Schools (Frequency Polygon)

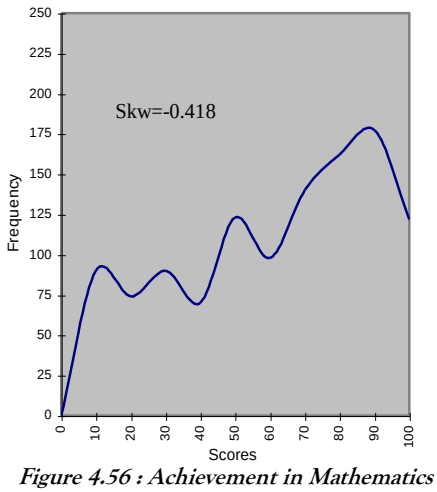


Figure 4.56 : Achievement in Mathematics –
Other Area Tamil schools (Frequency Polygon)

The multimodal nature of the distribution is evident in both groups. The heterogeneity in the group of students may be a problem within the classroom. However, in plantation area schools, the percentage of students in the 0-9 class interval is 18.1 percent. Those scoring below 50 marks make up 65.8 percent, where as in the other area group of schools, the comparable percentage is 39.1 only.

The following two histograms in Figures 4.57 and 4.58 illustrate the nature of the distribution of scores in English Language.

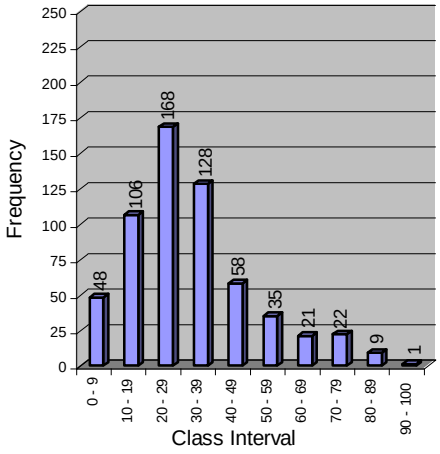


Figure 4.57 : Distribution of Scores in English Language - Plantation area Tamil Schools (Histogram)

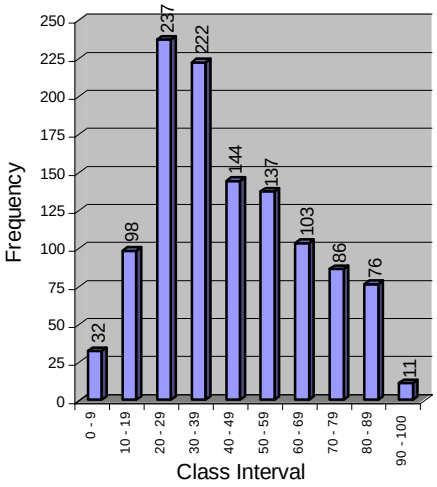


Figure 4.58: Distribution of Scores in English Language- Other Area Tamil schools (Histogram)

It is clear from the Figures that in both groups, a higher percentage of scores fall within the 20 - 39 class intervals. In the highest class interval, plantation area schools have only 0.2 percent, whereas other area schools have a percentage of 1.0. The percentage scoring below 50 marks in plantation area schools is 85.3 percent. In the other are schools group, the comparable percentage is 64 only.

This pattern of distribution of scores in the groups of Tamil medium schools leads us to conclude that the **problems and needs of the plantation area Tamil schools have to be studied further**, and remedial measures taken immediate to provide equal opportunities in basic education.

4.5.5 Differences in Achievement by Location of Schools

In Sri Lanka, urban schools comprise of schools located in Municipal Council and Urban Council areas. Pradeshiya sabha area schools are considered as rural schools. The total number of urban area students in the study sample is 3118, or 19 percent. The number of rural area students are 13265 or 81 percent.

Figure 4.59 highlights the difference in achievement in urban and rural schools, in all three subjects tested.

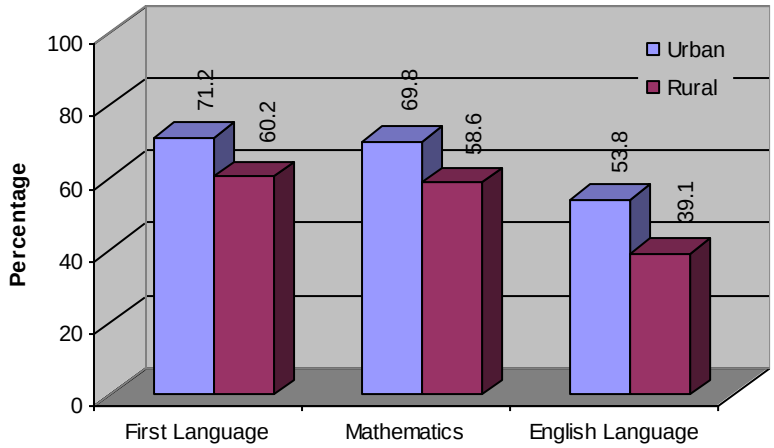


Figure 4.59 : Relative Differences in mean values – by Location

Table 4.12 : Significance of Differences Between Means in the three subjects, by Location

Subject	Mean Differences	F	Significance
First Language	11.0	415.25	0.000
Mathematics	11.2	345.66	0.000
English Language	7.0	1062.40	0.000

The table 4.12 confirms that the Urban-Rural differences in means in all three subjects are significant at the level of 95 percent.

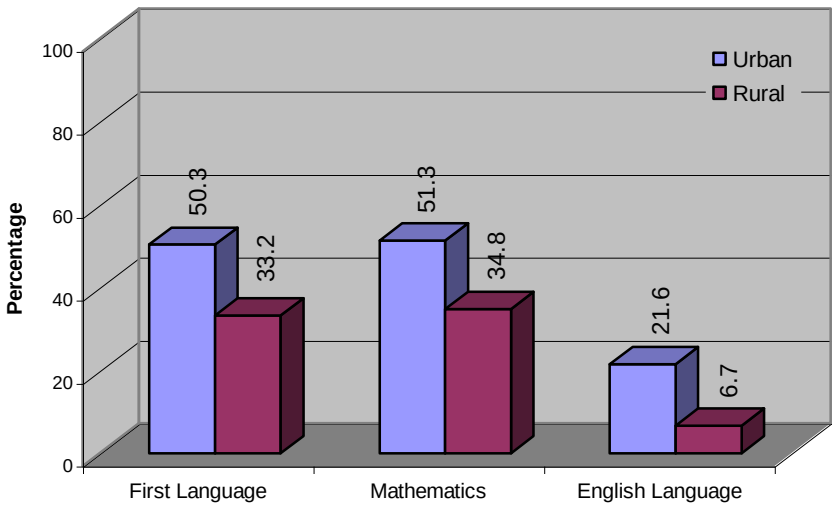


Figure 4.60 : All Island Percentage of students achieving mastery in the three subjects – by location

This same state of disparity in the provision of equal opportunities for Urban and rural students, is evident in an analysis of the percentages achieving mastery. While the percentage of students who could not reach the level of mastery in first language in urban schools was 49.7, it was 66.8 percent in rural schools. In Mathematics, the percentage not reaching the mastery level in urban schools is 48.7. In rural schools this percentage is 65.2. In English Language, percentage values of non mastery are higher than in the other two subjects. The percentage who could not achieve the level of mastery in urban schools is 78.4, while the comparable value in rural schools is 93.3 percent. The **lesser opportunities provided to rural students** impacts on their education related social mobility. The parents with a better economic background resident in rural areas tend to send their children to urban schools and the students from the low income family group remain in the rural schools. This leads to perpetuation of the disparity, widening of the gap in providing equal opportunities.

4.5.6 Differences in Achievement by Province

Providing basic education is the responsibility of the **Provincial Councils**. These administrative units **are expected to provide basic education on an equity basis, free of charge, to all children attending schools as well as to those who are not in the formal school system**. The Figure 4.61 and Table 4.13 shows the differences evident among the provinces, in provision of basic education on an equity basis. The disparity is marked in the Northern and Eastern provinces, relative to the other provinces.

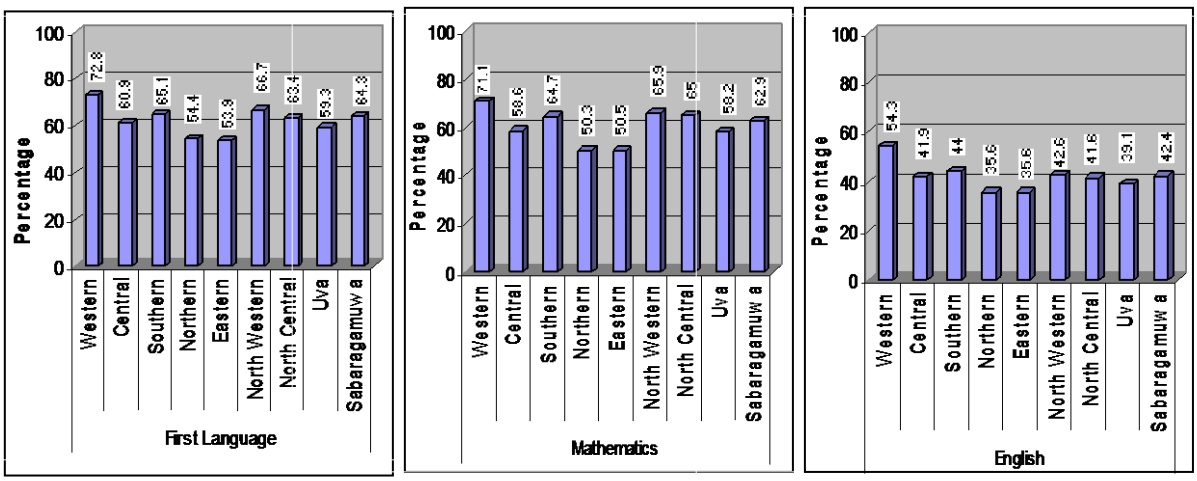


Figure 4.61: Mean values in First Language, Mathematics and English Language – by Province

Table 4.13 : Relative Differences in Mean Values in First Language, Mathematics and English Language - by Provinces

Province	First Language					Mathematics				English Language			
	No of Students	Mean	SD	F	Sig.	Mean	SD	F	Sig.	Mean	SD	F	Sig.
Western	1842	72.8	24.0	92.94	0.000	71.1	26.5	104.57	0.000	54.3	23.9	108.9	0.000
Central	1816	60.9	27.4			58.6	29.9			41.9	23.0		
Southern	1808	65.1	28.5			64.7	30.4			44.0	24.9		
Northern	1857	54.4	26.3			50.3	31.1			35.6	21.6		
Eastern	1814	53.9	27.6			50.5	30.8			35.6	21.7		
North Western	1820	66.7	25.3			65.9	27.9			42.6	22.2		
North Central	1828	63.4	25.0			65.0	27.8			41.6	21.6		
Uva	1805	59.3	28.6			58.2	30.9			39.1	22.3		
Sabaragamuwa	1793	64.3	27.2			62.9	30.5			42.4	23.3		
Total	16383	62.3	27.3			60.7	30.3			41.9	23.3		

These differences in means between provinces, in all three subjects, are significant at the level of 95 percent.

The differences among the provinces on the basis of the **percentages achieving mastery in the three subjects confirm the status of disparities** in mean values.

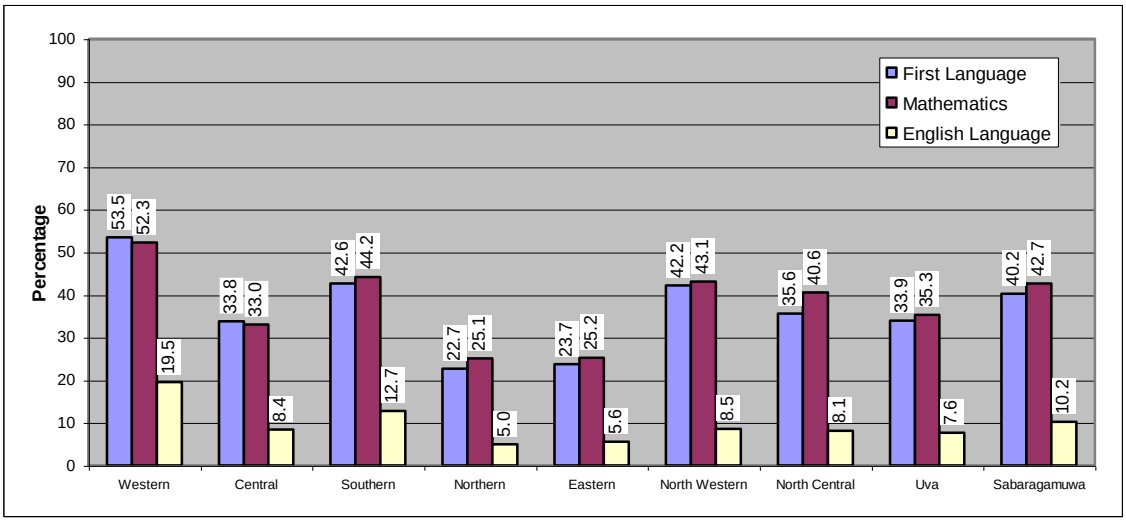


Figure 4.62: Percentage achieving Mastery in First Language, Mathematics and English Language- by Province

The responsibility devolves on Provincial authorities to consider the status of the province and adopt remedial measures, design and implement programmes to bring about improvement, with the assistance of the central government. The accountability of the teachers, officers and other plan implementation personnel vested with this responsibility, at the Central Government and Provincial council level, can by no means be ignored.

4.6 Comparison of Performance

4.6.0 Introduction

A comparison of the performance of Grade 04 pupils has been attempted, using the three approaches indicated.

- Comparison based on averages
- Criteria related comparison
- Level of performance

These comparisons enable the identification of the present status, strengths and weaknesses in the process, emerging patterns and trends within the system. The analysis on an all island, provincial and district basis, facilitates meaningful interpretation of findings.

4.6.1 Comparison Based on Averages

Comparison of averages or the mean values of the scores and the percentages reaching the level of mastery is one of the approaches used to identify patterns and trends in relation to performance. Figure 4.63 gives the average (mean) and percentage values required for this comparison.

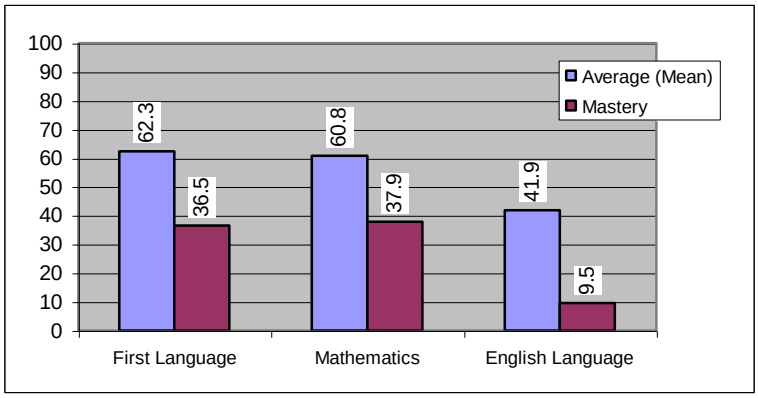


Figure 4.63 : Average (Mean) Values of the Test Scores and Percentages Achieving Mastery

The most significant finding is that the performance in English Language is lower than that of the other two subjects. The mean values and the percentage values that indicate the level of mastery reached provide the same information. **Another feature noted is that the average scores of the two subjects First Language and Mathematics are very close** (eg. 62.3, 60.8). That is to say that the average performance level in the two subjects is similar. The fact that the pearson correlation coefficient is 0.87 between the two sets of scores in First Language and Mathematics supports this finding.

4.6.2 Criteria Related Comparison

As stated clearly in the "Declaration of Education for All (1990) and its Framework for Action" agreed upon by the member countries in 1990 at Jomtien, the criteria for reaching the level of mastery is scoring 80 percent of marks or above in the subjects learnt by pupils during the period of Basic Education. Indicator 15 in the year 2000 National Assessment Guide clearly states that the criteria "80 percent of pupils who have reached at least Grade 04 of primary schooling, who master a set of nationally defined basic learning competencies" has to be recognized.

Tables 4.14, 4.15 and 4.16 give sufficient information on trends in respect of this criteria, on an all island and provincial basis.

Table 4.14: Percentage Achieving Mastery in First Language

Group	Rank	Province	Achieving Mastery	Target	Difference in Target Achievement
Above 50%	1	Western	53.5	80.0	26.5
26% - 50%	2	Southern	42.6	80.0	37.4
	3	North Western	42.2	80.0	37.8
	4	Sabaragamuwa	40.2	80.0	39.8
	5	North Central	35.6	80.0	44.4
	6	Uva	33.9	80.0	46.1
	7	Central	33.8	80.0	46.2
01% - 25%	8	Eastern	23.7	80.0	56.3
	9	Northern	22.7	80.0	57.3

(All Island Value = 36.5)

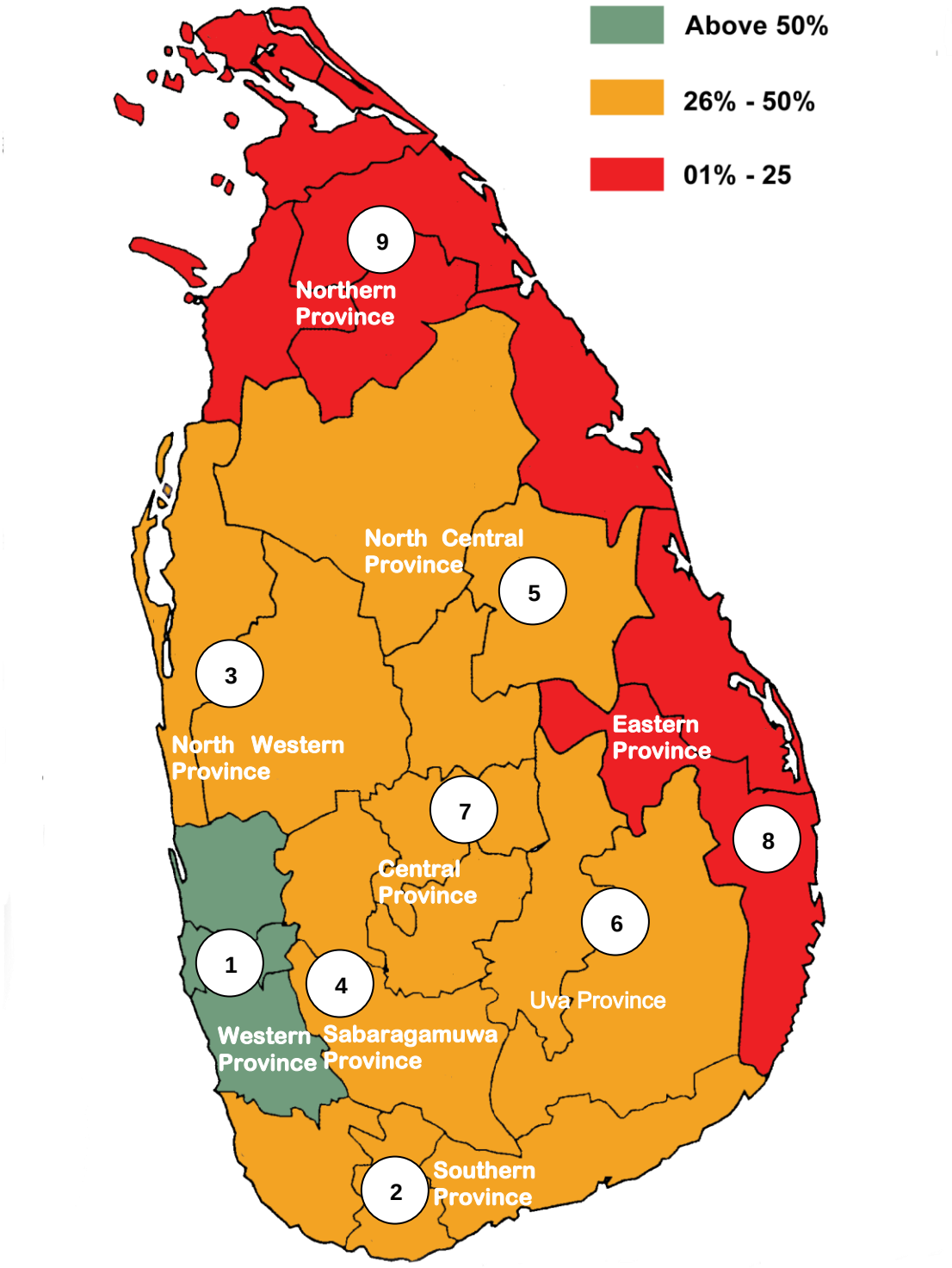


Figure 4.64 : Percentage Achieving Mastery in First Language

Table 4.15: Percentage Achieving Mastery in Mathematics

Group	Rank	Province	Achieving Mastery	Target	Difference in Target Achievement
Above 50%	1	Western	52.3	80.0	27.7
26% - 50%	2	Southern	44.2	80.0	35.8
	3	North Western	43.1	80.0	36.9
	4	Sabaragamuwa	42.7	80.0	37.3
	5	North Central	40.6	80.0	39.4
	6	Central	35.3	80.0	44.7
	7	Uva	33.0	80.0	47.0
01% - 25%	8	Eastern	25.2	80.0	54.8
	9	Northern	25.1	80.0	54.9

(All Island Value – 37.9)

Table 4.16 : Percentage Achieving Mastery in English Language

Group	Rank	Province	Achieving Mastery	Target	Difference in Target Achievement
01% - 25%	1	Western	19.5	80.0	60.5
	2	Southern	12.7	80.0	67.3
	3	Sabaragamuwa	10.2	80.0	69.8
	4	North Western	8.5	80.0	71.5
	5	Central	8.4	80.0	71.6
	6	North Central	8.1	80.0	71.9
	7	Uva	7.6	80.0	72.4
	8	Eastern	5.6	80.0	74.4
	9	Northern	5.0	80.0	75.0

(All Island Value = 9.5)

According to the three Tables, one of the trends is that the **performance levels in First Language and Mathematics are consistently higher than that of English Language.** Relative to the other two subjects, the percentage achieving mastery in English Language is quite insufficient. Though the percentages achieving the level of mastery in First Language and Mathematics are higher relatively, the level of performance in these two subjects cannot be considered as sufficient, according to the target agreed upon in 1990, which was a percentage of 80, with the expectation that the level of 100% be reached within a decade. Figure 4.66 clearly shows that 63.8 percent in First Language, 62.1 percent in Mathematics and 90.5 percent in English Language have not reached the level of mastery.

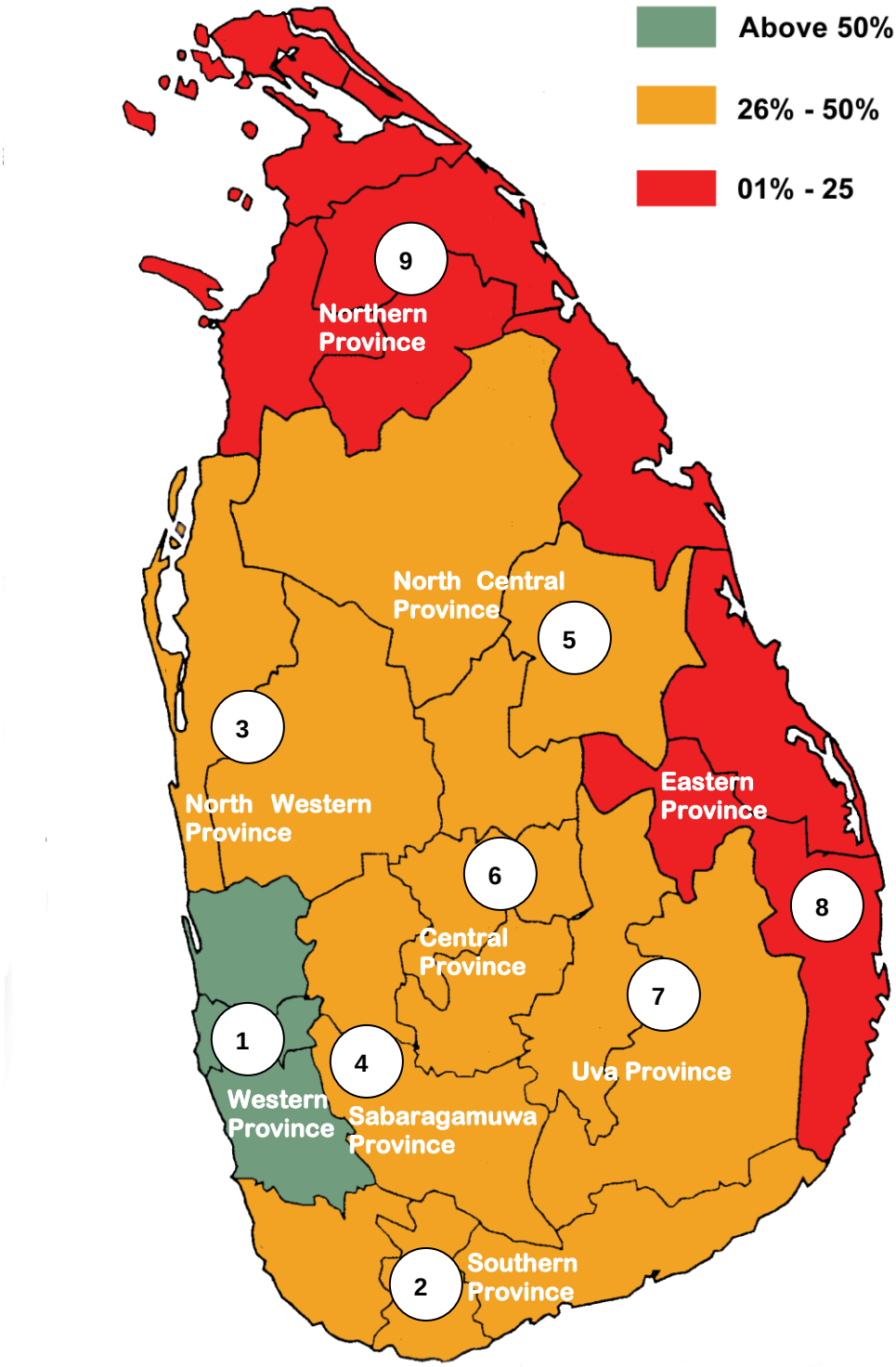


Figure 4.65 : Percentage Achieving Mastery in Mathematics

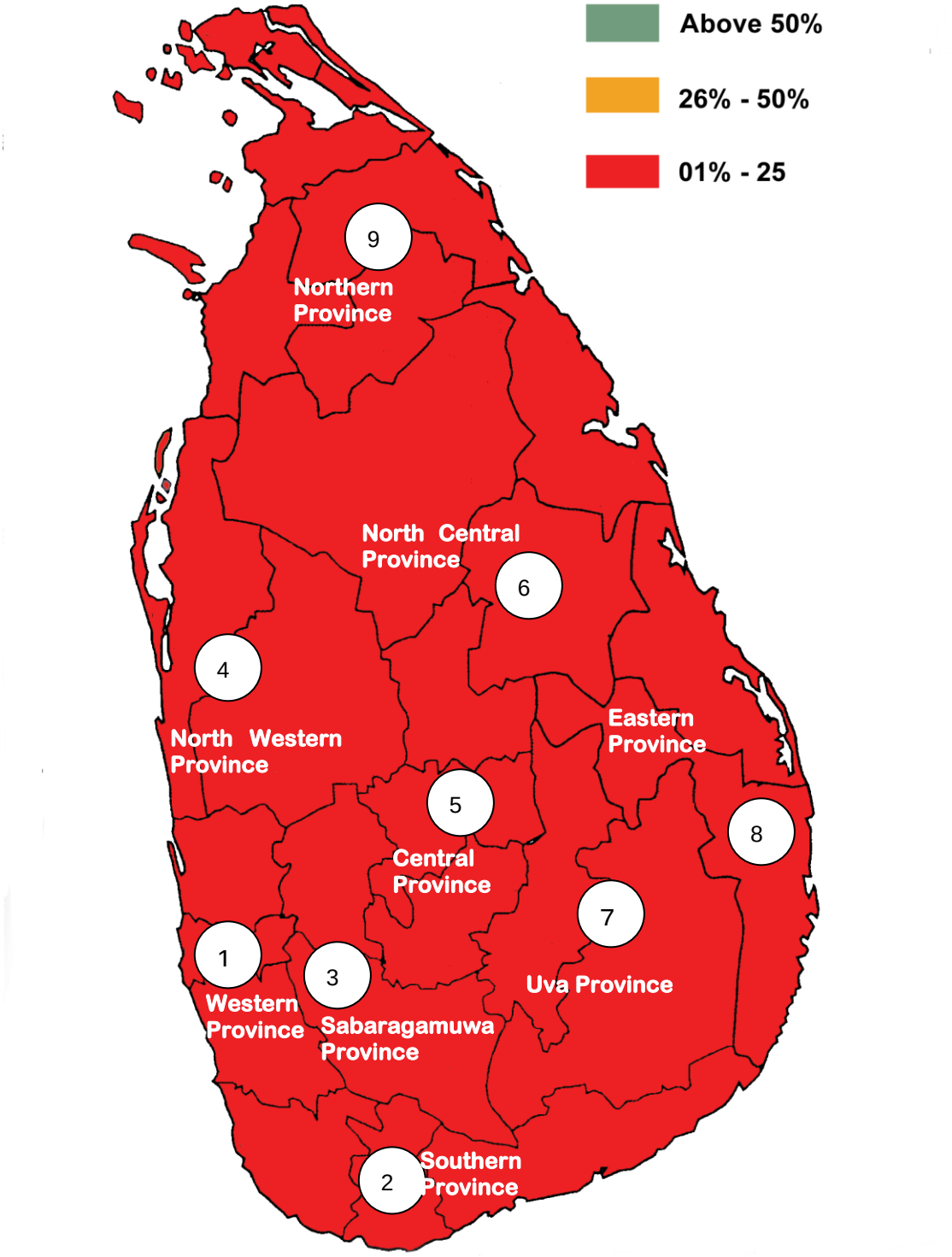


Figure 4.66 : Percentage Achieving Mastery in English Language

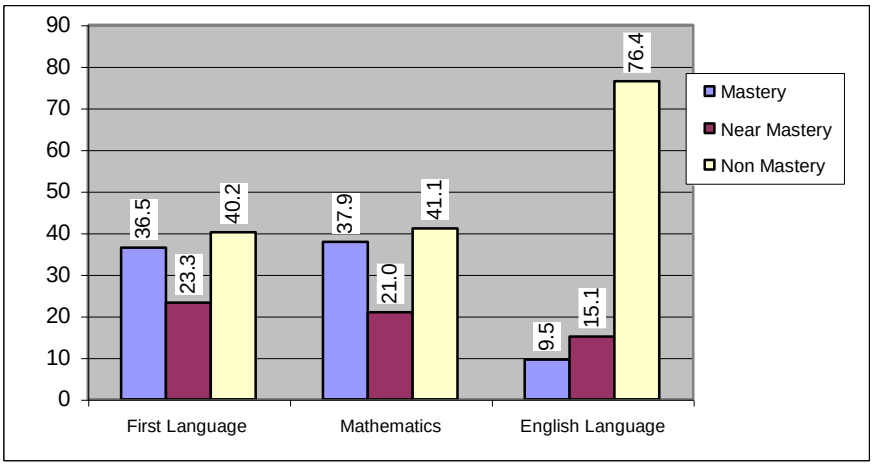


Figure 4.67: Percentage Achieving Mastery, Near Mastery and Non-Mastery in three subjects

If the students obtaining 60-79 percent of marks are categorized as near mastery and those obtaining 0-59 marks are categorized as non mastery, it is evident that the highest non-mastery is in English Language. In First Language and Mathematics, the non-mastery percentages are similar. Total non-mastery in the three subjects range from 62-91 percent. **The high percentage of non-achievers in all three subjects, is therefore the second trend noted**.

The third trend noted is the similarity in performance in First Language and Mathematics. The percentages reaching the level of mastery are in the range of 37-38. The percentage of non-mastery in the two subjects is in the range of 40-41 percent. Percentages achieving near-mastery is in the range of 21-23. The correlation coefficient of marks between these two subjects is 0.87, thus confirming the similarity in performance.

4.6.3 Level of Performance

By studying the mean values obtained in national assessment of student achievement at the primary level in previous studies and the present study some indications of the progress made overtime may be obtained.

In attempting to assess the improvement, if any, over the period 1994-2003 and to identify patterns in the average performance level of students, the level of performance in general has remained constant over this period as is indicated in Table 4.17.

Table 4.17 : Mean Values in Earlier Studies

Year	Grade	Subject	Mean Value
1994	05	Literacy	62
1999	05	Literacy	61
1997	03	Literacy	62
2002	03	Literacy	64
2003	04	Literacy	62

Sources : EFA-2000 Assessment Report – Sri Lanka
Grade 03 Performance Report - NIE

These four studies were conducted by the National Institute of Education, Maharagama, under the Joint UNESCO-UNICEF Monitoring Learning Achievement Project. The same test papers were used for data collection in Grade 05, in studies conducted in 1994 and 1999 and similarly, to assess the performance of Grade 03 students in 1997 and 2002, a common test had been used. These tests conducted during the Key Stage II and III indicate that the average performance level of students seem to range between 61-64. **Although the different data sets are not comparable the conclusion that can be drawn is that in general the achievement level in primary Grades has remained constant.**

4.6.4 Comparison Based on All Island Composite Index

Two all island composite indices are calculated using mean values and percentages achieving mastery, to identify the relative position of each province. In both indices, the total score ranges from a minimum of 03 to a maximum of 27, as 09 provinces and 03 variables (subjects) are being considered. The provinces are rank ordered by the total score, and grouped as upper, middle and lower, with 03 provinces in each group.

Table 4.18 gives the all island Composite Index Based on Provincial Mean Values.

Table 4.18 : All Island Composite Index Based on Provincial Mean Values

Group	*Province*	First Language			Mathematics			English Language			Total Score	All Island Rank
		Mean	Rank	Score	Mean	Rank	Score	Mean	Rank	Score		
Upper	1. Western	72.8	1	9	71.1	1	9	54.3	1	9	27	1
	2. North Western	66.7	2	8	65.9	2	8	42.6	3	7	23	2
	3. Southern	65.1	3	7	64.7	4	6	44.0	2	8	21	3
Middle	4. Sabaragamuwa	64.3	4	6	62.9	5	5	42.4	4	6	17	4
	5. North Central	63.4	5	5	65.0	3	7	41.6	6	4	16	5
	6. Central	60.9	6	4	58.6	6	4	41.9	5	5	13	6
Lower	7. Uva	59.3	7	3	58.2	7	3	39.1	7	3	9	7
	8. Eastern	53.9	9	1	50.5	8	2	35.6	8	2	5	8
	9. Northern	54.4	8	2	50.3	9	1	35.6	8	2	5	8
All Island Mean		62.32			60.78			41.92			-	

Based on mean values, the Western province is showing the best performance, scoring 27 out of 29 marks. North Western and Southern provinces secure the 2nd and 3rd places respectively. It is noted that the performance in Mathematics has lowered the rank of the Southern province to 3rd place in the group. Sabaragamuwa, North Central and Central provinces fall in the middle group, and have to concentrate more on raising achievement levels in their future primary education plans. **The three provinces in the lower group, Eastern, Northern and Uva have to initiate and sustain a forward march to achieve better results in primary education.** These provinces have to make a serious effort in both the short and long term, in implementing remedial education activity plans. They should take serious note of the fact that all their mean values are below the all island values. This trend in performance is confirmed by the All Island Composite Index compiled based on percentage achieving mastery.

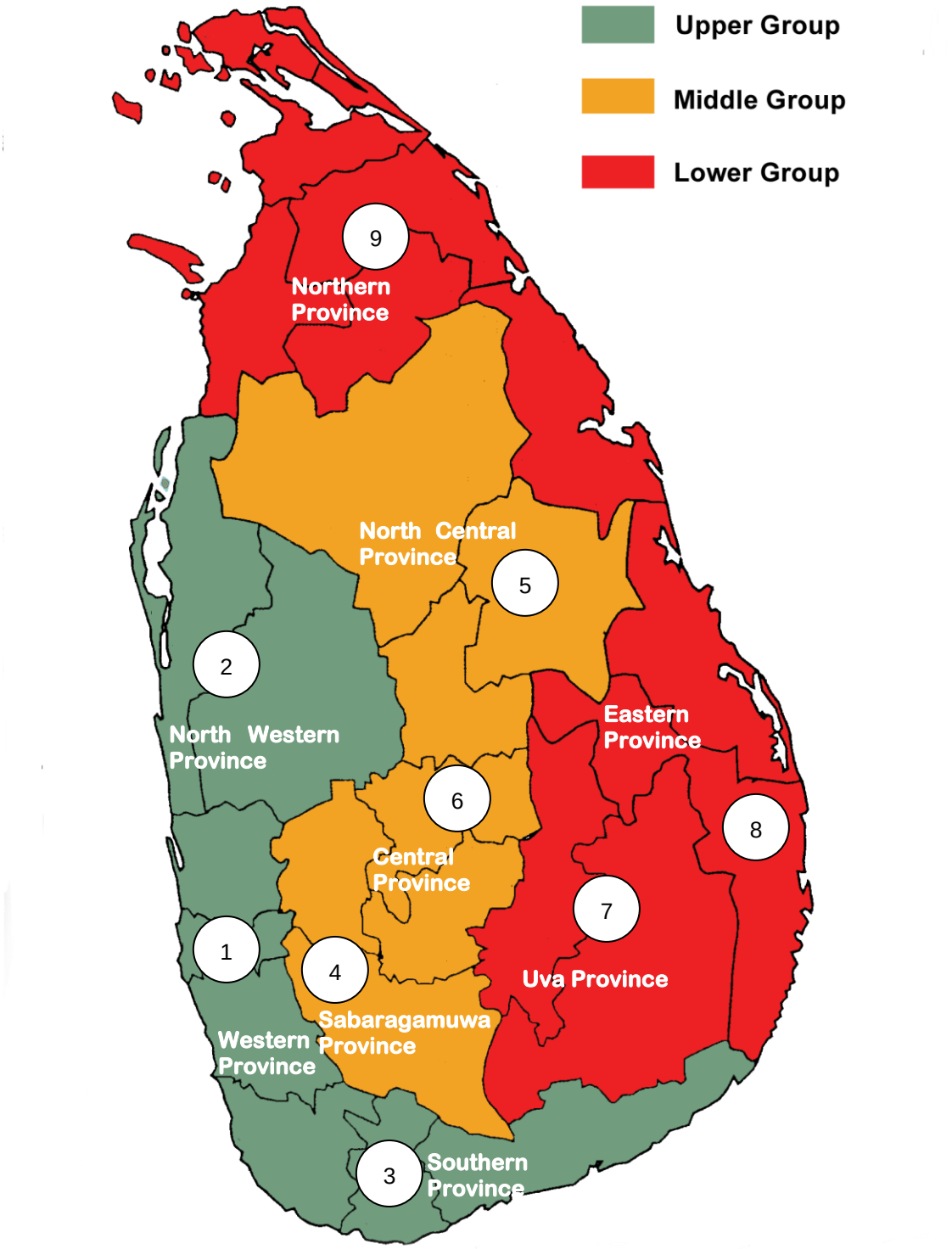


Figure 4.68 : All Island Composite Index Based on Provincial Mean Values

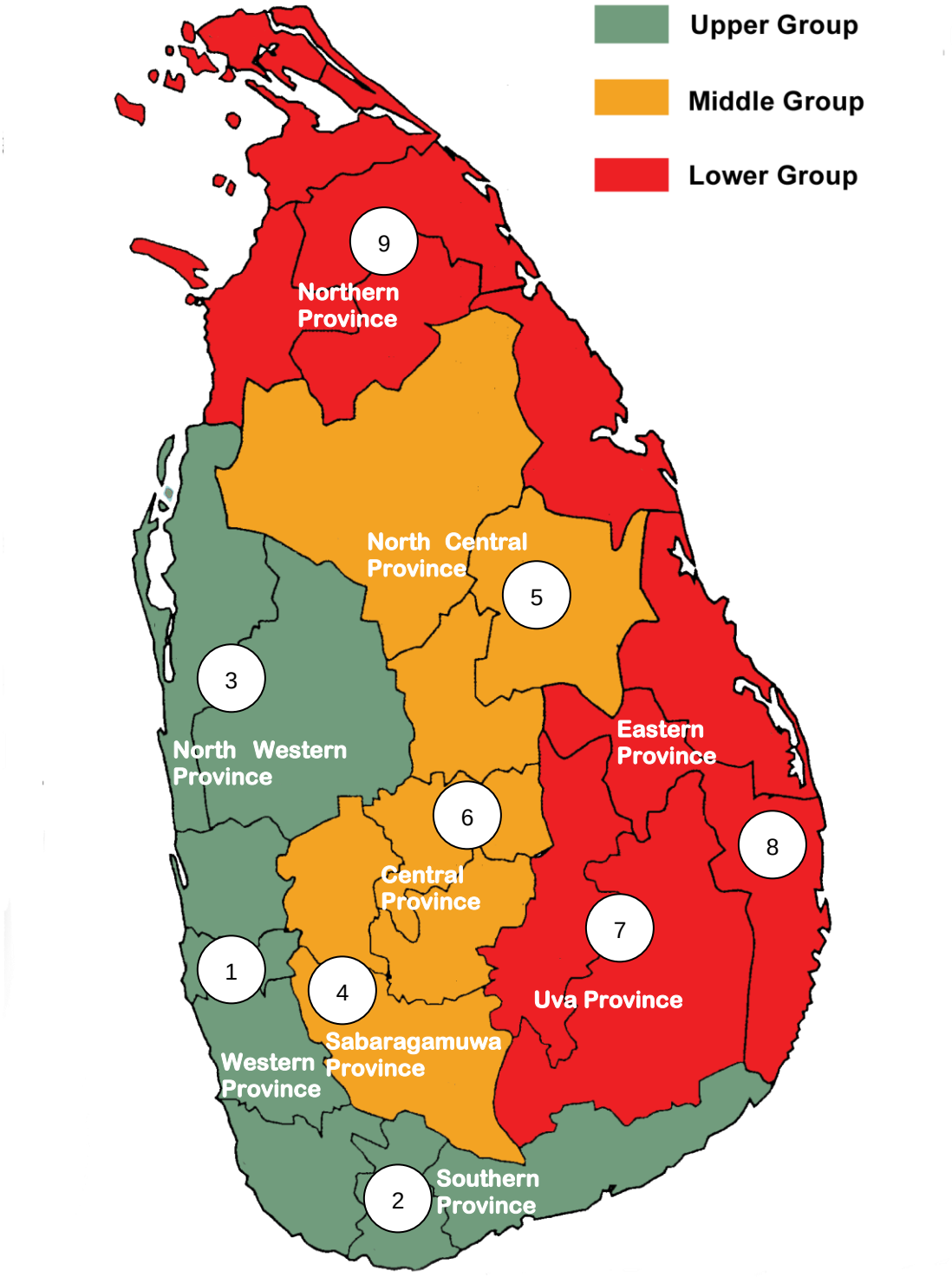


Figure 4.69 : All Island Composite Index Based on Percentage Achieving Mastery, by Province

Table 4.19 : All Island Composite Index Based on Percentage Achieving Mastery, by Province

Group	*Province*	First Language			Mathematics			English Language			Total Score	All Island Rank
		Achieving Mastery	Rank	Score	Achieving Mastery	*Rank*	Score	Achieving Mastery	Rank	Score		
Upper	1. Western	53.5	1	9	52.3	1	9	19.5	1	9	27	1
	2. Southern	42.6	2	8	44.2	2	8	12.7	2	8	24	2
	3. North Western	42.2	3	7	43.1	3	7	8.5	4	6	20	3
Middle	4. Sabaragamuwa	40.2	4	6	42.7	4	6	10.2	3	7	19	4
	5. North Central	35.6	5	5	40.6	5	5	8.1	6	4	14	5
	6. Central	33.8	7	3	33.0	7	3	8.4	5	5	11	6
Lower	7. Uva	33.9	6	4	35.3	6	4	7.6	7	3	11	6
	8. Eastern	23.7	8	2	25.2	8	2	5.6	8	2	6	8
	9. Northern	22.7	9	1	25.1	9	1	5.0	9	1	3	9
All Island Percentage		36.5			37.9			9.5			-	

Western province is the best in performance. Southern and North Western are in the upper group. Uva, Eastern and Northern provinces are in the lower group. Sabaragamuwa, North Central and Central provinces have secured places in the middle group. The provincial values of the lower group, in achieving mastery in all three subjects, are below the all island level.

4.6.5 Comparison of Provincial Level Indicators with National Level Indicators

A comparison of provincial level performance indicators with national level indicators provides guidance to planners, in decision making. If the position is above the National level, strategies can be designed to maintain these standards as well as to achieve better performance levels. If the position is below the national standard, planners can decide on new strategies to be adopted, prioritize needs to be addressed and review policies of resource allocation, accordingly.

Figures 4.70, 4.71, 4.72 provide information on two trends in student performance. One is that Uva, Northern and Eastern provinces are below the all island performance level.

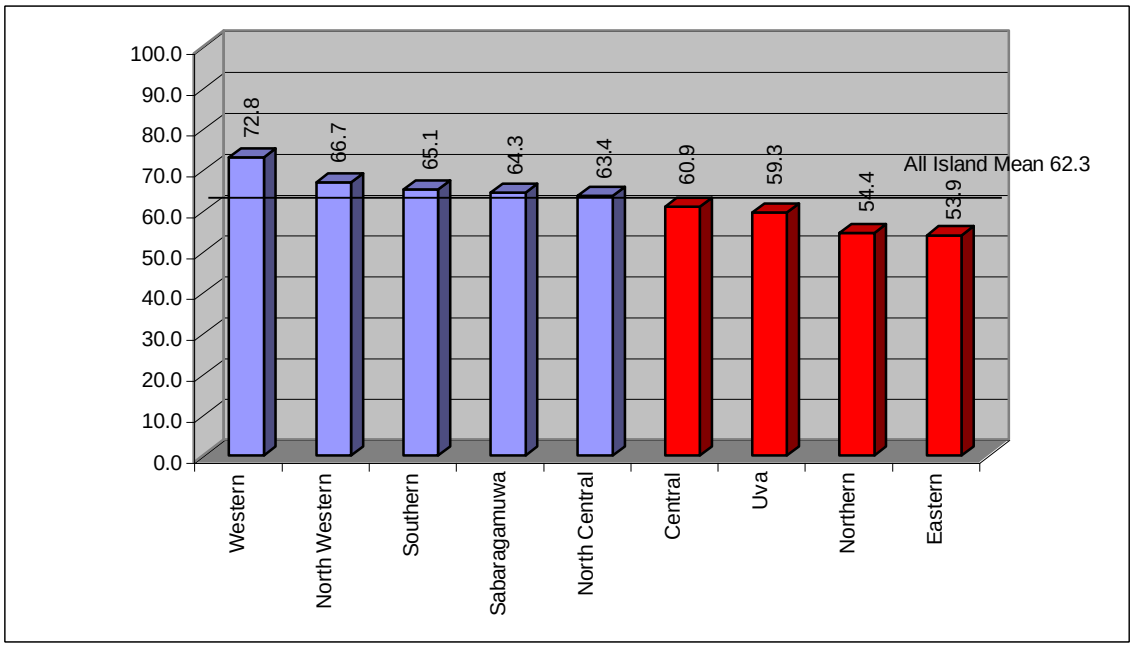


Figure 4.70 : Mean Values in First Language – by Province

This is true of First Language, and the other two subjects, Mathematics and English Language. Data in Figures 4.71 and 4.72 confirms this trend.

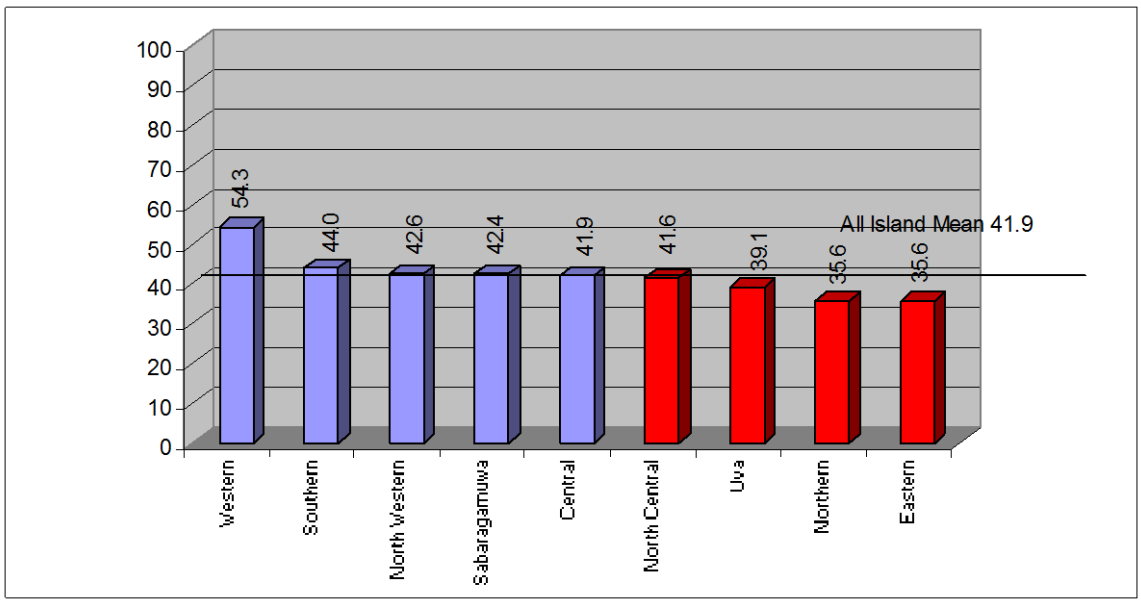


Figure 4.71 : Mean Values in English Language – by Province

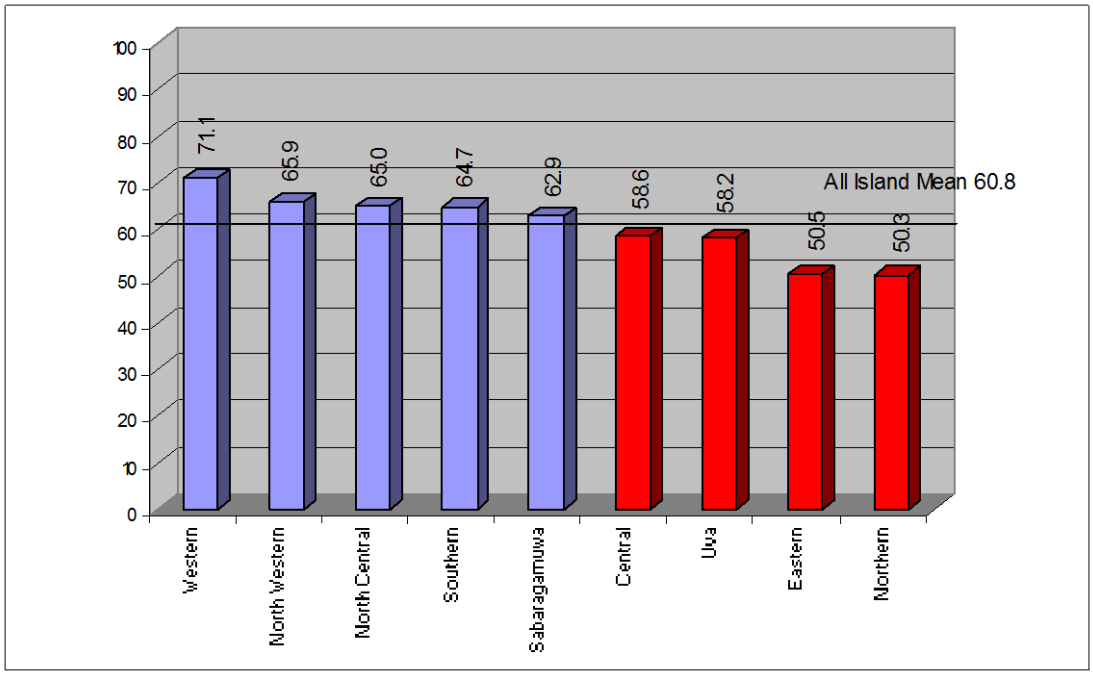


Figure 4.72 : Mean Values in Mathematics– by Province

The other trend is that consistently, **Western, North Western, Southern and Sabaragamuwa province** mean values are higher than the national level mean values. In other words these provinces **exhibit better performance than the average level of the country, as a whole**.

A similar trend is noted in the percentage of students achieving the level of mastery. In all three subjects tested, Western, Southern and Sabaragamuwa percentages are above the all island percentage values. As was evident earlier in comparison of mean values, Figures 4.73, 4.74 and 4.75 confirm that **Uva, Eastern and Northern provinces are consistently below the all island values**.

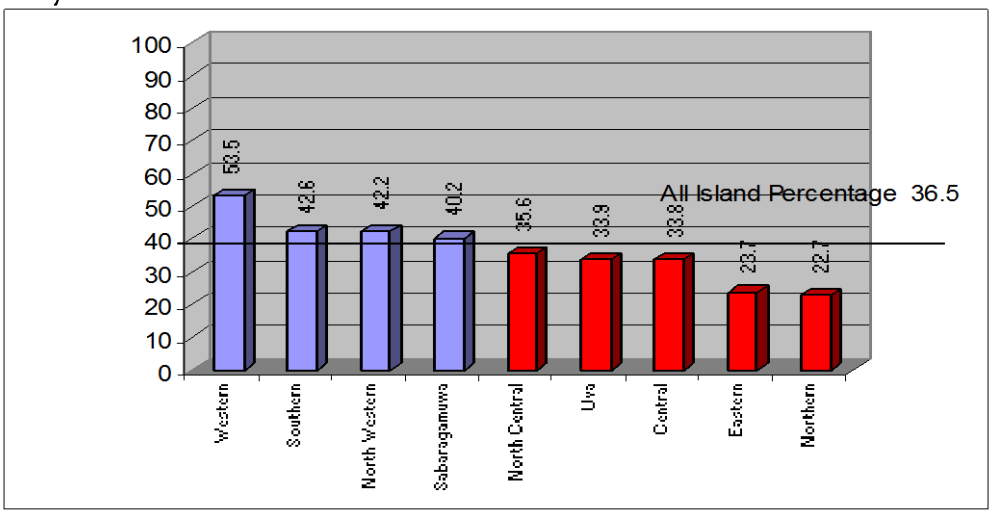


Figure 4.73 : Percentage Achieving Mastery in First Language - by Province

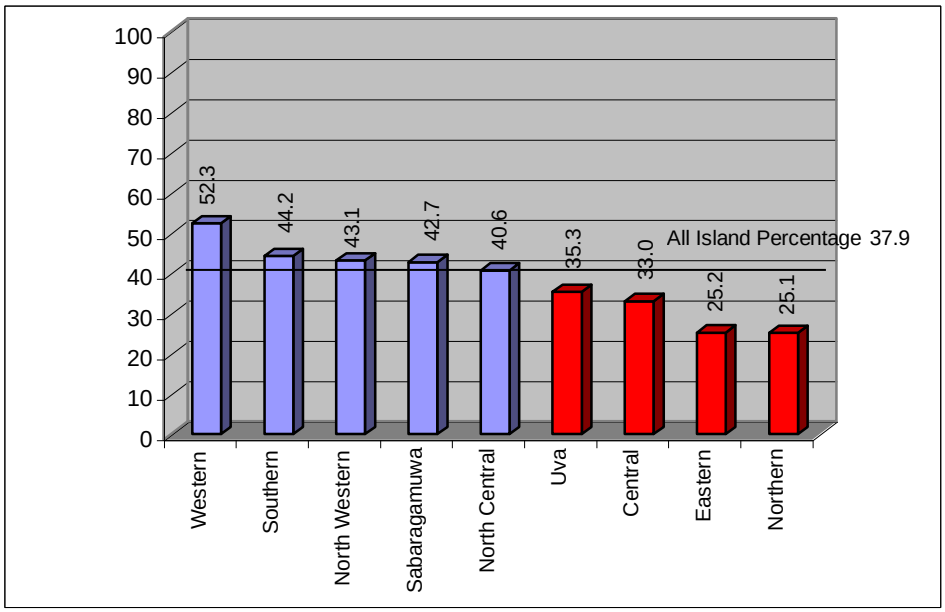


Figure 4.74 : Percentage Achieving Mastery in Mathematics - by Province

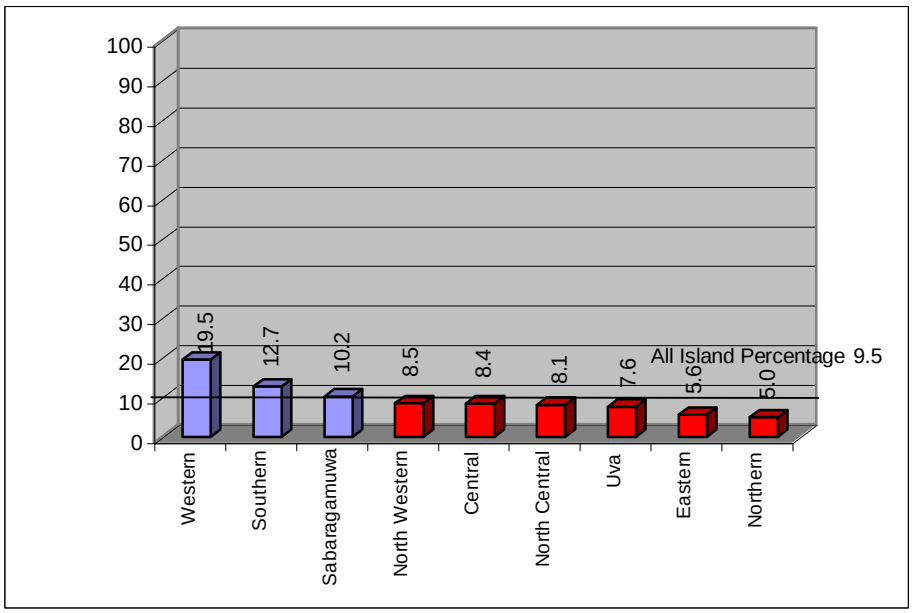


Figure 4.75 : Percentage Achieving Mastery in English Language – by Province

The other three provinces Central, North Central and North Western are in the near margin of the all island percentages achieving mastery. This pattern of performance, of the three groups deserves further study duly considered in making policy decisions and implementation plans.

4.6.6 Comparison of the Performance of Districts

Performance levels of Grade 04 students can be compared, on the basis of districts too. Ranking the districts based on the mean values and grouping the districts as Upper, Middle and Lower is an approach that makes comparison more meaningful. Further, this method of grouping can be adopted, using values that show the percentages of students achieving the level of mastery scoring 80 marks or above.

Districts are firstly rank-ordered and then arranged in three groups with around 26 percent of the districts in the Upper Group, a similar percentage in the Lower group and the rest, in the Middle group.

Tables 4.20, 4.21, 4.22 give the rank order of the districts and the groups they fall within, accordingly.

Table 4.20: Rank Order Based on Mean Values in First Language

Group	Rank	Mean Value	District	Province
Upper Group	1	74.55	Gampaha	Western
	2	72.93	Colombo	Western
	3	70.12	Kurunegala	North Western
	4	69.75	Kalutara	Western
	5	68.78	Matara	Southern
	6	67.44	Kegalle	Sabaragamuwa
Middle Group	7	66.90	Kandy	Central
	8	65.14	Galle	Southern
	9	64.04	Anuradhapura	North Central
	10	62.27	Ratnapura	Sabaragamuwa
	11	62.05	Polonnaruwa	North Central
	12	61.58	Vavuniya	Northern
	13	60.96	Puttalam	North Western
	14	60.95	Badulla	Uva
	15	60.57	Hambantota	Southern
	16	60.07	Mannar	Northern
	17	58.10	Matale	Central
	18	58.04	Ampara	Eastern
	19	56.48	Monaragala	Uva
Lower Group	20	55.68	Jaffna	Northern
	21	54.79	Trincomalle	Eastern
	22	53.00	Nuwara Eliya	Central
	23	50.29	Mulativu	Northern
	24	47.51	Batticaloa	Eastern
	25	43.09	Kilinochchi	Northern
All Island Mean Value 62.32				

Table 4.21 : Rank Order Based on Mean Values in Mathematics

Group	Rank	Mean Value	District	Province
Upper Group	1	71.91	Colombo	Western
	2	71.87	Gampaha	Western
	3	68.78	Kurunegala	North Western
	4	68.63	Matara	Southern
	5	68.23	Kalutara	Western
	6	66.07	Kegalle	Sabaragamuwa
Middle Group	7	65.58	Galle	Southern
	8	65.35	Anuradhapura	North Central
	9	64.90	Kandy	Central
	10	64.35	Polonnaruwa	North Central
	11	60.90	Puttalam	North Western
	12	60.88	Ratnapura	Sabaragamuwa
	13	60.11	Vavuniya	Northern
	14	59.89	Badulla	Uva
	15	58.60	Hambantota	Southern
	16	56.66	Ampara	Eastern
	17	56.60	Matale	Central
	18	55.98	Mannar	Northern
	19	55.11	Monaragala	Uva
Bottom Group	20	51.52	Jaffna	Northern
	21	49.90	Nuwara Eliya	Central
	22	49.44	Trincomalee	Eastern
	23	47.42	Mulativu	Northern
	24	43.03	Batticaloa	Eastern
	25	34.76	Kilinochchi	Northern
All Island Mean Value 60.78				

Table 4.22 : Rank Order Based on Mean Values in English Language

Group	Rank	Mean Value	District	Province
Upper Group	1	58.27	Colombo	Western
	2	54.35	Gampaha	Western
	3	48.08	Matara	Southern
	4	47.19	Kalutara	Western
	5	46.40	Kandy	Central
	6	45.88	Kegalle	Sabaragamuwa
Middle Group	7	44.45	Galle	Southern
	8	44.31	Kurunegala	North Western
	9	42.25	Anuradhapura	North Central
	10	41.65	Badulla	Uva
	11	40.37	Vavuniya	Northern
	12	40.27	Polonnaruwa	North Central
	13	40.12	Ratnapura	Sabaragamuwa
	14	39.77	Puttalam	North Western
	15	39.70	Matale	Central
	16	38.39	Mannar	Northern
	17	38.35	Hambantota	Southern
	18	37.93	Ampara	Eastern
	19	37.77	Jaffna	Northern
Lower Group	20	36.00	Nuwara Eliya	Central
	21	35.08	Trincomalee	Eastern
	22	34.64	Monaragala	Uva
	23	33.63	Mulativu	Northern
	24	33.08	Batticaloa	Eastern
	25	24.28	Kilinochchi	Northern
All Island Mean Value 41.92				

The pattern of data in the three Tables indicates that five of the districts fall into the upper group in all three subjects. These districts are Colombo, Gampaha, Kalutara, Matara and Kegalle. The five districts Trincomalee, Nuwara Eliya, Batticaloa, Mulativu and Kilinochchi are consistently in the lower group, in respect of all three subjects.

This pattern of performance indicating that a group of five districts are relatively high achieving and another five districts are low achieving should be taken into account, in resource allocation, and in strategies and measures adopted, to equalize opportunities island-wide.

Similarly, in the percentage of students reaching the level of mastery, Colombo, Gampaha, Matara and Kalutara districts are in the upper group, in all three subjects.

Table 4.23: Rank Order Based on Percentage Achieving Mastery in First Language

Group	Rank	Achieving Mastery (%)	District	Province
Upper Group	1	59.4	Gampaha	Western
	2	51.4	Colombo	Western
	3	47.7	Kurunegala	North Western
	4	47.6	Kalutara	Western
	4	47.6	Matara	Southern
	6	45.1	Kegalle	Sabaragamuwa
Middle Group	7	43.6	Kandy	Central
	8	43.0	Galle	Southern
	9	37.0	Ratnapura	Sabaragamuwa
	10	36.4	Anuradhapura	North Central
	11	36.0	Hambantota	Southern
	12	35.8	Badulla	Uva
	13	33.8	Polonnaruwa	North Central
	14	32.8	Puttalam	North Western
	15	30.4	Monaragala	Uva
	16	27.0	Mannar	Northern
	17	26.9	Vavuniya	Northern
	18	26.1	Jaffna	Northern
	19	26.0	Ampara	Eastern
Lower Group	20	25.5	Trincomalee	Eastern
	21	24.5	Matale	Central
	22	23.4	Nuwara Eliya	Central
	23	19.1	Batticaloa	Eastern
	24	17.5	Mulativu	Northern
	25	11.2	Kilinochchi	Northern
All Island Percentage 36.5				

Table 4.24 : Rank Order Based on Percentage Achieving Mastery in Mathematics

Group	Rank	Achieving Mastery (%)	District	Province
Upper Group	1	54.1	Gampaha	Western
	2	53.7	Colombo	Western
	3	47.5	Matara	Southern
	4	46.7	Kalutara	Western
	5	46.3	Kurunegala	North Western
	6	46.0	Galle	Southern
Middle Group	7	45.2	Kegalle	Sabaragamuwa
	8	41.5	Polonnaruwa	North Central
	9	41.0	Kandy	Central
	9	41.0	Ratnapura	Sabaragamuwa
	11	40.3	Anuradhapura	North Central
	12	37.5	Puttalam	North Western
	12	37.5	Hambantota	Southern
	14	36.9	Vavuniya	Northern
	15	36.0	Badulla	Uva
	16	33.9	Monaragala	Uva
	17	30.1	Ampara	Eastern
	18	29.4	Matale	Central
	19	28.1	Jaffna	Northern
Lower Group	20	25.3	Mannar	Northern
	21	22.3	Nuwara Eliya	Central
	22	21.7	Trincomalee	Eastern
	23	21.5	Batticaloa	Eastern
	24	18.8	Mulativu	Northern
	25	9.7	Kilinochchi	Northern
All Island Percentage 37.9				

Table 4.25: Rank Order Based on Percentage Achieving Mastery in English Language

Group	Rank	Achieving Mastery (%)	District	Province
Upper Group	1	23.7	Colombo	Western
	2	18.6	Gampaha	Western
	3	16.1	Matara	Southern
	4	14.0	Kalutara	Western
	5	12.7	Kegalle	Sabaragamuwa
	6	12.2	Galle	Southern
Middle Group	7	11.3	Kandy	Central
	8	9.8	Kurunegala	North Western
	9	9.4	Matale	Central
	10	9.3	Hambantota	Southern
	11	9.0	Anuradhapura	North Central
	12	8.8	Badulla	Uva
	13	8.7	Vavuniya	Northern
	14	8.5	Ratnapura	Sabaragamuwa
	15	6.5	Ampara	Eastern
	16	6.4	Puttalm	North Western
	17	6.1	Polonnaruwa	North Central
	18	5.5	Monaragala	Uva
	19	5.4	Jaffna	Northern
Lower Group	20	5.0	Batticaloa	Eastern
	21	4.9	Trincomalee	Eastern
	22	4.8	Mulativu	Northern
	23	3.3	Nuwara Eliya	Central
	24	2.9	Mannar	Northern
	25	0.7	Kilinochchi	Northern
All Island Percentage 9.5				

The five districts Trincomalee, Nuwara Eliya, Batticaloa, Mulativu and Kilinochchi are consistently in the lower group.

In both groupings, based on average scores and percentages achieving mastery, the pattern is that Colombo, Gampaha, Matara and Kalutara are in the upper group. Trincomalee, Batticaloa, Nuwara Eliya, Mulativu are in the lower group.

It may be that the districts in the upper group adopt better monitoring procedures and that districts in the lower group have poor monitoring procedures. The learning environment in districts in the upper group may be much better when compared with the learning environment prevailing in schools in districts in the lower group. The educational planning and implementation procedures adopted by provincial administrative and educational authorities in the districts, in the lower group may be relatively ineffective, in comparison with those adopted by the districts in the upper group.

In addition two composite indices for districts have been calculated, based on mean values and percentages achieving mastery. The total score of both indices range from a minimum of 03 to a maximum of 75, by the 25 educational districts and the 03 variables.

Table 4.26 : Composite Index for Districts - Based on Mean Values

Group	District	First Language			Mathematics			English Language			Total Score	All Island Rank
		Mean	Rank	Score	Mean	Rank	Score	Mean	Rank	Score		
Upper Group	1. Colombo	72.93	2	24	71.91	1	25	58.27	1	25	74	1
	2. Gampaha	74.55	1	25	71.87	2	24	54.35	2	24	73	2
	3. Matara	68.78	5	21	68.63	4	22	48.08	3	23	66	3
	4. Kalutara	69.75	4	22	68.23	5	21	47.19	4	22	65	4
	5. Kurunegala	70.12	3	23	68.78	3	23	44.31	8	18	64	5
	6. Kegalle	67.44	6	20	66.07	6	20	45.88	6	20	60	6
Middle Group	7. Kandy	66.90	7	19	64.90	9	17	46.40	5	21	57	7
	8. Galle	65.14	8	18	65.58	7	19	44.45	7	19	56	8
	9. Anuradhapura	64.04	9	17	65.35	8	18	42.25	9	17	52	9
	10. Polonnaruwa	62.05	11	15	64.35	10	16	40.27	12	14	45	10
	11. Ratnapura	62.27	10	16	60.88	12	14	40.12	13	13	43	11
	12. Vavuniya	61.58	12	14	60.11	13	13	40.37	11	15	42	12
	13. Puttalam	60.96	13	13	60.90	11	15	39.77	14	12	40	13
	14. Badulla	60.95	14	12	59.89	14	12	41.65	10	16	40	13
	15. Hambantota	60.57	15	11	58.6	15	11	38.35	17	9	31	15
	16. Matale	58.10	17	09	56.60	17	09	39.70	15	11	29	16
	17. Mannar	60.07	16	10	55.98	18	08	38.39	16	10	28	17
	18. Ampara	58.04	18	08	56.66	16	10	37.93	18	08	26	18
	19. Jaffna	55.68	20	06	51.52	20	06	37.77	19	07	19	19
Lower Group	20. Monaragala	56.48	19	07	55.11	19	07	34.64	22	04	18	20
	20. N'Eliya	53.00	22	04	49.90	21	05	36.00	20	06	15	21
	24.Trincomalee	54.79	21	05	49.44	22	04	35.08	21	05	14	22
	21. Mullativu	50.29	23	03	47.42	23	03	33.63	23	03	9	23
	22. Batticaloa	47.51	24	02	43.03	24	02	33.08	24	02	6	24
	25.Kilinochchi	43.09	25	01	34.76	25	01	24.28	25	01	3	25

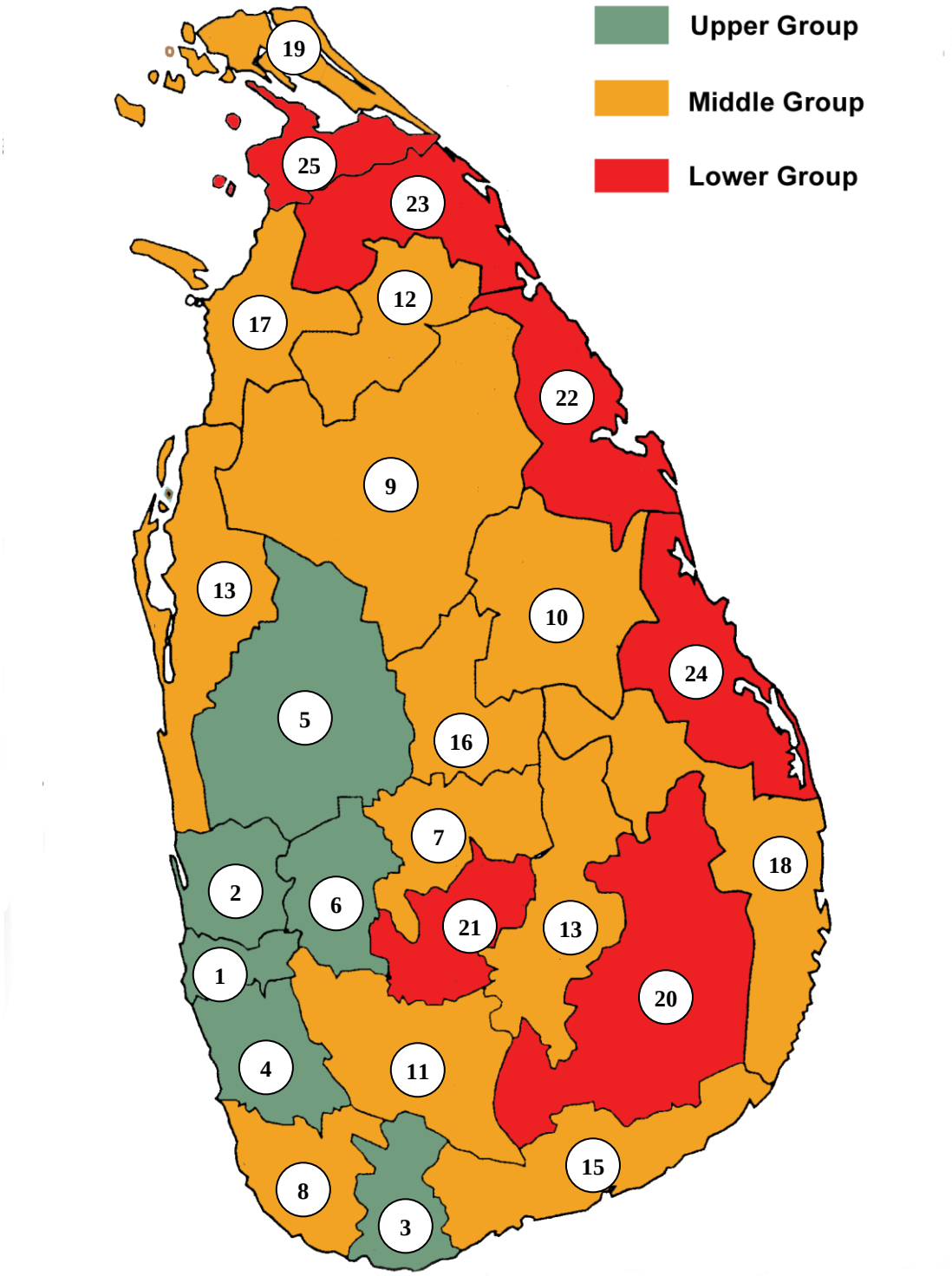


Figure 4.76 : Composite Index for Districts – Based on Mean Values

Table 4.27 : Composite Index for Districts – Based on Percentage Achieving Mastery

Group	District	First Language			Mathematics			English Language			Total Score	All Island Rank
		Achieving Mastery (%)	Rank	Score	Achieving Mastery (%)	Rank	Score	Achieving Mastery (%)	Rank	Score		
Upper Group	1. Gampaha	59.4	1	25	54.1	1	25	20.3	2	24	74	1
	2. Colombo	51.4	2	24	53.7	2	24	23.7	1	25	73	2
	3. Matara	47.6	4	22	47.5	3	23	16.1	3	23	68	3
	4. Kalutara	47.6	4	22	46.7	4	22	14.0	4	22	66	4
	5. Kurunegala	47.7	3	23	46.3	5	21	9.8	8	18	62	5
	6. Kegalle	45.1	6	20	45.2	7	19	12.7	5	21	60	6
Middle Group	7. Galle	43.0	8	18	46.0	6	20	12.2	6	20	58	7
	8. Kandy	43.6	7	19	41.0	9	17	11.3	7	19	55	8
	9. Anuradhapura	36.4	10	16	40.3	11	15	9.0	11	15	46	9
	10. Ratnapura	37.0	9	17	41.0	9	17	8.5	14	12	46	9
	11. Hambantota	36.0	11	15	37.5	12	14	9.3	10	16	45	11
	12. Polonnaruwa	33.8	13	13	41.5	8	18	6.1	17	09	40	12
	13. Badulla	35.8	12	14	36.0	15	11	8.8	12	14	39	13
	14. Puttalam	32.8	14	12	37.5	12	14	6.4	16	10	36	14
	15. Vavuniya	26.9	17	09	36.9	14	12	8.7	13	13	34	15
	16. Matale	24.5	21	05	29.4	18	08	9.4	9	17	30	16
	17. Monaragala	30.4	15	11	33.9	16	10	5.5	18	08	29	17
	18. Ampara	26.0	19	07	30.1	17	09	6.5	15	11	27	18
	19. Jaffna	26.1	18	08	28.1	19	07	5.4	19	07	22	19
Lower Group	20. Mannar	27.0	16	10	25.3	20	06	2.9	24	02	18	20
	21.Trincomalee	25.5	20	06	21.7	22	04	4.9	21	05	15	21
	22. N'Eliya	23.4	22	04	22.3	21	05	3.3	23	03	12	22
	23. Batticaloa	19.1	23	03	21.5	23	03	5.0	20	06	12	22
	24. Mullativu	17.5	24	02	18.8	24	02	4.8	22	04	8	24
	25.Kilinochchi	11.2	25	01	9.7	25	01	0.7	25	01	3	25

The two Tables 4.26 and 4.27 giving the composite indices highlight the fact that the **same group of districts are placed in the lower group and in the upper group, respectively.** Policy planners and programme implementers have to be cognizant of this pattern of performance, shown by the districts.

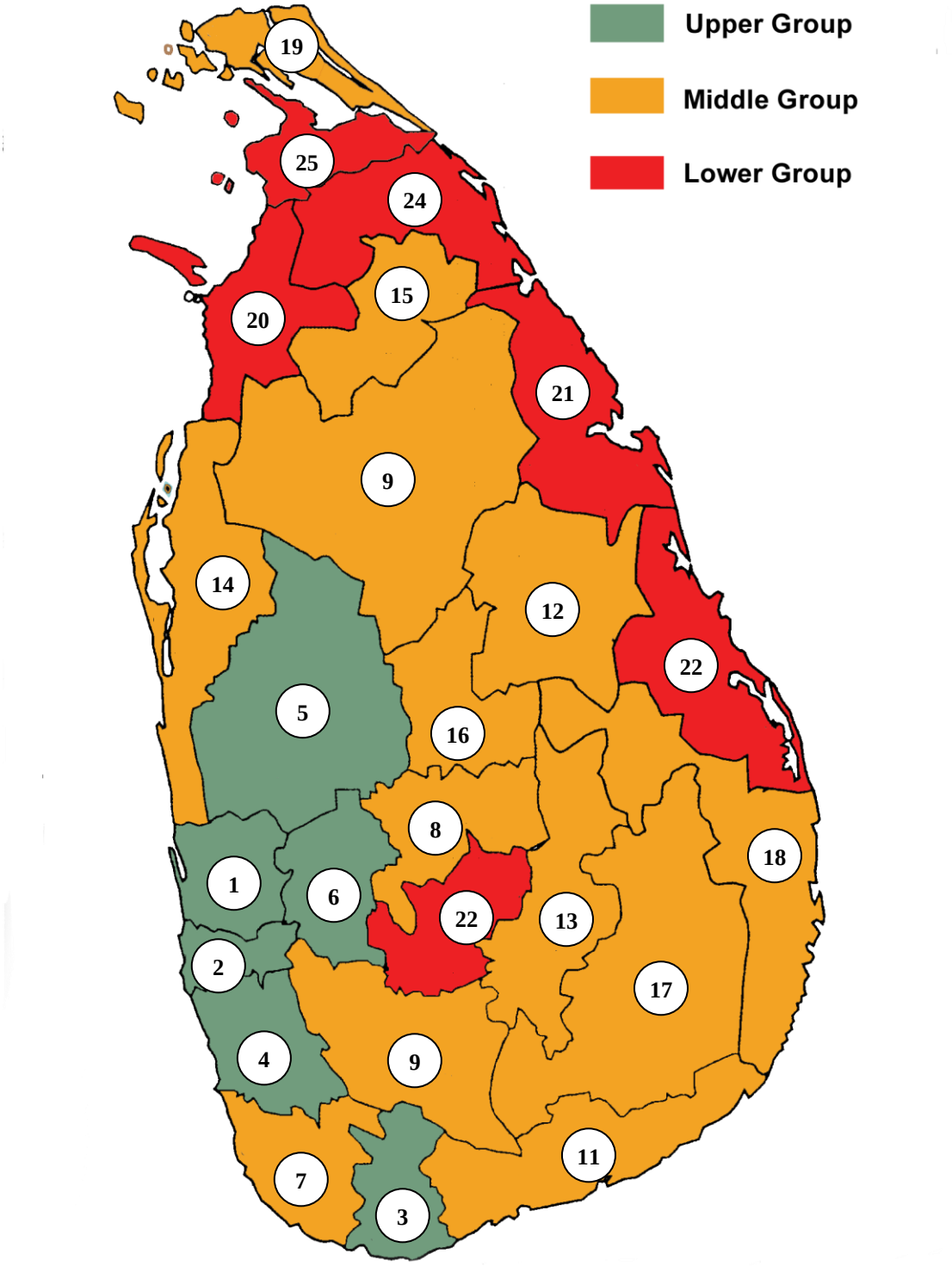


Figure 4.77 : Composite Index for Districts - Based on Percentage Achieving Mastery

4.7 Trends identified using the measures of correlation

4.7.0 Introduction

Two correlation indices were calculated using the scores obtained, in the present survey. One is the Product moment correlation coefficient. The other is the coefficient of Intra-class correlation (roh). The former is to identify the strength of the relationship between the three subjects and the latter, to identify the variance between schools and within schools.

4.7.1 Product moment correlations

Product moment correlations between the pairs of subjects indicate two main features. One is the relationship between performance in the subjects that are paired; i.e Maths and First Language, Maths and English Language, First Language and English Language. The **correlations between the pairs of subjects are always positive. The scores in subjects paired move in the same direction**. Students who score high marks in First Language also score high marks in Mathematics and vice versa. This relationship is true of all subject pairs.

> *Measures of correlation indicate both strength and the direction of the relationship between a pair of variables ..... Correlation entails the provision of a yardstick whereby the intensity or strength of a relationship can be gauged.*
>
> *- Bryman and Cramer-*

Table 4.28 : Correlation Between Subjects

Province	Maths- English	Maths – First Language	English – First Language
Western	0.700	0.850	0.740
Central	0.728	0.864	0.708
Southern	0.757	0.866	0.773
Northern	0.738	0.856	0.708
Eastern	0.720	0.861	0.709
North Western	0.660	0.853	0.701
North Central	0.714	0.859	0.737
Uva	0.747	0.885	0.758
Sabaragamuwa	0.741	0.875	0.761
All Island	0.731	0.871	0.743

The other feature is that the **correlations between the pairs are very high**. Table 4.29 depicts that the correlation between First Language and Mathematics is consistently higher than that of the other two pairs. Both at the all island level and at the provincial level this is so. This indicates that effective language learning and teaching in classrooms is a prerequisite for the development of numerical and other abilities.

Further, Primary Level teachers have to pay equal attention to all three subjects, First Language, Mathematics and Second Language, as they are equally important in improving the subject related abilities of pupils.

4.7.2 Intra-class correlations

The second group of correlations calculated was the Intra-class correlation coefficient. It is also known as the roh value or the **range of homogeneity value**. Calculating this value is useful for two reasons. One is that this value is needed in designing samples for educational research studies. The other is that this value indicates the nature of the variance of a set of scores.

> *Roh is an indicator of variance between clusters relative to variance within clusters. The most frequent use of roh is for variance between schools and within schools*
>
> *– T.N. Postlethwaite.-*

Table 4.29: The roh values calculated using the scores obtained in this study

Province	Cluster size = 20			Cluster size = 17.4		
	First Language roh	English roh	Mathematics roh	First Language roh	English roh	Mathematics roh
Western	0.29	0.30	0.25	0.32	0.33	0.28
Central	0.28	0.32	0.30	0.31	0.35	0.33
Southern	0.24	0.28	0.23	0.27	0.31	0.26
Northern	0.24	0.25	0.25	0.26	0.27	0.28
Eastern	0.34	0.37	0.36	0.37	0.40	0.39
North Western	0.20	0.23	0.21	0.22	0.25	0.23
North Central	0.18	0.23	0.19	0.21	0.26	0.21
Uva	0.32	0.33	0.29	0.35	0.36	0.32
Sabaragamuwa	0.26	0.26	0.24	0.29	0.29	0.26
All Island	0.29	0.32	0.29	0.32	0.35	0.32

One set of values was calculated using the minimum cluster size of 20. The other set has been calculated using the average cluster size of 17.4 that was really achieved in the survey.

The extreme values of roh are typically 0.0 and 1.0. Based on the evidence given in the Table the roh value in relation to Sri Lanka can be decided as 0.30. It means that 30 percent of the variation is between schools and 70 percent is between students within schools. It should be noted that when the roh is high, the differences between schools are high. The level of a student's score will depend very much on the school he/she attends. However, when the roh is low, the school a student attends does not matter so much.

Two main points can be emphasized using the roh values in Table 4.29. One is that an average roh of 30 indicates, there are large differences between schools. The level of the school the student attends matters a lot in deciding the score that he earns in a given test. The second is that there is a clear difference between English Language (0.32) and the other two subjects (0.29). Differences in teaching English Language among schools are more, relatively to the other two subjects. Though there are and have been various English improvement programmes throughout the country, serious attention should be focussed on quality improvement in teaching and learning English Language and the provision of equal opportunities to the students learning in the primary or basic education cycle.

The other use of the calculation of this roh value is that it can be used in future, in designing the sample size of educational research studies. Prior to this research, no such value was calculated, in the field of educational research, in Sri Lanka. In the research studies carried out by the National Institute of Education, Maharagama, under the guidance of UNESCO-UNICEF (Joint) Monitoring Learning Achievement Project, in 1994 and 1996, for the purpose of deciding the sample size, roh value was assumed as 0.2. In the previous Grade 04 study roh value was assumed as 0.5. In future educational research studies, a better and convenient sample size can be decided on which may be above those of the 1994 and 1996 studies and below the sample size of the present Grade 04 study. Therefore, **this roh value will provide good guidance to future educational researches in the country**.

4.8 Summary

Patterns and trends identified using test data, are significant in many respects. The overall performance level in First Language seems to be fairly satisfactory and so is achievement in Mathematics, although percentages achieving mastery in both subjects is low. Performance in English Language is comparatively poor. Type 1AB schools are the best in performance and Type 02 schools, the poorest. Girls perform better than boys. Achievement levels of Sinhala medium students are better than those of Tamil medium students. Of the Tamil medium schools, plantation area school pupils' performance is the lowest. Urban schools have consistently performed better than rural schools. Of the provinces Western province has performed better than all others. The performance levels of Uva, Northern and Eastern provinces are not at all satisfactory.

Reaching the targets set out by EFA – Framework for Action is yet a long way off. There is considerable disparity in the provision of basic education by the state, on an equity basis. By school type, medium of instruction, province, district, location of school (Urban/Rural) and even intra-school, there are clear disparities in students' performance.

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