National Report

National Assessment of Achievement of Students Completing Grade 4 in Year 2015 in Sri Lanka

Ministry of Education
National Education Research and Evaluation Centre (NEREC)

Financed by:
World Bank-funded Transforming the School Education System as the Foundation of a Knowledge Hub Project (TSEP)

May 2016

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Writer: Marie Perera

Sample Selection: Jude Nonis

Data Analysis: Jude Nonis

Proof Reading: Jeevani Herath

Data Processing: Nayanie Gamaethige
Nadee Gamaethige
M.H.S.F. Mahsanie
S. Udayakumara
K.M. Kanishka Karunanayak e
Anuradha S. Seneviratne
Devinda Wijethunga
K.P. Ganga Udeshika
Varuni Gurugamage
Sandaru Jayawardhana

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Senior Professor Marie Perera
Director
National Education Research and Evaluation Centre (NEREC)

Message from the Secretary, Ministry of Education

I consider it is a privilege for me to write this message to the report on 'National Assessment of Achievement of Students Completing Grade 4 in Year 2015 in Sri Lanka'. Conducting periodical national assessments has been one of the major activities of the Education Sector Development Framework and Programme (ESDFP) (2012-2016). This is an important national action which is exercised with a view to reveal the achievement levels of students in various grades. Findings of these assessments help teachers to understand the levels of achievement of students and policy-makers and planners to determine the performance of the education system by means of learning outcomes, to what extent the educational development programmes and investments have been successful and what further steps should be taken inorder further to upgrade the performance of the system. Considering the importance of this exercise, the Ministry of Education has planned to continue these assessments regularly and effectively.

In this context the Ministry of Education, with the financial assistance of the World Bank, has commissioned the National Education Research and Evaluation Center (NEREC) of the Faculty of Education, University of Colombo the task of conducting national assessments to determine the levels of achievement of students in grades 4 and 8, during the past several years. Its latest national assessment report reveals factors that are particularly significant in order to enhance teaching and learning, analysed by various aspects such as types of schools, gender, medium of instruction, location and competency levels of students who completed grade 4 in the year 2015.

I wish to extend my sincere gratitude to Hon. Akila Viraj Kariyawasam, Minister of Education for providing guidance to implement this activity which has a national importance. Further, I also wish to thank Dr. Harsha Aturupane, Lead Education Specialist, Education Global Practice of the World Bank for providing technical guidance to carry out this assessment and appreciate the financial assistance extended by the World Bank though the 'Transforming School Education Project (TSEP)' for this purpose. I also appreciate the Dean/Faculty of Education University of Colombo, Professor W.Chandradasa and Director NERED, Professor Maire Perera and NEREC research team for their academic contributions, and time taken to conduct and

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W.M. Bandusena
Secretary
Ministry of Education

Research Team

Marie Perera - Coordinator

M. Karunanithy

P.K. J.E. Nonis

Kumudu Seneviratne

Jeevani Herath

R.D.C. Niroshini

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Abbreviations

EFA	Education for All
ESDFP	Education Sector Development Framework and Programme
ESS	Effective Sample Size
IEA	International Association for the Evaluation of Educational Achievement
NEREC	National Education Research and Evaluation Centre
PPS	Probability Proportional to Size
roh	Rate of homogeneity
SD	Standard deviation
TIMSS	Trends in International Mathematics and Science Study

Executive Summary

A world wide focus on the need for timely and credible data on student learning, that may inform the design of effective mechanisms to improve educational outcomes, rather than only on education inputs could be seen. National Assessment of learning outcomes has become an important component of education policy analysis and programme monitoring in Sri Lanka. The National Education Research and Evaluation Centre (NEREC) of the Faculty of Education, University of Colombo has been the forerunner in conducting these assessments.

NEREC has conducted National Assessments of Learning Outcomes both at primary as well as at secondary level. At primary level National Assessments of learning outcomes were conducted at Grade 4 in 2003, 2007, 2009 and 2013. This report presents the findings of the national assessment conducted in grade 4 for first language – Sinhala and Tamil, the second language – English and mathematics in the year 2015.

The national assessment of learning outcomes of 2015 used instruments that were designed and used in the 2013 study to test cognitive skills in the three subjects. Hence, this report presents the patterns of achievement of learning outcomes of students completing grade 4 in 2015 as well as compare the achievement with that of 2013 to identify the trends in achievement.

The national assessment covered the entire country and the sample was drawn to enable analysis by province, type of schools, gender, medium of instruction and location. The final sample consisted of 15462 students from 448 schools.

Data gathered through the achievement tests were analyzed on a national and provincial basis in relation to school type, gender, medium of instruction and location. Patterns in learning achievement was discussed using measures of central tendency-mean and median, skewness values of the distribution, cumulative percentages and percentile ranks. In addition, graphs – frequency polygon and box plots were also used.

The findings revealed that there is disparity in achievement in all three subjects in relation to provincial performance, school type, gender and medium of instruction. Provincial wise some provinces such as Sabaragamuwa and North Western performed well in most of the subjects. However there was disparity in achievement within the province in relation to school type, gender and location. A trend that was observed was that some of the provinces that were not performing well in 2013 in certain subjects had improved considerably in 2015. For example, the Northern, Eastern and Uva provinces' performance in the Sinhala language had improved while in the Southern province the performance had decreased. On the other hand, the Tamil language performance in the Southern province had improved significantly. With respect to school types while 1AB schools performed the best, Type 3 schools performance had improved very much. However, the gap between these schools and the Type 2 and 1C continues. Girls performed better than boys in all subjects. Medium wise Sinhala medium students' performance was better than the Tamil medium students except in the first language performance. Location wise urban schools performance was higher than the rural schools performance and the gap between rural and urban continues.

It was also revealed that skill wise the writing and syntax were the weakest skill in all three languages. On the other hand, in mathematics achievement the problem solving skill had slightly improved but the knowledge of concepts had declined. It was also revealed that there is an imbalance in the identified Essential Learning Competencies (ELCs). Further, there is a mismatch between the ELCs and the syllabuses and textbooks.

The findings revealed that there are disparities in achievement at all levels – provincial, school wise, gender, medium wise and location wise. As a result students are at different levels. Developing standards for each key stage and linking them with the ELCs would be a solution to this issue. Further, there is a need to upgrade the ELCs. National assessment findings should feed into teacher development programmes and for further research at provincial, zonal as well as school level.

Chapter One

Introduction to the study

1.1 Background

The World Declaration on Education for All, adopted in Jomtien, Thailand (1990) and the Dakar Framework for Action (2000) set out an overall vision: universalizing access to education for all children, youth and adults, and promoting equity. Evaluating the progress made towards the EFA goals since 2000 and the education related Millennium Development Goals (MDGs) as well as the lessons learned, a new education agenda and the Framework for Action, Incheon Declaration, 2030 has been proposed. This declaration having examined the remaining challenges has identified on future priorities and strategies for its achievement hoping to "leave no one behind". This new vision is embodied in the proposed Sustainable Development Goal 4 (SDG 4) "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all".

Inclusion and equity in and through education is considered the cornerstone of this new vision (SDG 4). It is committed to addressing all forms of exclusion and marginalization, disparities and inequalities in access, participation and learning outcomes. It emphasizes that no education target should be considered met unless met by all.

National assessments provide country-wide information about an array of learning outcomes according to nationally defined standards and pinpoint areas for government attention and policy intervention. Furthermore, they explicitly address the EFA quality goal that refers to 'recognized and measurable learning outcomes', as well as the Expanded Commentary, which discusses the need for 'accurately assessed curricular knowledge and skills'.

A world wide emphasize on the need for timely and credible data on student learning, that may inform the design of effective mechanisms to improve educational outcomes,

rather than only on education inputs could be seen. Consequently there is a dramatic and global growth in the use of national assessments (Kamens & McNeely, 2010).

> "National assessment systems provide global overviews of educational achievement for whole school systems, and also permit evaluations to be made of trends over time and the performance of sub-groups of students" (Postlethwaite and Kellaghan, 2008, p.10).

Sri Lanka has also progressed towards achieving the EFA and MDGs pertaining to education. Towards this goal the Ministry of Education adopted a sector wide approach to education planning in 2005. The first Education Sector Development Programme (ESDFP) was successfully implemented from 2006 – 2011. The plan for the second stage of ESDFP 2013-2017 is currently been implemented. The purpose is to address prevailing issues relating to equity, equality, quality and efficiency considerations in the general education sector. In order to address these issues the ESDFP (2013 -2017) is organized under the following key policy themes.

Theme 1: Increase equitable access to primary and secondary education
Theme 2: Improve the quality of primary and secondary education
Theme 3: Strengthen governance and service delivery of education

In addition it provides a foundation theme and a crosscutting activity to ensure the achievement of policy themes related results and outcomes.

The foundation: Overarching education sector development rolling plan : and
Crosscutting activity: Results – based monitoring and evaluation. (p.1)

Under theme 2 – Improving Quality of primary and secondary education, National Assessment of Learning Outcomes are expected to be utilized for program development.

Therefore, national assessment of learning outcomes has become an important component of education policy analysis and programme monitoring in Sri Lanka as well. The purpose of a national assessment is not only to provide information on the state of education, but also that information should lead to improvement in student achievement by systematically feeding into decision making.

1.2 National Assessment Studies conducted in Sri Lanka

The National Education Research and Evaluation Centre (NEREC) of the Faculty of Education, University of Colombo has been conducting National assessments since 2003. NEREC has conducted national assessment of learning outcomes both at primary as well as at secondary level. At primary level, assessments were conducted at Grade 4 in 2003, 2007, 2009 and 2013 respectively. At secondary level National Assessment of Learning Outcomes were conducted at Grade 8 in 2005, 2008, 2012 and 2014. The results from these studies, it is claimed provide "useful information for analysis of policy and the monitoring of the progress of the education system" (Aturupana, 2009, p.31).

1.3 Rationale for the present study

This report presents the findings of a national assessment conducted for students completing grade 4 in the year 2015. Students' achievement in the first language – Sinhala or Tamil, the second language - English, and mathematics was assessed.

The national assessments conducted in grade 4 in 2003, 2007and 2009 reveal that on average there is an improvement in achievement levels of Grade 4 students in First Language, English and mathematics. While there was an improvement in the achievement of learning outcomes, it was also revealed that there are inequalities in provision of education in relation to province, gender, medium of instruction and locality (NEREC, 2008).

Although there is a substantial increase in achievement over the period, the need "for these findings to be supported by further national assessments in the future, in order to reach a reliable and robust conclusion about the magnitude of improvement" (Aturupane, 2009, p.33) has been stressed.

Over the period of 2003-2009 the same question papers were used in the national assessment. This was to enable comparison of achievement over the period and identify patterns and trends. Even though the test items were not published, using the same test

items over a decade, it was felt may have resulted in teachers been familiar with the items and led to a wash back effect. Therefore, there was a need to construct new test items for the 2013 national assessment.

1.4 National Assessment of Learning Outcomes- 2015

The National Assessment of Learning Outcomes of 2013 used new instruments to test cognitive skills in First language, second language – English and mathematics. Therefore, it was not possible to compare with the previous assessments. Instead, the 2013 National Assessment was to serve as the baseline for monitoring the level and distribution of learning outcomes overtime.

The National Assessment of Learning Outcomes of 2015 used the same instruments used in the 2013 assessment to test cognitive skills in First language, second language – English and mathematics. Therefore, the results of this study will be compared with the baseline data of the 2013 study to identify trends in learning outcomes over the period 2013 to 2015.

A national assessment has multiple purposes. According to Kellaghan and Greaney (2009), all national assessments seek answers to six questions. The present assessment seeks to find answers to three of them.

- How well are students learning in the education system (with reference to general expectations, aims of the curriculum, preparation for further learning, or preparation for life)?
- Does evidence indicate particular strengths and weaknesses in students' knowledge and skills?
- Do particular subgroups in the population perform poorly? Do disparities exist, for example, between the achievements of (a) boys and girls, (b) students in urban and rural locations, (c) students from different language or ethnic groups, or (d) students in different regions of the country?

  (Kellaghan and Greaney, 2008, p.9).

The national assessment covered the entire country and the sample was drawn to enable analysis by province, type of school, gender and medium of instruction.

Chapter 2 of this report will discuss the methodology of the study. Chapters 3-6 will present the findings pertaining to the achievement of cognitive skills in first language - Sinhala and Tamil, second language - English and mathematics respectively. These chapters will present the patterns of achievement of the three subjects as well as indicate the trends in achievement over the period 2013-2015. The final chapter will discuss the lessons to be learnt and the way forward.

1.5 Summary

A worldwide concern regarding the need to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all in association with improvements in the conditions of schooling and student achievement levels is evident.

Sri Lanka being a member country that has agreed to the World Declaration on Education for All, has conducted four national assessments of achievement of learning outcomes of grade 4 students with the aim of monitoring and evaluating the quality of its education system. Results of these studies show substantial improvements in achievement, while there are still disparities in achievement inter and intra wise provincial level. In 2013 a baseline study was conducted using new assessment tools to assess the cognitive abilities of grade 4 students. The present assessment using the same instruments will enable the comparison of achievement of learning outcomes of grade 4 students over the period 2013-2015.

Chapter Two

Methodology

2.1 Introduction

As mentioned in chapter 1, the National Assessment of Achievement of Grade 04 Pupils in Sri Lanka was conducted in 2015.

This chapter elaborates the methodology adopted in the 2015 study which was based on the instruments constructed for this purpose in 2013.

2.2 Objectives of the study

In accordance with the Education Sector Development Framework Programme (ESDFP 2012-2017) and the Development of Education plan through sector-wide approach, the main objective of the study was to:

determine the achievement of learning outcomes of students completing grade 04 in the year 2015 and to compare such achievement with that of 2013.

2.2.1 Specific objectives of the study

2.2.1.1 Assess the extent to which the expected learning outcomes have been achieved by grade 4 students in 2015

2.2.1.2 Identify the areas of strengths and weaknesses of student achievement in relation to subject content and related skills

2.2.1.3 Examine whether there are disparities in achievement in relation to school type, medium of instruction, school location, and gender.

2.2.1.4 Compare the achievement level of students in 2013 with that of 2015.

In section 2.3, the sampling methodology will be discussed.

2.3 Sampling methodology

The sampling methodology used for this study, was based on an instructional manual designed by the Statistical Consultation Group, Statistics Canada in Ottawa. It has been recommended by the World Bank in its series, Assessment of Educational Achievement in Developing Countries and has been used for evaluation purposes since 2007 in international studies such as the IEA Study of Reading Literacy, the IEA Progress in International Reading Study (PIRLS), and Trends in International Mathematics and Science Study (TIMSS). The same methodology had been used in NEREC assessments since 2009.

Selection of the sample of schools and the sample of students will be discussed next.

2.3.1 Desired target population

The target population of the study has grade-based definition. Therefore, students who have completed fourth grade in the education system of Sri Lanka in the year 2015 were considered as the desired target population of this study.

2.3.2 Sampling frame and elements of the sampling frame

Sampling frame is the list of ultimate sampling entities. Latest updated school database available at the Ministry of Education-Sri Lanka (the school database for the year 2014 June) was the sampling frame used for the study.

Although private schools also provide primary and secondary education they are not controlled by the government, yet follow the local curriculum set up by the Ministry of Education in the local language mediums of Sinhala or Tamil or English. In addition there are a few international schools which also provide primary and secondary education. These schools are also not included in the sampling frame. Accordingly, as Table 2.1 indicates the desired target population of the study was predicted by calculating the number of students who studied in Grade 3 in 2014. Therefore, the desired target population is approximately **337828** students who will complete Grade 4 in 2015 in state schools.

However, in selecting the final sample certain schools and consequently number of students had to be excluded from the population.

2.3.3 School level exclusions

Extremely small size :

The schools that consist of less than 10 students in grade 04 of the available MOE database was considered as extremely small size schools. Such schools had been excluded from the sample in the previous study as well. Table 2.1 illustrates school level exclusions by provinces.

Table 2.1: School level exclusions by provinces

Province	Number of schools				Number of Students			
	Desired target populating	Defined target population	Excluded population	Exclusion %	Desired target population	Defined target population	Excluded population	Exclusion %
Western	1214	1100	114	9%	79587	78938	649	1%
Central	1340	1026	314	23%	45254	43513	1741	4%
Southern	965	760	205	21%	44804	43652	1152	3%
Northern	885	591	294	33%	19812	18349	1463	7%
Eastern	977	820	157	16%	35533	34636	897	3%
North Western	1120	876	244	22%	42097	40680	1417	3%
North Central	716	564	152	21%	24032	23115	917	4%
Uva	788	593	195	25%	24197	23159	1038	4%
Sabaragamuwa	986	697	289	29%	33307	31786	1521	5%
Total	8991	7027	1964	22%	348623	337828	10795	3%

2.3.4 Defined target population

After excluding schools from the desired target population, remaining schools can be defined as the "Defined Target Population".

Table 2.2: Defined target population by provinces

Province	Defined Target School Population	Defined Target Student Population
1. Western	1100	78938
2. Central	1026	43513
3. Southern	760	43652
4. Northern	591	18349
5. Eastern	820	34636
6. North Western	876	40680
7. North Central	564	23115
8. Uva	593	23159
9. Sabaragamuwa	697	31786
	7027	337828

2.3.5 Sample design – procedure

The sample procedure has a multi stage approach. Multi stage sampling is a strategy whereby the final sample is derived through a series of stages.

In the first stage, schools were selected for the sample. Schools were selected within strata with Probability Proportional to Size, without replacements. *Probability Proportional to Size Sampling* (PPS) is a sampling technique, commonly used in multistage cluster sampling, in which the probability that a particular sampling unit will be selected in the sample is proportional to some known variable (Ross, K., 2005). Then in the second stage a group of students was selected from the sampled schools. Cluster sampling approach was the strategy used for selection of students from the grade 04 classes. This means that an entire grade 04 class from each sampled school was selected.

In selection of the sample, the present study as in the previous study, the province was taken as the main stratum (explicit stratum). The rationale for selecting the province as the explicit stratum is that in the Sri Lankan context education being a devolved subject the Provincial Ministries of Education have a key role in planning, implementing and monitoring educational plans. Medium of instruction (Sinhala and Tamil) and type of

school have been considered as implicit strata, because in Sri Lanka it is used to report students' achievement by medium of instructions and type of school. Accordingly results will be reported for provinces.

Table 2.3 illustrates student sample and school sample per province with other important values which decide the size of sampling error, such as roh and ESS and design effect. Design Effect is the ratio of the variance of the sample mean for a complex sample design to the variance of a simple random sample.

Table 2.3: Calculated student sample and school sample per province

Province	Number of schools	Number of classes	Number of student	Average	ROH Value	Design Effect	Student Sample (ESS=178)	Final school sample
1. Western	1214	2343	79587	33.96	0.25	9.241997	1645	48
2.Central	1340	1791	45254	25.26	0.25	7.066862	1258	50
3.Southern	965	1483	44804	30.21	0.25	8.302933	1478	49
4.Nothern	885	1069	19812	18.53	0.25	5.383302	958	52
5.Eastern	977	1402	35533	25.34	0.25	7.086127	1261	50
6.North Western	1120	1543	42097	27.28	0.25	7.570642	1348	49
7.North Central	716	955	24032	25.16	0.25	7.041099	1253	50
8.Uva	788	1011	24197	23.93	0.25	6.733432	1199	50
9.Sabaragamuwa	986	1307	33307	25.48	0.25	7.120888	1268	50
Grand Total	8991	12904	348623				11667	448

Table 2.4 illustrates calculated student sample, allocated student sample and achieved student sample by provinces.

Table 2.4: Calculated, allocated and achieved student sample per each province

Province	Calculated Student Sample	Allocated Student Sample as MOE Student Database	Achieved Student Sample			
			Tamil	Sinhala	Mathematics	English
Western	1645	1860	242	1496	1691	1694
Central	1258	1721	592	1025	1591	1593
Southern	1478	1891	104	1684	1773	1772
Northern	958	1434	1283	109	1381	1388
Eastern	1261	1640	1174	351	1524	1523
North Western	1348	1786	242	1411	1622	1622
North Central	1253	1614	216	1340	1519	1523
Uva	1199	1620	455	1069	1509	1510
Sabaragamuwa	1268	1896	211	1607	1828	1828
	11667	**15462**	**4519**	**10092**	**14149**	**14453**

The sampling frame was explicitly stratified by province. With stratification, sample student size can be calculated in advance of sampling procedure so that it will meet the desired level of precision, by each stratum. This ensures that the target population is represented adequately in the sample. Study team was satisfied with 178 as Effective Sample Size (ESS). This would be an accuracy of plus or minus 7.5% at the error limit at the province level. Rate of homogeneity, (roh) 0.25 was calculated from the previous grade 4 assessment study data. Maximum value of roh at the province level was taken for the calculation of the student sample for each province. Assigning a weight to each sampled unit was calculated within the explicit strata.

2.4 Achievement tests

The tests in First Languages- Sinhala and Tamil, the Second language - English and mathematics, were designed in 2013 based on the framework for each subject.

The same test papers were used in the 2015 in order to compare the achievement of students in 2013 with that of the achievement in 2015.

2.5 Framework for the National Assessment

Content of the achievement tests and their distribution in the papers is given in Table 2.5.

Table 2.5: Content of the achievement tests and their distribution in the papers

Subject	Sub skill	No. of Questions	Question nos.	Duration
Sinhala Language	Vocabulary	11	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	One Hour
	Comprehension	10	12, 13, 14, 25, 26, 27, 28, 29, 30, 31	
	Syntax	10	15, 16, 17, 18, 19, 20, 21, 22, 23, 24	
	Writing	9	32, 33, 34, 35, 36, 37, 38, 39, 40	
Tamil Language	Vocabulary	11	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	One Hour
	Comprehension	10	12, 13, 14, 25, 26, 27, 28, 29, 30, 31	
	Syntax	10	15, 16, 17, 18, 19, 20, 21, 22, 23, 24	
	Writing	9	32, 33, 34, 35, 36, 37, 38, 39, 40	
English Language	Vocabulary	10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	One Hour
	Comprehension	10	11, 12, 13, 14, 15, 16, 17, 18, 19 ,20	
	Syntax	10	21, 22, 23, 24, 25, 26, 27, 28, 29, 30	
	Writing	05	31, 32, 3, 34, 35	
Mathematics	Concepts	12	2, 3, 4, 16, 23, 27, 29, 31, 35, 37, 38, 39	One Hour
	Procedures	11	1, 6, 7, 8, 9, 14, 18, 20, 24, 25, 33	
	Problem Solving	17	5, 10, 11, 12, 13, 15, 17, 19, 21, 22, 26, 28, 30, 32, 34, 36, 40	

2.6 Procedures in administration of the National Assessment 2015

National Assessment of Grade 04 students were administered island wide on 1st and 2nd of December, 2015.

Test coordinators

Coordinators to administer the test and collect background information from sample schools were appointed from among lecturers of the Faculty of Education, University of Colombo and students who follow Master of Philosophy, Master of Education and Post Graduate Diploma in Education courses, lecturers from Colleges of Education. To assist them, experienced teachers from the same schools were appointed with the consent of principals. Coordinators' contribution in the process of test administration and other activities involved were very much appreciated.

Training workshop for coordinators

Training workshops for coordinators were organized in three phases. A team representing NEREC visited the North, North Central and Eastern provinces from 23rd – 27th November 2015 and conducted the training progrmme in Anuradhapura, Vavuniya, Kilinochchi, Jaffna, Trincomalee, Batticaloa and Polonnaruwa. Test papers and other relevant documents were handed over to all coordinators with necessary instructions.

The team who visited the Phase II covered the Uva, Southern and part of Eastern Provinces from 23rd – 26th November 2015. Team members conducted the training programme at Bandarawela, Monaragala, Hambantota, Galle and Ampara.

In Phase III, the training workshops were held at the NEREC for four provinces Western, Central, North Western and Sabaragamuwa on 26th and 27th November 2015.

The following measures were adopted in this study as well, which were expected to increase the reliability of the assessment.

- In order to assess the achievement of grade 4 pupils who completed grade 4 in 2015, tests were held at the end of the academic year 2015.
- The tests were administered on two week days.
- In order to better monitor the administering of the tests, in the 2015 study 448 independent coordinators were appointed to the 448 examination centers.
- The coordinators had to complete a journal in which they had to provide information regarding the conduct of the examination and the collection of other relevant background information.

Test administration

All necessary instructions were sent in advance to all Provincial Directors, Zonal Directors and relevant school principals regarding the test administration.
The test was administered on 1st and 2nd of December 2015, as per the time table prepared by NEREC.

Return of answer scripts and other documents

Coordinators from Central, Western, North Western and Sabaragamuwa Provinces handed over the answer scripts and other documents at the NEREC from 05th to 8th December 2015. A team from NEREC visited the North Central, Northern, Eastern, Southern and Uva provinces to collect answer scripts and other documents from 8th to 17th December 2015.

2.7 Analysis of data

Data gathered through the achievement tests were analyzed on a national and provincial basis. In order to minimize the effect of the discrepancy between the expected and the achieved sample, data was weighted.

Patterns in learning achievement was discussed using Measures of central tendency (Mean, Standard Deviation and median) error of mean, Skewness, cumulative

percentages and percentile ranks. In addition, graphs – frequency polygon and box plots were also used.

2.8 Summary

The National Assessment of Achievement of grade 04 pupils of Sri Lanka in the year 2015 was conducted with the main objective of examining how far equity is promoted in the country by enabling all children to access and complete basic education.

This chapter elaborated the specific objectives of the study, sampling procedures and the frame work of the assessment.

The next four chapters will present the data pertaining to student achievement in relation to the four subjects – Sinhala language, Tamil language, English language and mathematics.

Introduction to Chapters 3 – 6

In chapters 3-6 data pertaining to achievement of learning outcomes in relation to first language – Sinhala and Tamil, the second language – English, and mathematics would be presented. Each chapter is divided into two parts. The main objective of part I would be to identify patterns in achievement in relation to providing equal opportunities in Education. In part II patterns of achievement of 2015 would be compared with the patterns identified in 2013 to identify trends in achievement.

The patterns in achievement will first be presented at all island level to get an overview of the students' achievement in the relevant subject. As discussed in chapter 2, the explicit strata in the 2015 study is the province. Thus, Student achievement will next be presented in relation to province. The implicit stratum are the gender, school type, medium of instruction and location. Therefore, provincial analysis would be followed by achievement in relation to gender, school type, medium of instruction and location.

In order to discuss the distribution of achievement, four indicators are used. They are:

- Measures of central tendency - mean and median
- Skewness values of the distribution
- Measures of relative position - cumulative percentages and percentile ranks
- Measures of variability – range and standard deviation, graphs, frequency polygons, box plots and whisker chart

In the final section of part I of each chapter, student achievement would be presented in relation to the skills identified for the particular subject. In part II, patterns identified in 2015 would be compared with patterns identified in 2013 to identify the trends in achievement over the period 2013-2015.

Chapter Three

Patterns and Trends in Achievement: First Language – Sinhala 2015

3.1 Introduction

This chapter presents the patterns and trends in achievement of the students in Sinhala language.

The patterns of achievement in 2015 will be presented in part I and the trends will be presented in part II.

Part I – Patterns in achievement in First Language - Sinhala

First, national level student achievement would be discussed in relation to student performance pertaining to Sinhala language.

3.2 Patterns of achievement at national level

National level student achievement would be discussed first in relation to student performance pertaining to Sinhala language.

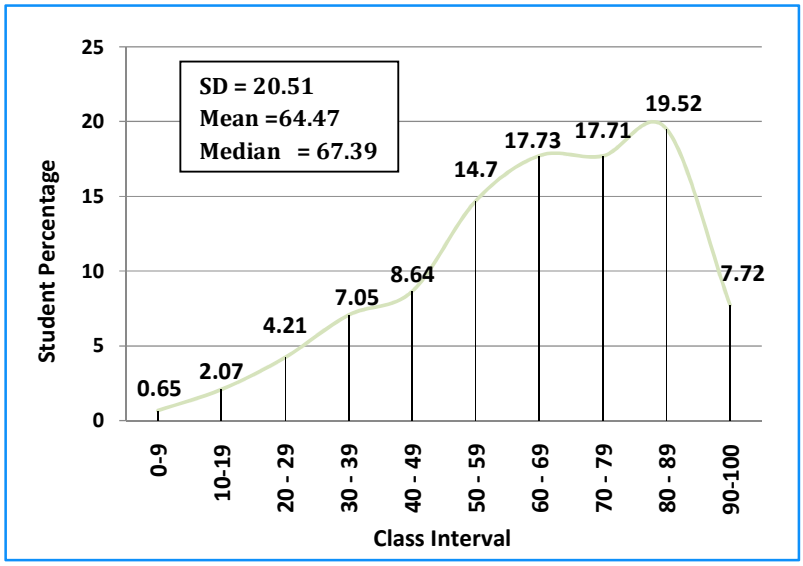

Fig. 3.1: All island achievement in Sinhala language 2015 – dispersion of marks

The frequency polygon shown in Fig. 3.1 outlines the total picture of the distribution of marks of grade 04 students in the Sinhala language.

Fig. 3.1 depicts a negatively skewed distribution of marks displaying that majority of the students has scored high marks in the Sinhala language.

The dispersion of marks is further explained in the cumulative percentage Table 3.1 given below.

Table 3.1: All island achievement in Sinhala language 2015– cumulative percentages

Class Interval	Student %	Cumulative %
0 –9	0.65	0.65
10 - 19	2.07	2.73
20 - 29	4.21	6.94
30 - 39	7.05	13.99
40 - 49	8.64	22.62
50 - 59	14.70	37.33
60 - 69	17.73	55.06
70 - 79	17.71	72.77
80 - 89	19.52	92.28
90 - 100	7.72	100.00
Total	100.00	

Approximately 13.99% of students has obtained marks below 40 marks. On the other hand, the highest percentage of students (19.52%) has scored between 80-89. However, the number of students who has scored above 90 marks is only 7.72%.

Fig. 3.2 illustrates student achievement patterns further.

As Fig. 3.2, the box plot displays more than 50% of students has reached 64.47 mark level. Further, 75% of students has scored up to 80. Majority of the students' marks are between 50 and 80. However, there are few students who have scored very low marks and below the range of the others. Hence they are considered as outliers.

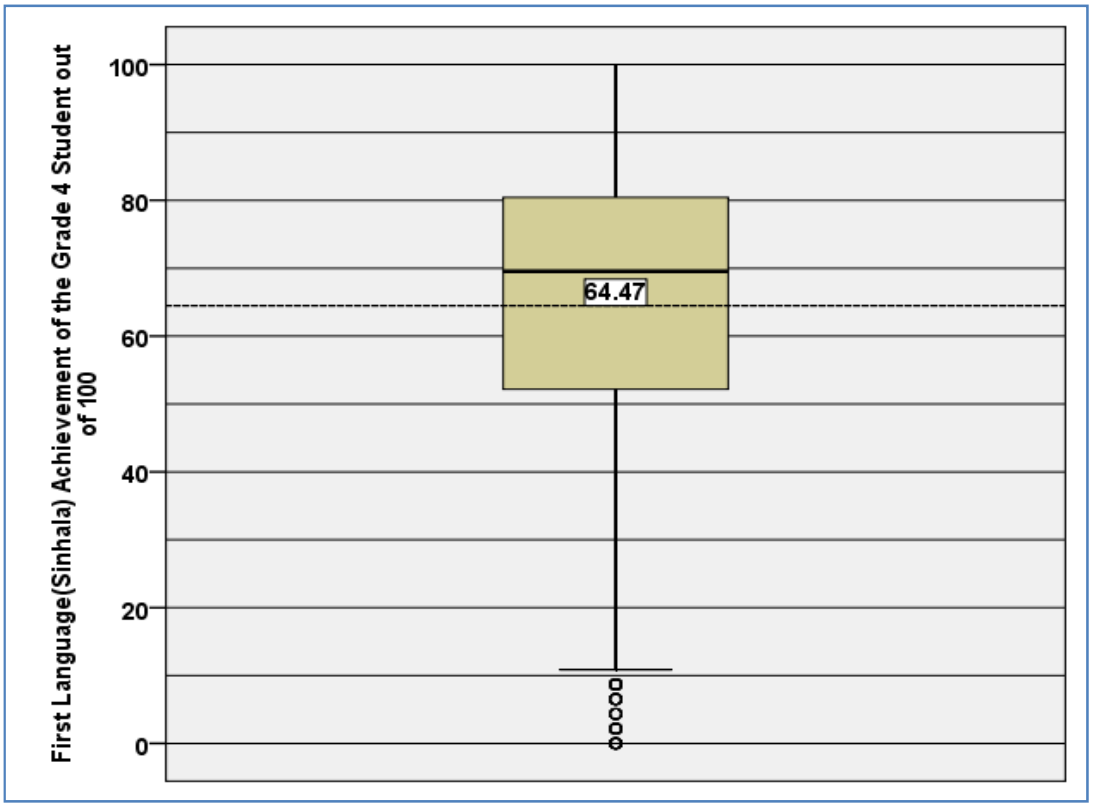

Fig. 3.2: Box plot and whisker chart representing all island Sinhala language achievement

Summary of national level achievement

- National level mean is 64.47, while the median is 67.39.
- Disparity in achievement prevails with approximately 13.99% of students scoring below 40% and 19.52% of students scoring between 80-89 marks. However, there are also a few outliers those whose marks are very low compared to others.

Provincial wise student achievement will be discussed next.

3.3 Provincial wise student achievement

The nature of the distribution of scores provincial wise reveals certain patterns. First these patterns pertaining to the Sinhala language are discussed using Table 3.2.

Table 3.2: Provincial achievement in Sinhala language 2015 – Summary statistics

Province	Mean	Rank	Standard Error of Mean	Standard Deviation	skewness	Percentile (p25)	Median (p50)	Percentile (p75)
North Western	67.54	1	0.11	20.88	-0.66	52.17	71.74	84.78
Sabaragamuwa	66.62	2	0.12	19.88	-0.61	52.17	69.57	82.61
Southern	66.04	3	0.1	19.67	-0.65	52.17	69.57	80.43
Northern	64.36	4	0.48	17.81	-0.71	52.17	67.39	78.26
North Central	64.34	5	0.14	19.84	-0.54	52.17	67.39	80.43
Western	63.10	6	0.08	21.33	-0.57	47.83	67.39	80.43
Uva	62.57	7	0.16	19.99	-0.49	50.00	65.22	78.26
Central	61.96	8	0.12	19.85	-0.57	50.00	65.22	78.26
Eastern	60.13	9	0.23	20.19	-0.37	45.65	60.87	76.09
All Island	**64.47**		**0.04**	**20.51**	**-0.58**	**50.00**	**67.39**	**80.43**

As Table 3.2 indicates based on provincial wise mean achievements North Western Province ranks first and its mean value is above the all island value as well.

Achievement wise the provinces fall into three main categories. North Western, Sabaragamuwa and Southern, with mean scores above the national mean, fall into the higher category.

Northern and North Central Provinces means are just below the all island mean. Western, Uva, Central and Eastern Provinces are below the national mean but above 60 points.

These disparities are further highlighted through the bar chart given in Fig. 3.3.

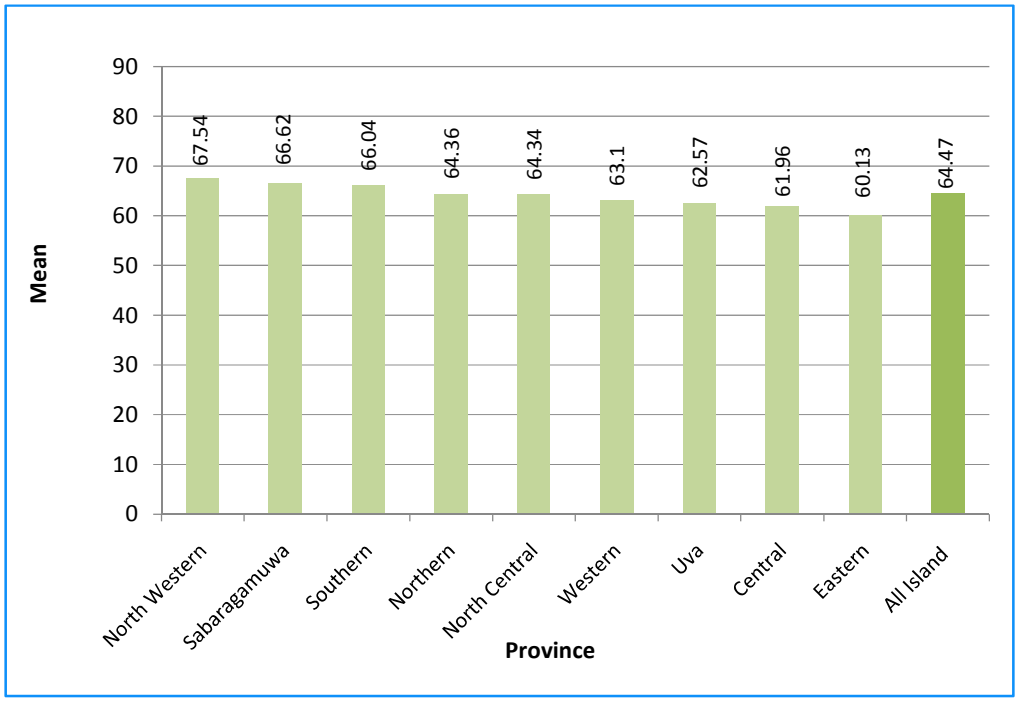

Fig. 3.3: Bar chart to represent mean among the provinces- Sinhala language

Disparity in achievement among provinces

Standard Deviation (SD) indicates how marks deviate from the mean. The national SD is 20.51. Except for the Northern Province in all the other provinces the SD varies from the national SD by only 1 point. SD is lowest in the Northern Province indicating that the variation from mean is less. SD is highest in the Western Province indicating high variation in achievement.

All the provinces have obtained negative skewed values. This means that majority of the students in these provinces has scored high marks. It is a positive sign that higher number of provinces has achieved higher values (near to the mean or above). This has contributed to the all island skewness value to be negative.

On the other hand Uva and Eastern Provinces skewness value is low indicating that there are more low achievers.

Fig. 3.4, the box plot graphically illustrates this diversity further.

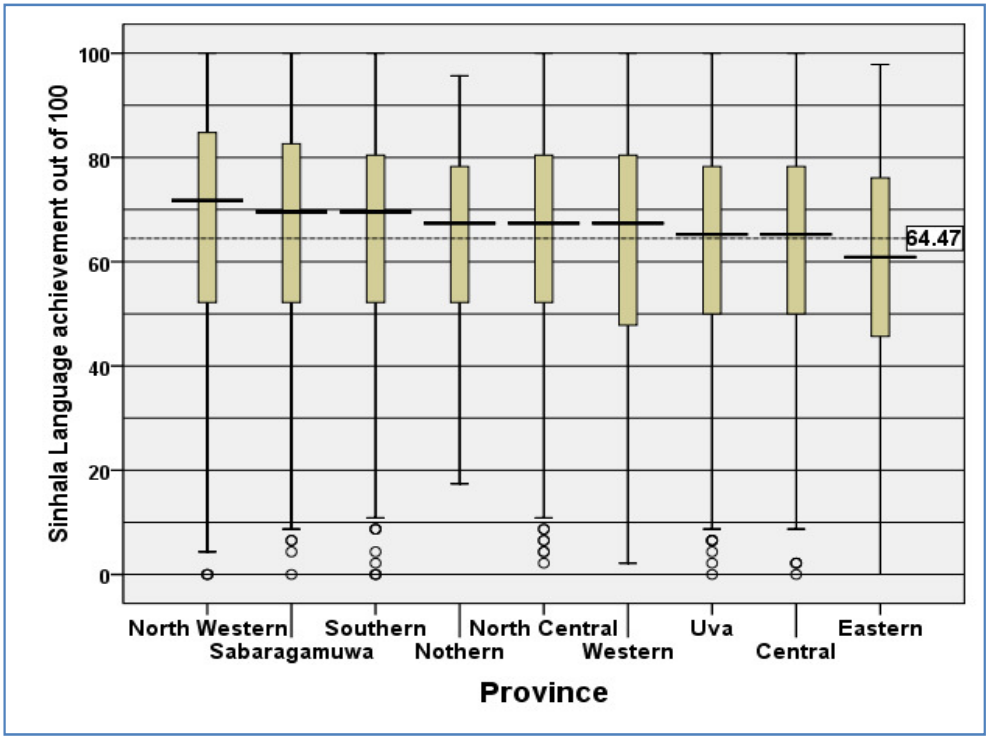

Fig. 3.4: Box plot and whisker chart representing provincial wise Sinhala language achievement

Except for Eastern and Western Provinces the all island 25th percentile is equal to 50 or above. This is a positive sign. It indicates that more than 75% of the student sample is above the 50 marks point.

It is interesting to note that several provinces have similar median scores. The North Western Province has the highest value of 71.74. While Sabaragamuwa and Southern Provinces have the second highest median of 69.57, Northern, North Central and Western Provinces have median values of 67.39. While Eastern Province has the lowest median of 60.87, Uva and Central also have similar median values of 65.22.

The highest 75th percentile score has been obtained by the North Western Province indicating its overall high performance. Southern, North Central and Western Provinces' 75th percentile values are equal to the all island 75th percentile value. Eastern Provinces' 75th percentile is the lowest. An interesting finding is that even then there are no outliers in the Northern and Eastern provinces. In all other provinces there are outliers whose

performance does not fit into the general dispersion of marks of the province. However, there are no students who have performed exceptionally well and above the mark range of the province.

Table 3.3 provides the provincial wise percentage of students scoring 50 or above marks.

Table 3.3: Percentage of students scoring 50 or above, and below 50

Province	Above or equal to 50	Below 50
Southern	81.95%	18.05%
North Western	81.15%	18.85%
Sabaragamuwa	80.96%	19.04%
North Central	79.63%	20.37%
Northern	78.90%	21.10%
Central	78.15%	21.85%
Uva	78.02%	21.98%
Western	77.01%	22.99%
Eastern	72.08%	27.92%
All Island	79.46%	20.54%

The above details confirm that Southern, North Western and Sabaragamuwa are the three highest performing provinces.

Summary of provincial level analysis

- Achievement wise the provinces fall into three categories.
  Category 1 – North Western, Sabaragamuwa and Southern, with mean scores above the national mean (64.47)
  Category 2 –Northern, and North Central cluster in the middle slightly below the national mean.
  Category 3 – Western, Uva, Central and Eastern are the lowest performing Provinces and are below the national mean.
- Disparity of marks within a province is highest in the Western Province.
- In the Northern Province the disparity of marks is less. Therefore, achievement is more homogeneous within the province.

Achievement levels in relation to the types of school would be discussed next.

3.4 Achievement levels by type of school

Table 3.4: Sinhala language achievement according to school type

School Type	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
1AB	68.72	0.08	18.57	-0.79	56.52	71.74	82.61
1C	61.50	0.09	20.40	-0.43	47.83	63.04	78.26
Type 2	60.05	0.08	21.54	-0.38	43.48	63.04	78.26
Type 3	67.98	0.07	19.58	-0.74	56.52	71.74	82.61
All Island	64.47	0.04	20.51	-0.58	50.00	67.39	80.44

As Table 3.4 indicates there is not a considerable gap between the mean scores of 1AB and Type 3 schools. On the other hand, Type 2 and 1C school types' mean values are quite similar and below the national mean. Therefore, while the gap between 1AB and Type 3 schools' achievement is narrowing the gap between these schools and Type 2 and 1C seems to widen.

The difference in mean scores is graphically shown in Fig. 3.5.

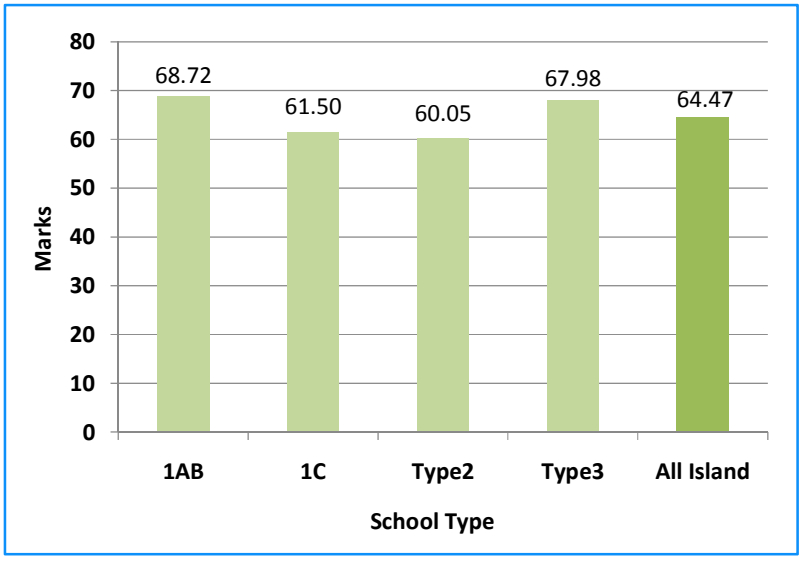

Fig. 3.5: Bar chart representing the mean among the school types - Sinhala language

The performance of the school types is further highlighted when the median scores are considered in Table 3.4. 1AB and Type 3 schools have achieved high median values for the achievement in the Sinhala language and they are identical and above the national value. On the other hand, Type 2 and 1C schools have also obtained identical median values and it is lower than the all island median value (67.39).

Variation among students

Variation in student achievement in 1AB school type is the lowest. The lowest standard deviation value is shown by 1AB schools (18.57). The SD values of both 1AB and Type 3 schools are lower than the all island SD value. It reveals that higher number of student achievement lies closer to the mean value. On the other hand, the SD value is highest in Type 2 schools and is higher than the all island value.

Disparity in achievement

All school types have obtained negative skewed values. It reveals that in all school types higher number of students has achieved high marks while lower marks are obtained by a lower number of students. Highest skewed value has been obtained by the 1AB schools. Next higher value has been obtained by Type 3 schools. This indicates that the majority of marks are closer to the mean. Both values are above the all island skewness value. Lowest negative skewed value has been obtained by Type 2 schools and the next lowest is in 1C schools. Thus the majority of the students' marks deviate from the mean.

The similarities and differences of student performance in different types of schools is further highlighted through the frequency distribution graphs.

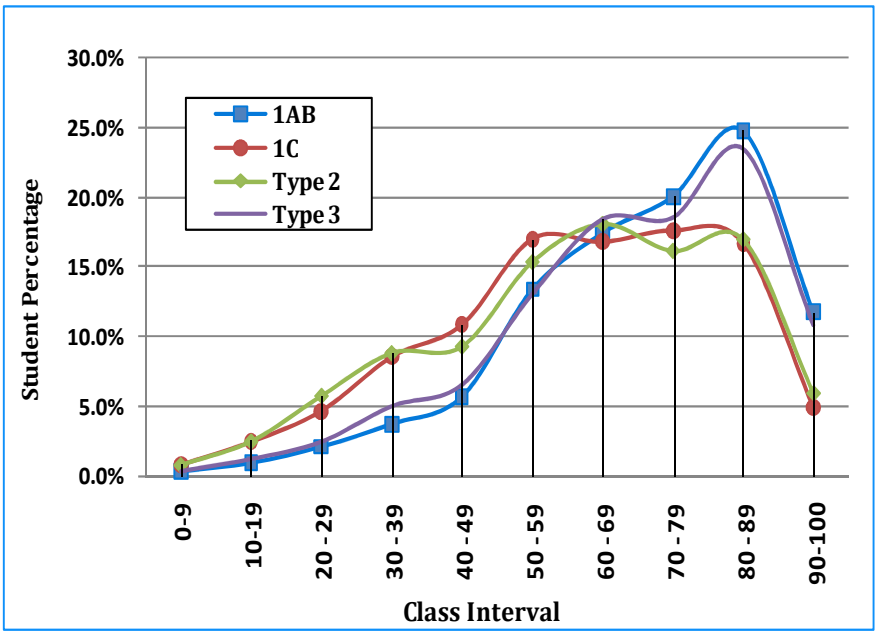

Fig. 3.6: Dispersion of marks by school type – Sinhala language

As Fig. 3.6 displays, in the 1AB curve the high performing students' marks are spread between 70-100 marks. Similar pattern is indicated in Type 3 schools. Both curves peak at 80-89 marks range indicating that there are groups of high achievers. Their performance is above the performance of the other two school types. This explains the high negative skewness value of these two types of schools.

On the other hand, in Type 2 schools the highest peak is at 60-69 class interval and 1C curve peak at 70-79 class interval.

These performance patterns are further elaborated through the spread of marks at different mark intervals illustrated in the cumulative percentage table.

Table 3.5: Cumulative student percentages according to school type - Sinhala language

Class Interval	1AB		1C		Type 2		Type 3	
	Student %	Cumulative %	Student %	Cumulative %	Student %	Cumulative %	Student %	Cumulative %
0 - 9	0.25	0.25	0.78	0.78	0.79	0.79	0.33	0.33
10 - 19	0.87	1.12	2.43	3.22	2.49	3.28	1.21	1.55
20 - 29	2.04	3.16	4.65	7.87	5.77	9.05	2.46	4.00
30 - 39	**3.66**	**6.82**	**8.52**	**16.38**	**8.85**	**17.91**	**5.01**	**9.01**
40 - 49	5.65	12.47	10.82	27.21	9.33	27.23	6.55	15.56
50 - 59	13.38	25.85	16.95	44.15	15.42	42.65	13.08	28.64
60 - 69	17.46	43.31	16.73	60.89	18.14	60.79	18.45	47.09
70 - 79	20.10	63.41	17.56	78.44	16.21	77.00	18.57	65.66
80 - 89	24.83	88.24	16.64	95.09	17.04	94.03	23.51	89.17
90 - 100	11.76	100.00	4.91	100.00	5.97	100.00	10.83	100.00
Total	100.00		100.00		100.00		100.00	

As shown in Table 3.5, the highest percentage of students' marks (24.83%) in 1AB schools and Type 3 (23.51%) fall within the class interval 80-89. On the other hand, in 1C schools the highest percentage of marks, falls within the class interval 70-79. However, almost equal percentage of student marks is also spread between the class intervals of 50-59 and 80-89. In Type 2 schools the highest percentage of marks falls within 60-69. However, the high marks are spread from 60-69 up to 80-89.

However, in all school types higher percent of students' marks falls between 60-89 and the percentage of low achievers is comparatively less.

The above table illustrates that the gap between 1AB and Type 3 schools are narrowing, the gap between these schools and 1C and Type 2 is widening. However, in all the school types the percentage of high achievers is increasing.

This pattern is further illustrated through the box plot.

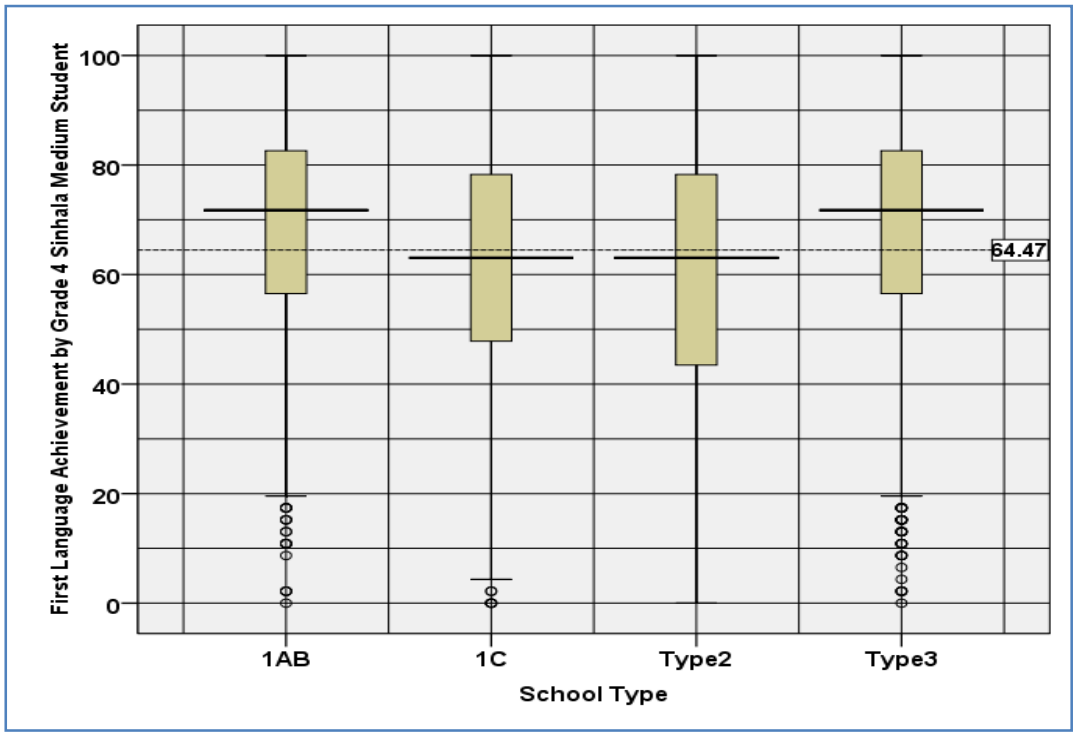

Fig. 3.7: Sinhala language marks according to school types using box plot and whisker plot

As the box plot graph indicates the 25th percentile in 1AB and Type 3 schools are above 50 and in the other two school types it is less and the lowest is in Type 2 schools. Yet, in Type 2 schools there are no outliers. However, in all the other school types there are outliers, On the other hand, at the 75th percentile there is not much variation among the school types.

In spite of this high performance there are no exceptionally high performers or outliers.

Summary

- The achievement in Sinhala language in 1AB schools is the highest (68.72). 1AB and Type 3 schools performance is relatively similar and above the national mean (64.47).

  On the other hand, 1C and Type 2 schools performance is similar and below the national mean.
- The gap in achievement between 1AB and Type 3 schools appears to be narrowing. On the other hand, the gap between the 1AB and Type 3 and Type 2 and 1C is widening.

3.5 Achievement levels by gender

Table 3.6: Sinhala language achievement according to gender

Student Gender	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
Male	60.72	0.06	20.96	-0.41	45.65	63.04	78.26
Female	68.42	0.06	19.25	-0.77	56.52	71.74	82.61
All Island	64.47	0.04	20.51	-0.58	50.00	67.39	80.43

There is a difference in the achievement of females over males. As Table 3.6 indicates, male performance is also lower than the all island mean score, while female performance is above the all island mean.

These differences could also be seen in Fig. 3.8

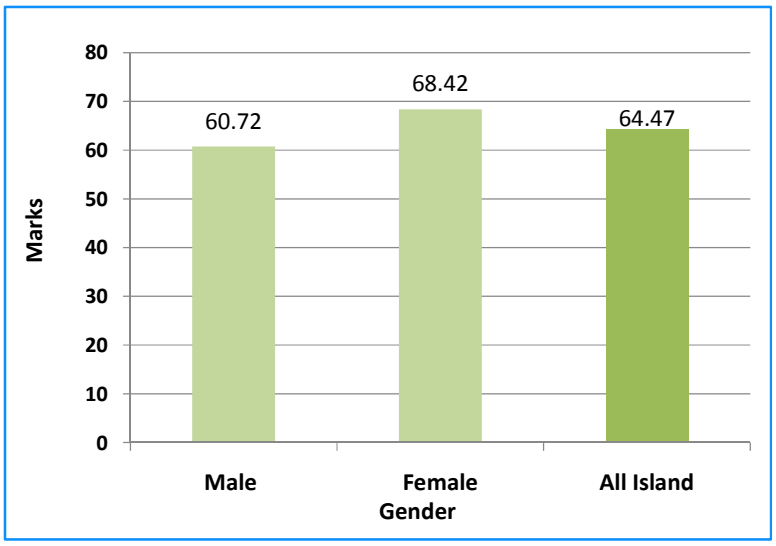

Fig. 3.8: Bar chart representing mean values according to gender – Sinhala language

Variation among students

There is not much variation in achievement among males and females as the SD values are quite similar. However, the skewness value of the females is higher than the males indicating that there are more high achievers among the females.

Fig. 3.9 graphically illustrates the dispersion of marks according to gender.

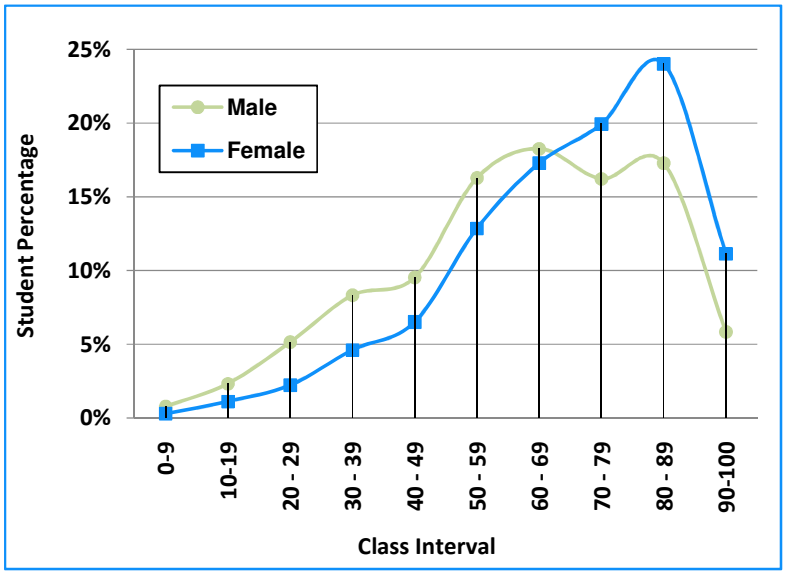

Fig. 3.9: Dispersion of marks by gender – Sinhala language

Disparity in achievement

Fig. 3.9 displays two curves which are both negatively skewed. As can be seen there are more high achievers than low achievers among both males and females. Pattern of the two curves are almost similar at the beginning, then the curves become different and finally, both curves become similar again.

However, the female curve peaks at a higher point indicating that there are more high achievers among the females. On the other hand, the highest percentage of male students falls into 60-69 mark range.

The disparity in the male students' achievement can be elaborated better through the cumulative percentages.

Table 3.7: Cumulative student percentages according to gender –Sinhala language

Class Interval	Male		Female	
	Student %	Cumulative %	Student %	Cumulative %
0 - 9	0.78	0.78	0.28	0.28
10 - 19	2.33	3.11	1.13	1.41
20 - 29	5.14	8.25	2.22	3.63
30 - 39	**8.33**	**16.58**	**4.62**	**8.26**
40 - 49	9.53	26.11	6.50	14.76
50 - 59	16.28	42.39	12.86	27.63
60 - 69	**18.27**	**60.66**	**17.29**	**44.91**
70 - 79	16.23	76.89	19.93	64.84
80 - 89	**17.28**	**94.16**	**24.01**	**88.85**
90 - 100	5.84	100.00	11.15	100.00
Total	100.00		100.00	

According to Table 3.7 and Fig. 3.9 it could be concluded that, there are more high performing female students than male students. The highest percentage (24.01%) of female students' fall into the class interval 80-89. On the other hand, the highest percentage of male students, (18.27%) falls into the class interval 60-69.

Even though, there are only 8.26 cumulative percent of female students who has scored below 40 marks, there are 16.58% of male students who has scored less than 40 marks. Therefore, the overall achievement in Sinhala of the boys is lower than the girls.

Box plot and whisker for gender wise Sinhala language achievement elaborate the performance further.

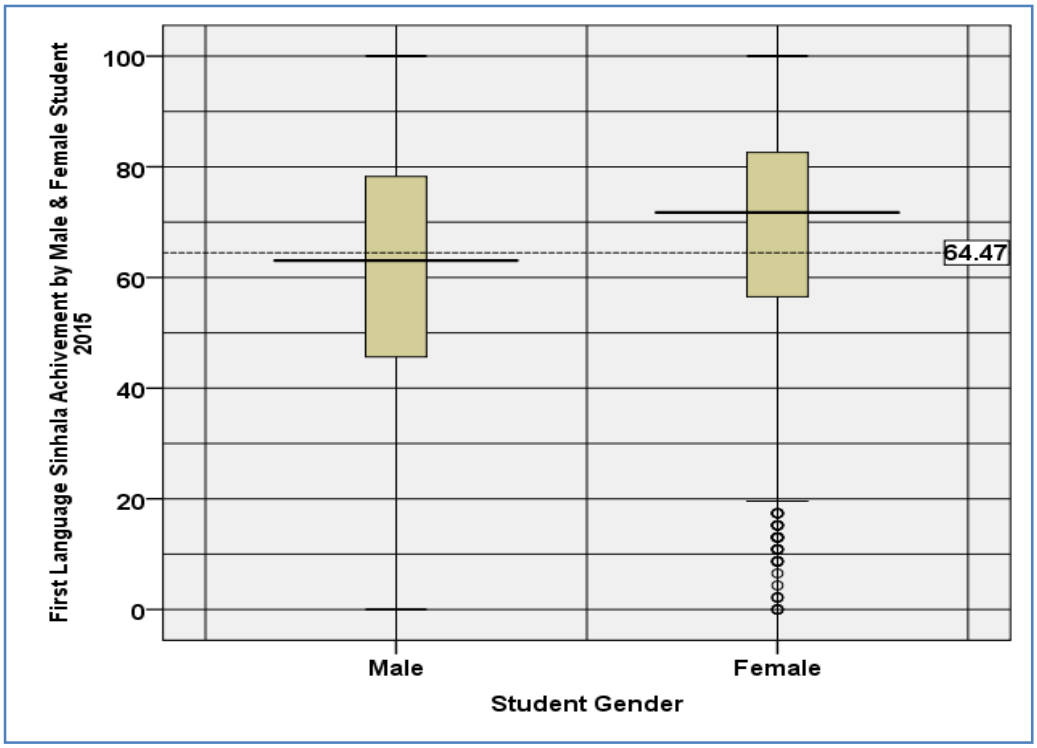

Fig. 3.10: Box plot and whisker plot representing gender wise Sinhala language marks

Box plot and whisker chart show that female students' marks dispersion is higher than the male students. Fifty percent of male students' achievement lies below the female students' achievement. Median of the male students lie close to the all island mean value line, where as the female students' median is higher than the all island mean. This means that while 50% of male students have scored 64.47, fifty percent of female students have scored above 64.47.

Female students' 25th, 50th and 75th percentile values are higher than male student's percentile values and all island percentile values.

However, as the boxplot depicts there are some female students who compared with the majority are very low performing. On the other hand, there are no outliers among the males.

Summary

- Female performance is better than all island and male performance.
- While only 8.26% of girls have scored below 40, the male percentage is 16.58.
- Highest percentage of females (24.01%) fall into the mark range 80-89. On the other hand, among the males the highest percentage belongs to a lower mark range 60-69 and a lower percentage (18.27%).
- However, among girls there are a few low performing outliers.

Students' achievement in relation to Sinhala language location wise will be discussed next.

3.6 Achievement levels by location

Table 3.8: Sinhala language achievement according to location

Location	Mean	Std. Error of Mean	Standard Deviation	Skewness	Percentile (25)	Median (50)	Percentile (75)
Rural	62.22	0.05	20.45	-0.47	47.83	65.22	78.26
Urban	67.87	0.06	20.12	-0.78	54.35	71.74	84.78
All Island	64.47	0.04	20.51	-0.58	50.00	67.39	80.43

As Table 3.8 indicates, there is variation in achievement among the schools in the different localities. The urban area schools have performed the best. On the other hand, the rural area schools have performed below the national mean. The difference in mean values is graphically shown in Fig. 3.11.

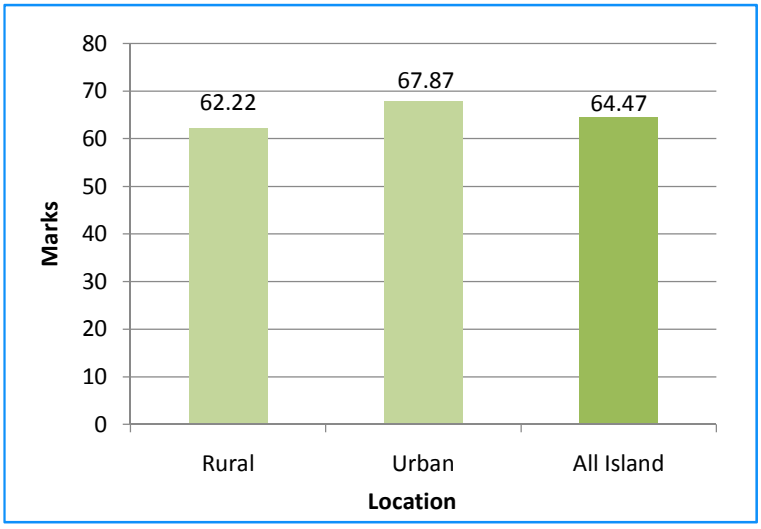

Fig. 3.11: Bar chart representing mean values according to location– Sinhala language

As Fig. 3.11 indicates the mean values in the urban area schools are higher than the schools in the rural areas. The gap in achievement between rural and urban area schools is visible.

On the other hand, when the median values given in Table 3.8 are considered, in the urban area schools the median is also higher than in the rural schools.

The deviation of the marks from the mean according to Table 3.8 appears to be quite different in the two localities. While the skewness values are negative denoting more high achievers, in the urban area schools the skewness is quite high indicating more high achievers. In the rural areas skewness is less indicating less high achievers.

However, the SD of urban, rural as well as all island is quite similar. This means that even though there are variations in achievement within the locality the pattern of variation is similar.

The dispersion of marks according to location, further illustrates this disparity.

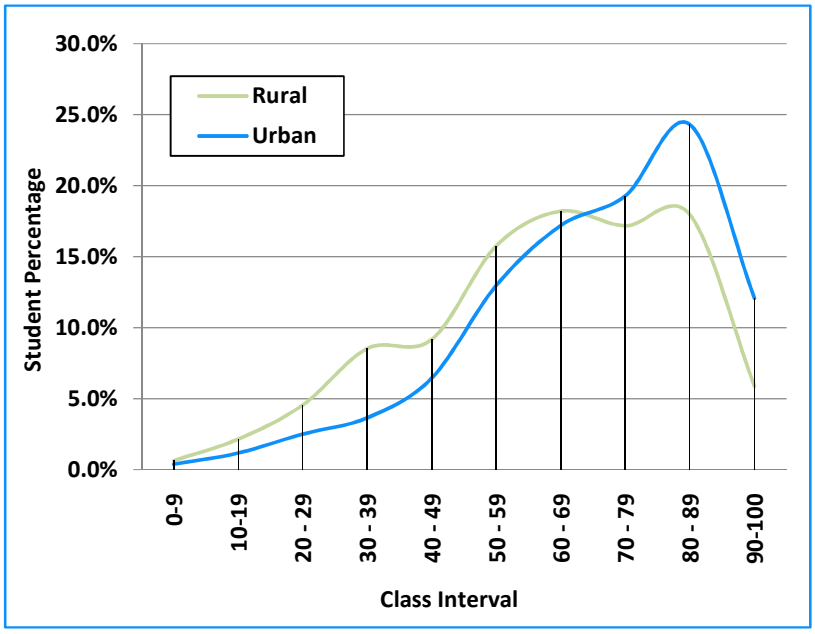

Fig. 3.12: Dispersion of marks by location – Sinhala language

Fig. 3.12 displays two negatively skewed curves. Hence, the number of high achievers in all localities are high. However, as has been already discussed the dispersion of marks in the two localities is different. While the urban curve indicates one high peak denoting very high achievers corresponding to the class interval 80-89, in the rural area curve there are two high peaks. One peak corresponds to the class interval 60-69 and the other at 80-89.

The pattern of achievement of students in the two localities are further illustrated in the cumulative percentage Table 3.9.

Table 3.9: Cumulative student percentages according to location –Sinhala language

Class Interval	Rural		Urban	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.64	0.64	0.38	0.38
10-19	2.15	2.79	1.17	1.55
20 - 29	4.55	7.35	2.51	4.06
30 - 39	8.53	15.88	3.66	7.72
40 - 49	9.18	25.06	6.45	14.17
50 - 59	15.76	40.82	12.97	27.14
60 - 69	18.20	59.01	17.20	44.35
70 - 79	17.17	76.18	19.28	63.63
80 - 89	17.94	94.13	24.30	87.93
90-100	5.87	100.00	12.07	100.00
Total	100.00		100.00	

According to Table 3.9 and Fig. 3.12 it could be concluded that, there are more high performing students in the urban area schools. The highest percentage (24.30%) of students falls into the class interval 80-89 in the urban area schools. Even though, a high percentage of students (17.94%) in the rural area schools also falls into the class interval 80-89, there is also a higher percentage of student (18.20%) who falls into the 60-69 class interval.

On the other hand, while there are only 7.72 cumulative percent of students in the urban area schools who has scored below 40 marks, there are 15.88% of students in the rural area schools who has scored less than 40 marks. Therefore, the overall achievement in Sinhala language of the students in the urban area schools is higher than the students in the rural area schools.

Box plot and whisker for location wise Sinhala language achievement elaborate the performance further.

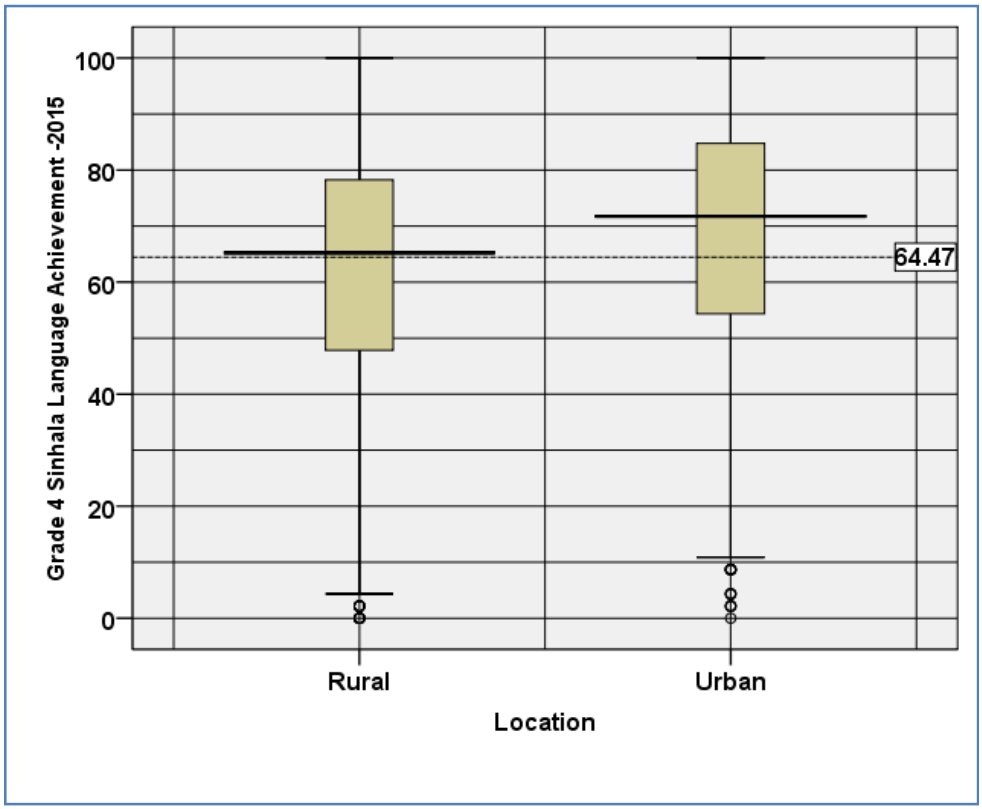

Fig. 3.13: Box plot and whisker plot representing location wise Sinhala language marks

As the box plots in Fig. 3.19 indicates the percentile values at all three (25th, 50th and 75th) levels are higher in the urban area schools than in the rural area schools. However, it is interesting to note that even though student performance is highest at all percentiles in the urban area schools, there are also low performing outliers.

Similar outliers can be seen in the rural area schools as well. However, in the rural schools number of outliers is less than in the urban schools.

Summary

- Highest achievement can be seen in the urban area schools and their mean value (67.87) is above the all island mean value.
- Even though there are high achievers in both the urban and rural area schools the percentage of high achievers is greater among the urban students.
- Low performing outliers can be seen in both urban and rual schools.

3.7 Analysis of achievement by sub skills

In constructing the achievement tests, the test items were designed in relation to the sub skills vocabulary, comprehension, syntax and writing and also in line with the Essential Learning Competencies (ELCs).

Students' performance according to the sub skills is given in Fig. 3.14.

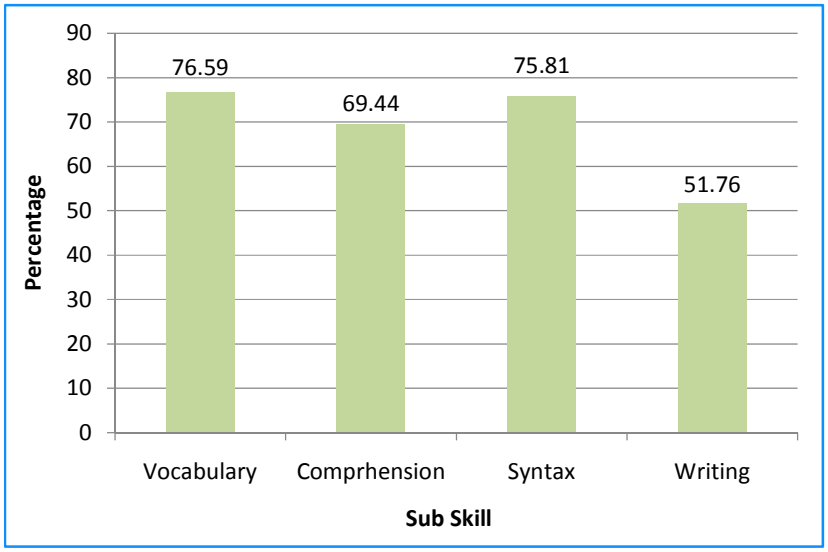

Fig. 3.14: Achievement in sub skills in Sinhala language

As Fig. 3.14 indicates, the weakest sub skill is writing.

The achievement in the writing task is further analyzed in Fig. 3.15. This analysis indicates the percentage of completely grammatically correct sentences, partially correct and incorrect sentences and the percentage not attempted.

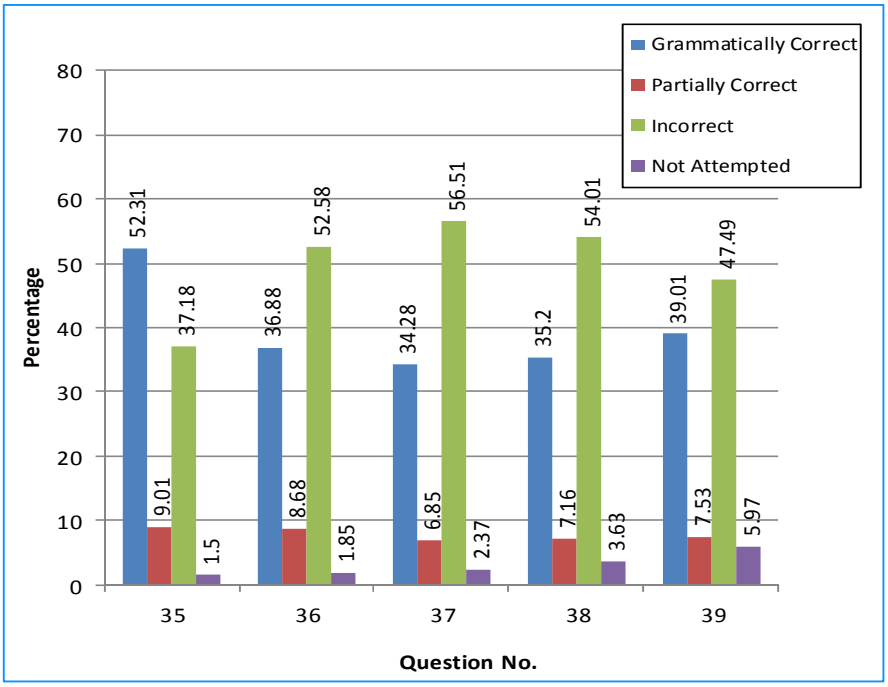

Fig. 3.15: Competency related to writing – Sinhala language

As the Fig. 3.15 indicates the percentage of incorrect sentences is rather high. On the other hand, there is more than 6% of students who has given partially correct answers which means that they are syntactically incorrect. Further, some students have not even attempted to write even the first sentence.

Essential learning competencies and students' achievement

In constructing the question paper as discussed in chapter 2, the framework for all three language papers were similar. That is, it was based on the sub skills of vocabulary, comprehension, syntax and writing. In addition, the Essential Learning Competencies identified by the National Institute of Education pertaining to each language was also considered. However, it was noted that there were no ELCs identified for some skills.

Table 3.10 analyzes student achievement in relation to ELCs and language skills.

Table 3.10: Student achievement in relation to ELCs/language skills

(ELC No)	Content of the paper	QS No	Correct %
	Vocabulary	1	94.50%
		2	95.60%
		3	89.10%
		4	74.20%
	Similar words	5	66.40%
	Opposite words	6	67.30%
	Terms related to various careers	7	47.40%
	Language terms related to the text book	8	57.80%
	Place, material and Personal nouns	9	85.50%
		10	88.10%
		11	88.90%
3	Filling a form	12	93.70%
		13	88.90%
		14	35.10%
6	Punctuation	15	89.30%
		16	58.00%
8	Spellings	17	29.40%
		18	50.90%
4	Subject verb agreement	19	89.90%
		20	70.30%
		21	57.40%
		22	69.30%
5	Sequencing	23	77.10%
		24	82.40%
7	Read and comprehend simple poem	25	64.50%
		26	82.40%
		27	73.00%
47	Read and comprehend invitations	28	93.00%
		29	82.80%
		30	76.20%
		31	80.80%
	Writing meaningful sentences	32	58.70%
		33	51.20%
		34	49.40%
	Writing	35	59.60%
		36	43.80%
		37	39.90%
		38	41.10%
		39	44.70%
		40	48.40%

As Table 3.10 indicates there are only seven ELCs. These relate mostly to reading. As the table displays students' knowledge of spellings is weak. Further, for question number 14 students had to infer the meaning to find the answer. This shows that the students inferring skills are weak. In vocabulary terms related to various careers is low. Writing meaning full sentences is also a weak area.

Facility index values for the Sinhala language paper

The facility values given in Fig. 3.16 also confirm that students have found these items difficult.

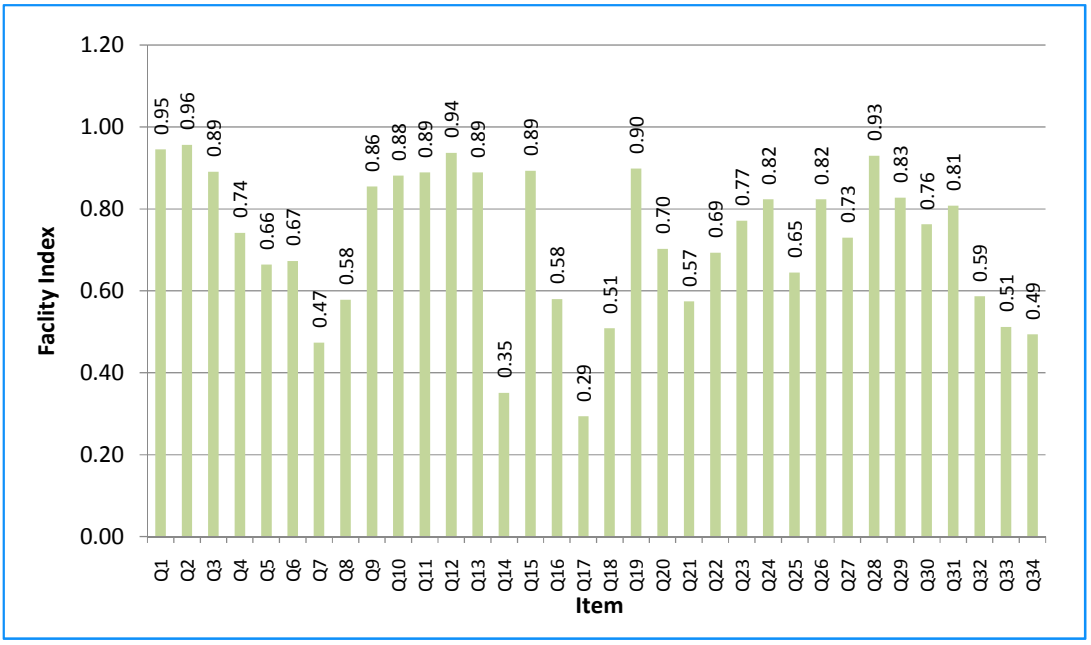

Fig. 3.16: Facility values for the different test items –Sinhala language

Although the students' knowledge of grammar is satisfactory it appears that they are unable to construct meaning full sentences. Thus it could be inferred that they are unable to apply the grammatical knowledge they have gained.

Even though students are expected to write simple sentences, there is no ELC corresponding to writing paragraphs. Combination of these factors appears to have impacted on student's writing skills.

Part II- Comparison of achievement level of students in 2013 with that of 2015

Trends in achievement over the period 2013 -2015 will first be discussed at national level.

3.8 Trends in achievement at national level

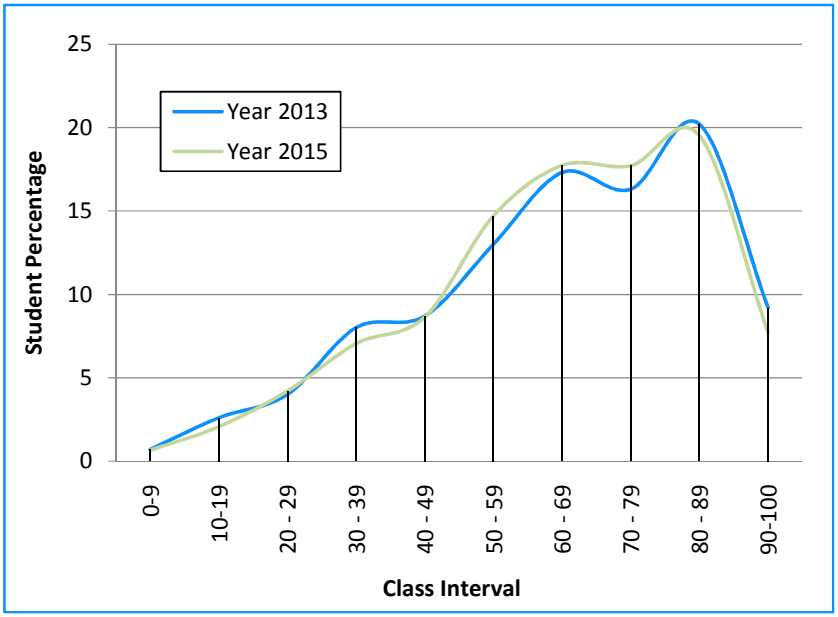

Fig. 3.17: Comparison of all island achievement in Sinhala language 2013 -2015 -dispersion of marks

Fig. 3.17 displays two negatively skewed curves which are quite similar. However, there are slight changes which has resulted in a slight drop in the mean value for the year 2015. This change can be further explained using the cumulative frequency table.

Table 3.11: Comparison of all island achievement in Sinhala language – Cumulative percentages

Class Interval	Year 2013		Year 2015	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.70	0.70	0.65	0.65
10-19	2.60	3.30	2.07	2.73
20 - 29	4.00	7.30	4.21	6.94
30 - 39	8.00	15.30	7.05	13.99
40 - 49	8.70	24.00	8.64	22.62
50 - 59	13.00	37.00	14.70	37.33
60 - 69	17.30	54.30	17.73	55.06
70 - 79	16.30	70.60	17.71	72.77
80 - 89	20.20	90.80	19.52	92.28
90-100	9.20	100.00	7.72	100.00
Total	100.00		100.00	

According to Table 3.11 the percentage of students who has scored below 40 marks has dropped in 2015 from 15.30 to 13.99. On the other hand, the percentage of students who has scored between 80–100 has also dropped from 29.40 to 27.24. This drop in the high performers has impacted on the mean value and it has decreased from 64.56 - 64.47.

The impact of the performances of the provinces will be discussed next.

3.9 Provincial wise comparison of student achievement

As Fig. 3.18 indicates the mean values in the different provinces have fluctuated. In four provinces the achievements have declined slightly. However the decline is significant only in the Southern Province. In Eastern and Uva there is slight increase in achievement. On the other hand, in the Northern and North Central Provinces there is a marked increase in achievement. As Table 3.12 indicates these positive changes are significant only in Northern, Eastern North Central and Uva Provinces.

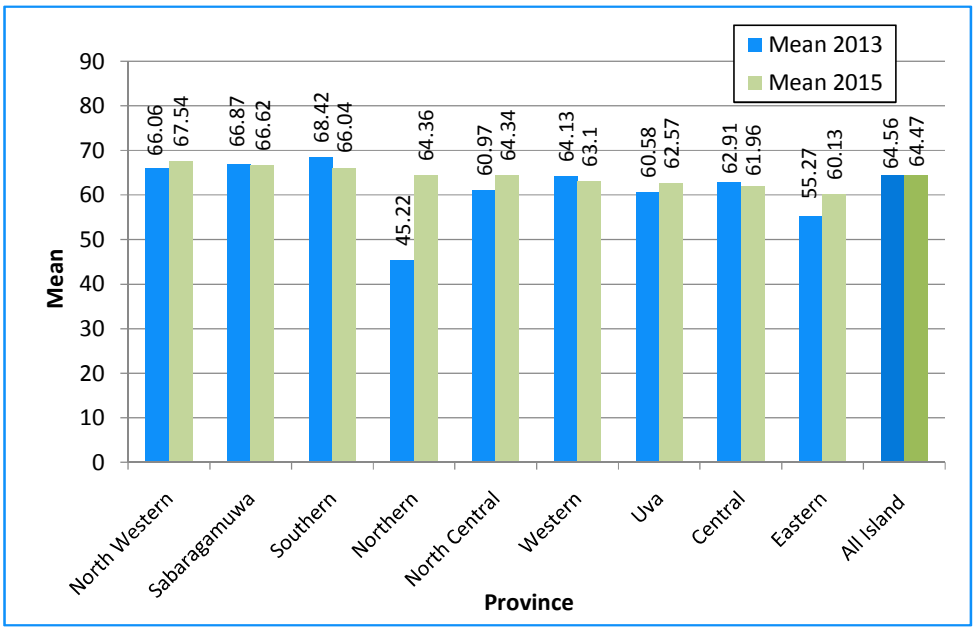

Fig. 3.18: Provincial wise comparison of student achievement - 2013 & 2015

Table 3.12: Provincial wise comparison of student achievement - 2013 & 2015

Province	Year 2013		Year 2015		Z
	Mean	Standard Deviation	Mean	Standard Deviation	
Central	62.91	19.89	61.97	19.85	1.10
Eastern	55.27	22.32	60.14	20.19	2.62*
North Central	60.97	20.83	64.34	19.84	4.38*
North Western	66.06	21.47	67.54	20.88	1.88
Northern	45.22	20.68	64.36	17.81	4.28*
Sabaragamuwa	66.87	19.69	66.62	19.88	0.35
Southern	68.42	20.33	66.04	19.67	3.50*
Uva	60.58	21.47	62.57	19.99	2.29*
Western	64.13	21.94	63.10	21.34	1.33
All Island	64.56	21.23	64.47	20.51	0.31

* Values are significant at 95%

The reasons for these changes can be explained by using the line curves in page 47. In the Southern Province the percentage of high achievers within the class interval 80-89 has declined. On the other hand, in the Northern, Eastern and Uva Provinces the percentage of high achievers has increased.

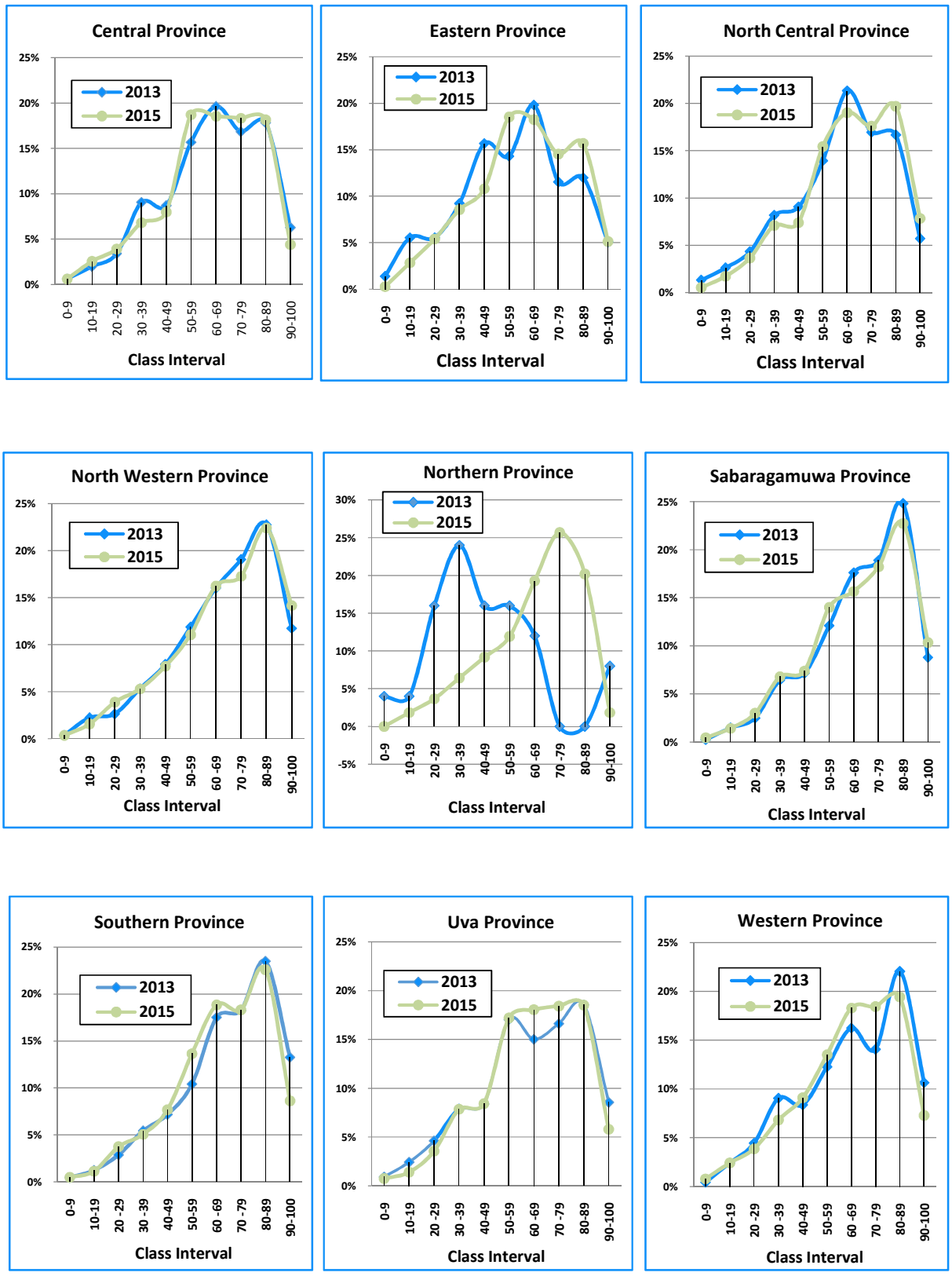

Fig. 3.19: Comparison of provincial wise distribution of marks – Sinhala language

Trends in achievement according to school type will be discussed next.

3.10 Comparison of marks according to school type

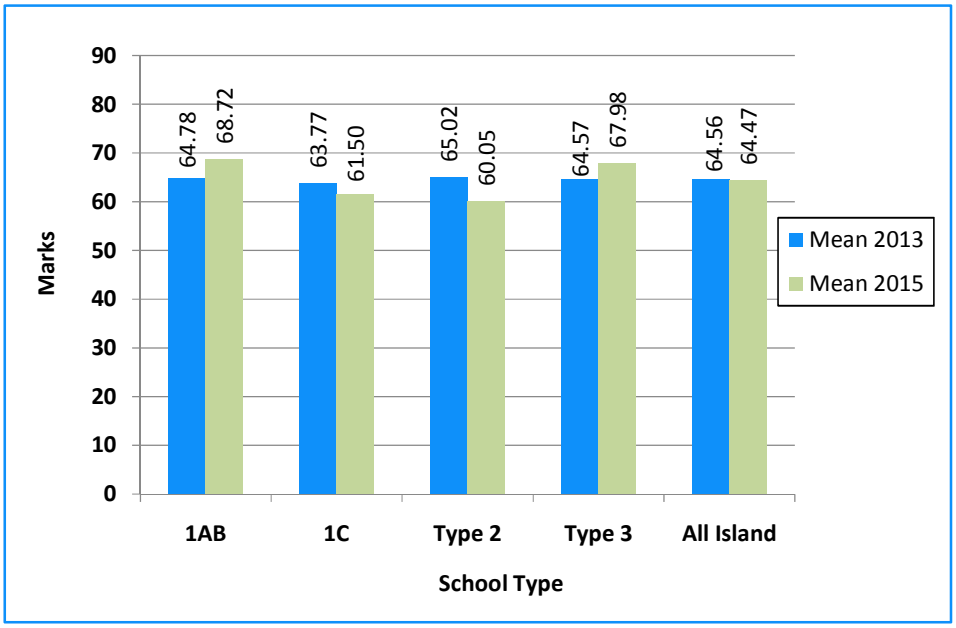

Fig. 3.20: All island comparison of mean values according to school type

As the Fig. 3.20 indicates there has been an increase in student achievement in 1AB and Type 3 schools. The achievement levels of these two school types have been approximately similar in the year 2013 and they have maintained this trend in the year 2015. On the other hand, the Type 2 schools performance had been above 1AB and Type 3 in 2013. However, in 2015 their performance has declined almost by 5 points. Similarly, 1C schools' achievement also has declined further. Therefore, the gap in achievement between 1AB and Type 3 schools and that of Type 2 and 1C has increased and impacted on the all island achievement negatively. This negative trend needs to be arrested.

Table 3.13: Comparison of achievement of 1AB schools

Class Interval	1AB-Year 2013		1AB-Year 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	0.09	0.09	0.25	0.25
10-19	0.91	1.00	0.87	1.12
20 - 29	4.19	5.19	2.04	3.16
30 - 39	8.56	13.75	3.66	6.82
40 - 49	8.56	22.31	5.65	12.47
50 - 59	14.75	37.07	13.38	25.85
60 - 69	17.67	54.74	17.46	43.31
70 - 79	18.76	73.50	20.10	63.41
80 - 89	16.94	90.44	24.83	88.24
90-100	9.56	100.00	11.76	100.00
Total	100		100	

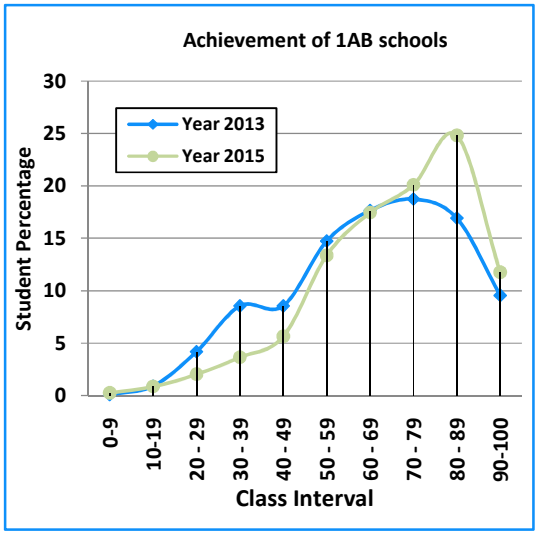

Fig 3.21: Comparison of achievement of 1AB schools – 2013 & 2015

The reason for the increase in achievement in 1AB schools is as indicated in Table 3.13 and Fig. 3.21 is due to the increase in the percentage of students scoring between 80-89 marks.

Table 3.14: Comparison of achievement of Type 3 schools

Class Interval	Type 3 - 2013		Type 3 - 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	0.84	0.84	0.33	0.33
10-19	2.30	3.14	1.21	1.55
20 - 29	3.66	6.80	2.46	4.00
30 - 39	6.67	13.47	5.01	9.01
40 - 49	8.26	21.73	6.55	15.56
50 - 59	12.86	34.59	13.08	28.64
60 - 69	18.23	52.82	18.45	47.09
70 - 79	16.35	69.17	18.57	65.66
80 - 89	21.60	90.77	23.51	89.17
90-100	9.23	100.00	10.83	100.00
Total	100		100	

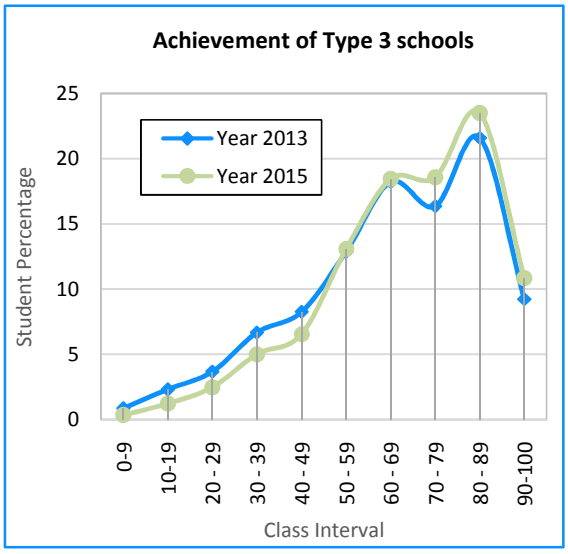

Fig 3.22: Comparison of achievement of Type 3 schools – 2013 & 2015

The same trend is observed in Type 3 schools.

Table 3.15: Comparison of achievement of 1C schools

Class Interval	1C - 2013		1C - 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	0.73	0.73	0.78	0.78
10-19	2.65	3.38	2.43	3.22
20 - 29	3.42	6.80	4.65	7.87
30 - 39	7.53	14.33	8.52	16.38
40 - 49	7.53	21.86	10.82	27.21
50 - 59	12.66	34.53	16.95	44.15
60 - 69	18.65	53.18	16.73	60.89
70 - 79	16.16	69.34	17.56	78.44
80 - 89	21.91	91.25	16.64	95.09
90-100	8.75	100.00	4.91	100.00
Total	100		100	

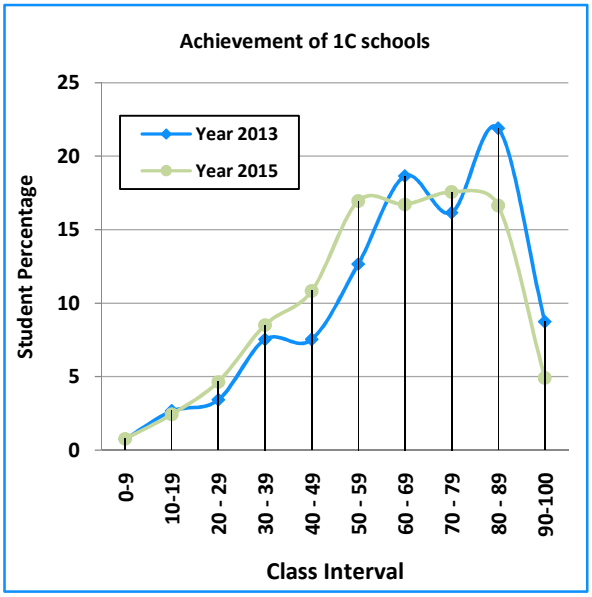

Fig. 3.23: Comparison of achievement of 1C schools – 2013 & 2015

As Table 3.15 and Fig. 3.23 the percentage of high achievers has decreased.

Table 3.16: Comparison of achievement of Type 2 schools

Class Interval	Type 2 - 2013		Type 2 - 2015	
	Student %	Cumula - tive %	Student %	Cumula-tive %
0-9	0.55	0.55	0.79	0.79
10-19	1.92	2.47	2.49	3.28
20 - 29	3.40	5.87	5.77	9.05
30 - 39	7.27	13.14	8.85	17.91
40 - 49	8.52	21.65	9.33	27.23
50 - 59	12.98	34.63	15.42	42.65
60 - 69	16.46	51.09	18.14	60.79
70 - 79	17.86	68.95	16.21	77.00
80 - 89	20.98	89.93	17.04	94.03
90-100	10.07	100.00	5.97	100.00
Total	100		100	

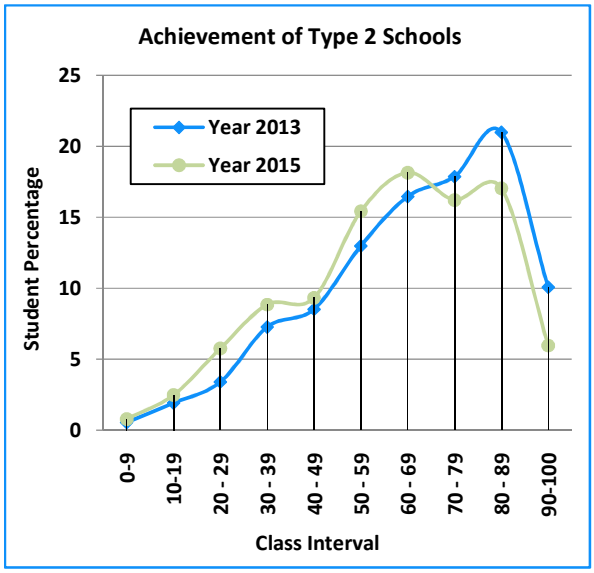

Fig. 3.24: Comparison of achievement of Type 2 schools – 2013 & 2015

The same trend observed in 1C schools can be seen in Type 2 schools.

Trends in achievement gender wise will be discussed next.

3.11 Comparison of marks according to gender

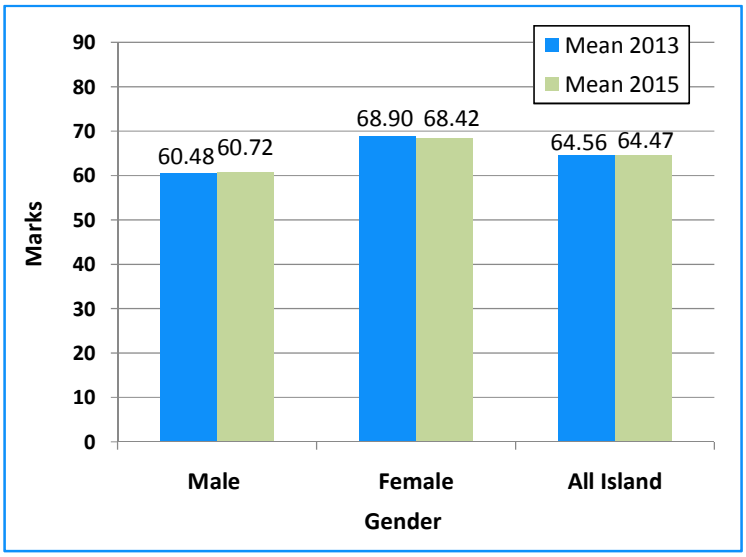

Fig. 3.25: All island comparison of mean values according to gender

As Fig. 3.25 displays the male students' achievement has increased slightly. On the other hand, the female performance has decreased slightly. The increase in male performance is a positive sign. However, the gap in achievement between males and females continue and measures need to be taken to arrest this trend.

Table 3.17: Comparison of achievement of male students

Class Interval	Male - 2013		Male - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	0.98	0.98	0.78	0.78
10-19	2.89	3.87	2.33	3.11
20 - 29	4.88	8.75	5.14	8.25
30 - 39	9.36	18.11	8.33	16.58
40 - 49	9.51	27.62	9.53	26.11
50 - 59	14.10	41.71	16.28	42.39
60 - 69	17.15	58.86	18.27	60.66
70 - 79	16.54	75.40	16.23	76.89
80 - 89	17.67	93.06	17.28	94.16
90-100	6.94	100.00	5.84	100.00
Total	100		100	

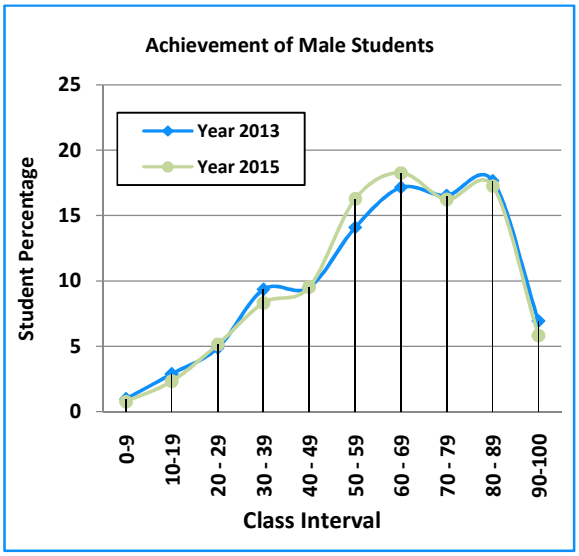

Fig. 3.26: Comparison of achievement of male students – 2013 & 2015

Table 3.18: Comparison of achievement of female students

Class Interval	Female - 2013		Female - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	0.26	0.26	0.28	0.28
10-19	1.26	1.51	1.13	1.41
20 - 29	2.16	3.68	2.22	3.63
30 - 39	5.09	8.77	4.62	8.26
40 - 49	6.84	15.61	6.50	14.76
50 - 59	11.95	27.56	12.86	27.63
60 - 69	18.12	45.68	17.29	44.91
70 - 79	17.73	63.40	19.93	64.84
80 - 89	24.45	87.85	24.01	88.85
90-100	12.15	100.00	11.15	100.00
Total	100		100	

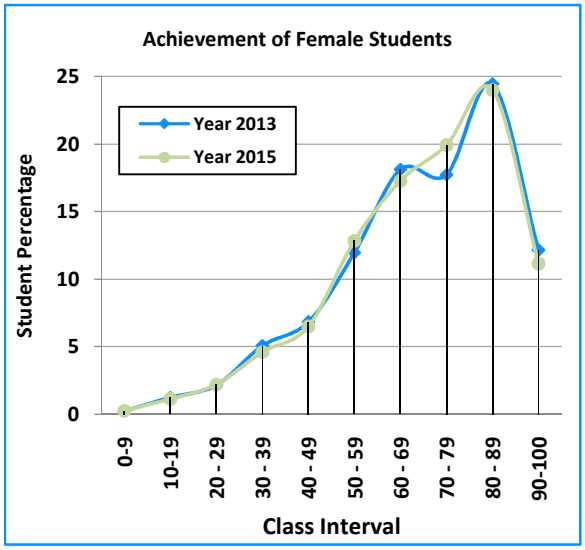

Fig. 3.27: Comparison of achievement of female students – 2013 & 2015

Trend in achievement location-wise will be discussed next.

3.12 Comparison according to location

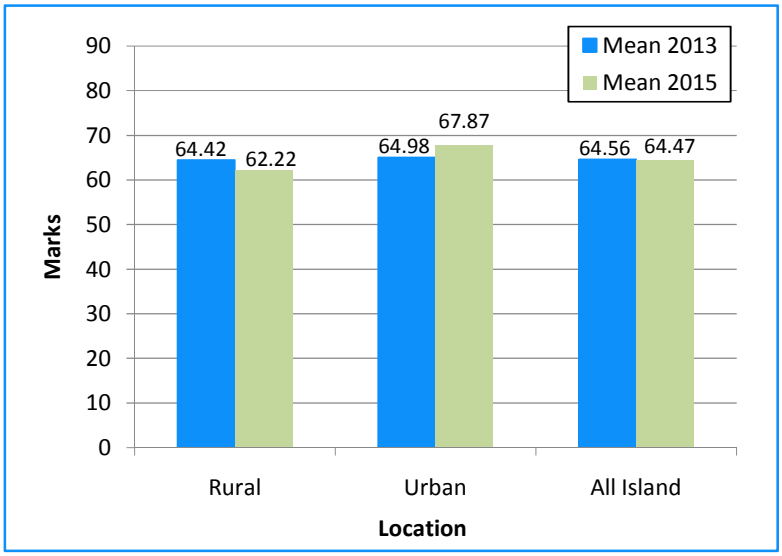

Fig. 3.28: All island comparison of mean values according to location

As Fig. 3.28 displays there is a decline in achievement in rural area schools while there is an increase in the urban area schools. This trend while having an impact on the all island performance has also increased the gap in achievement of students in the rural area schools and urban area schools.

Table 3.19: Comparison of achievement of rural schools

Class Interval	Rural - 2013		Rural - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	0.67	0.67	0.64	0.64
10-19	2.16	2.83	2.15	2.79
20 - 29	3.70	6.53	4.55	7.35
30 - 39	7.61	14.14	8.53	15.88
40 - 49	8.68	22.82	9.18	25.06
50 - 59	13.16	35.98	15.76	40.82
60 - 69	17.75	53.73	18.20	59.01
70 - 79	16.88	70.60	17.17	76.18
80 - 89	20.21	90.81	17.94	94.13
90-100	9.19	100.00	5.87	100.00
Total	100		100	

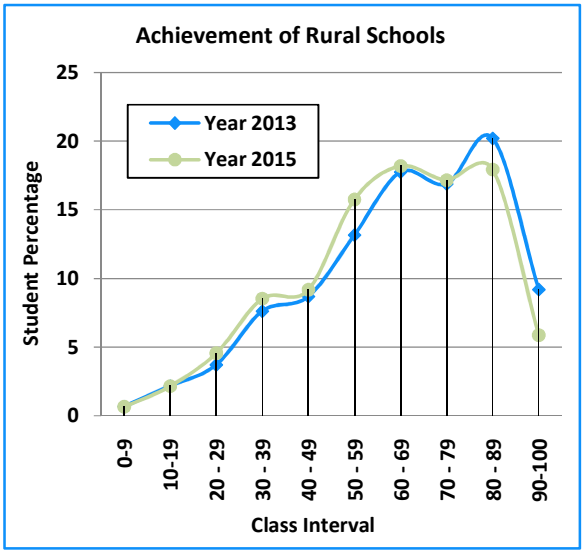

Fig. 3.29: Comparison of achievement of rural schools – 2013 & 2015

As Table 3.19 and Fig. 3.29 indicate the reason for the decline in performance is due to the drop in percentage of high achievers (80-89) in 2015.

Table 3.20: Comparison of achievement of urban schools

Class Interval	Urban - 2013		Urban - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	0.47	0.47	0.38	0.38
10-19	1.89	2.36	1.17	1.55
20 - 29	3.08	5.44	2.51	4.06
30 - 39	6.17	11.61	3.66	7.72
40 - 49	6.60	18.21	6.45	14.17
50 - 59	12.68	30.89	12.97	27.14
60 - 69	17.18	48.07	17.20	44.35
70 - 79	17.95	66.02	19.28	63.63
80 - 89	23.56	89.59	24.30	87.93
90-100	10.41	100.00	12.07	100.00
Total	100		100	

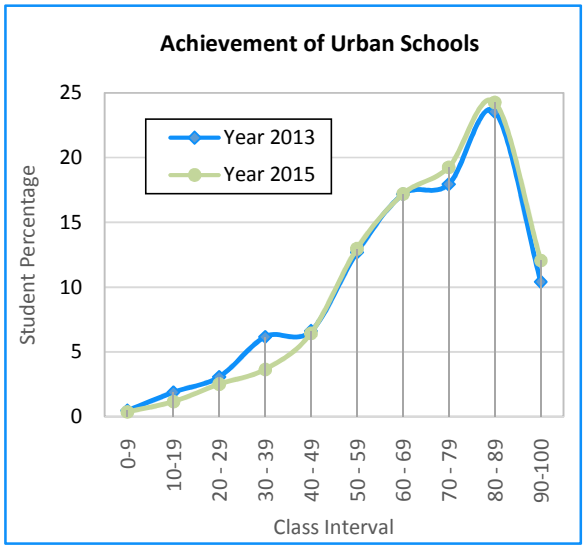

Fig. 3.30: Comparison of achievement of urban schools – 2013 & 2015

On the other hand in urban area schools the percentage of high achievers has increased.

Trends in the achievement of sub skills will be discussed next.

3.13 Skill analysis comparison

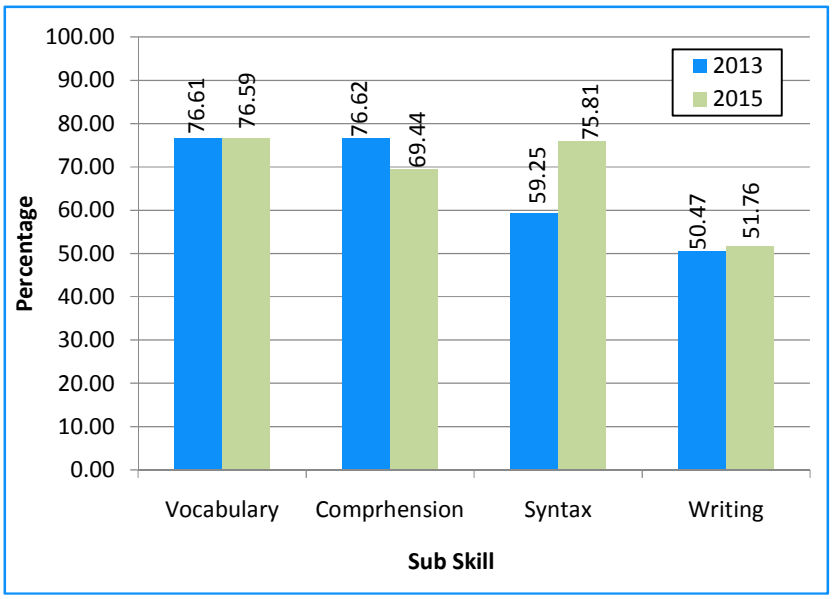

Fig. 3.31: Comparison of achievement of sub skills in Sinhala language

As Fig. 3.31 displays there is a decline in comprehension while there is a substantial increase in the understanding of syntax. On the other hand, while there is no change in vocabulary there is a slight increase in writing achievement. However, the weakest skill is still writing.

Table 3.21: Comparison of achievement of ELCs/language skills

ELC no	Description	Q.No	% of correct responses - 2013	% of correct responses - 2015	Change
	Vocabulary	1	94.10%	94.50%	+
		2	94.90%	95.60%	+
		3	92.00%	89.10%	-
		4	73.30%	74.20%	+
	Similar words	5	65.60%	66.40%	+
	Opposite words	6	67.70%	67.30%	-
	Terms related to various careers	7	45.70%	47.40%	+
	Language terms related to the text book	8	55.10%	57.80%	+
	Place, material and Personal nouns	9	84.00%	85.50%	+
		10	85.40%	88.10%	+
		11	84.90%	88.90%	+
3	Filling a form	12	89.70%	93.70%	+
		13	89.10%	88.90%	-
		14	33.50%	35.10%	+
6	Punctuation	15	89.50%	89.30%	-
		16	53.50%	58.00%	+
8	Spellings	17	29.30%	29.40%	+
		18	45.90%	50.90%	+
4	Subject verb agreement	19	88.40%	89.90%	+
		20	67.20%	70.30%	+
		21	53.80%	57.40%	+
		22	67.20%	69.30%	+
5	Sequencing	23	74.40%	77.10%	+
		24	80.80%	82.40%	+
7	Read and comprehend simple poem	25	65.50%	64.50%	-
		26	80.90%	82.40%	+
		27	74.00%	73.00%	-
47	Read and comprehend invitations	28	93.30%	93.00%	-
		29	82.20%	82.80%	+
		30	76.50%	76.20%	-
		31	79.50%	80.80%	+
	Writing meaningful sentences	32	58.90%	58.70%	-
		33	51.80%	51.20%	-
		34	46.30%	49.40%	+
	Writing	35	63.60%	59.60%	-
		36	48.70%	43.80%	-
		37	44.70%	39.90%	-
		38	45.40%	41.10%	-
		39	48.20%	44.70%	-
		40	52.30%	48.40%	-

Table 3.21 displays there is not much improvement in students' achievement in skills and competencies during the period 2013-2015. Students' knowledge of spellings is still weak. Further, inferring skills (Q.14) and in vocabulary, terms related to various careers still remain at an unsatisfactory level. Writing meaning full sentences is also a weak area.

There is only a slight increase in writing skills. Table 3.22 compares the analysis of the writing task over the period 2013 -2015.

Table 3.22: Comparison of achievement of writing skills

Question No	Writing	Year 2013	Year 2015	Change
35	Grammatically Correct	57.32%	52.31%	-
	One Word Answer	8.19%	9.01%	+
	Incorrect	33.40%	37.18%	+
	Not Attempted	1.10%	1.50%	+
36	Grammatically Correct	42.41%	36.88%	-
	One Word Answer	7.57%	8.68%	+
	Incorrect	46.66%	52.58%	+
	Not Attempted	1.36%	1.85%	+
37	Grammatically Correct	37.35%	34.28%	-
	One Word Answer	8.42%	6.85%	-
	Incorrect	52.54%	56.51%	+
	Not Attempted	1.68%	2.37%	+
38	Grammatically Correct	36.82%	35.20%	-
	One Word Answer	9.77%	7.16%	-
	Incorrect	51.02%	54.01%	+
	Not Attempted	2.39%	3.63%	+
39	Grammatically Correct	40.37%	39.01%	-
	One Word Answer	9.25%	7.53%	-
	Incorrect	46.29%	47.49%	+
	Not Attempted	4.09%	5.97%	+
40	Grammatically Correct	44.49%	41.83%	-
	One Word Answer	9.41%	8.69%	-
	Incorrect	39.92%	39.93%	+
	Not Attempted	6.17%	9.55%	+

According to this table the percentage of grammatically correct sentences written by the students has decreased. Therefore, even though there is a slight improvement in the discrete writing skills students overall writing skills has not improved.

3.14 Summary

Part I of this chapter discussed students' performance in the Sinhala language at national level, provincial level as well as in relation to school type, gender and location.

Test items used to assess students' achievement were analyzed to assess how far they have been successful in achieving the sub skills of the language expected to be achieved by grade 4 pupils.

Part II described the trends in achievement between 2013-2015.

It could be concluded that there is disparity in achievement of learning outcomes in the learning of Sinhala language.

Chapter Four

Patterns and Trends in Achievement: First Language – Tamil 2015

4.1 Introduction

This chapter presents the patterns and trends in achievement of the students in the first language–Tamil in the year 2015.

In part I, patterns in achievement will be discussed and in part II the trends will be discussed.

Part I – Patterns in achievement in First Language - Tamil

First, national level student achievement would be discussed in relation to student performance pertaining to Tamil language.

4.2 Patterns of achievement at national level

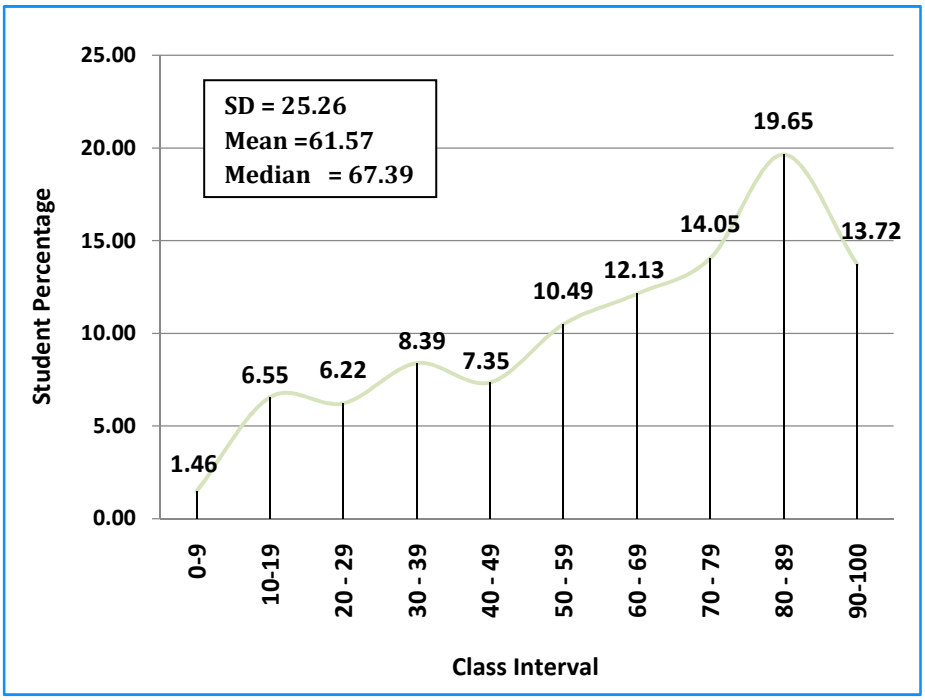

Fig. 4.1: All island achievement in Tamil language 2015 – dispersion of marks

The frequency polygon shown in Fig. 4.1 outlines the total picture of the distribution of marks of grade 04 students in the Tamil language.

Fig. 4.1 depicts a negatively skewed distribution of marks displaying that majority of the students has scored high marks in the Tamil language.

The dispersion of marks is further explained in the cumulative percentage Table 4.1 given below.

Table 4.1: All island achievement in Tamil language 2015– cumulative percentages

Class Interval	Student %	Cumulative %
0 –9	1.46	1.46
10 - 19	6.55	8.01
20 - 29	6.22	14.23
30 - 39	8.39	22.62
40 - 49	7.35	29.96
50 - 59	10.49	40.45
60 - 69	12.13	52.58
70 - 79	14.05	66.63
80 - 89	19.65	86.28
90 - 100	13.72	100.00
Total	100.00	

According to the above Table 4.1 majority of the students has scored between 80-89. There is also 13.72% of students who falls within the class interval 90-100. On the other hand, there are 22.62% of students who has scored below 40 marks.

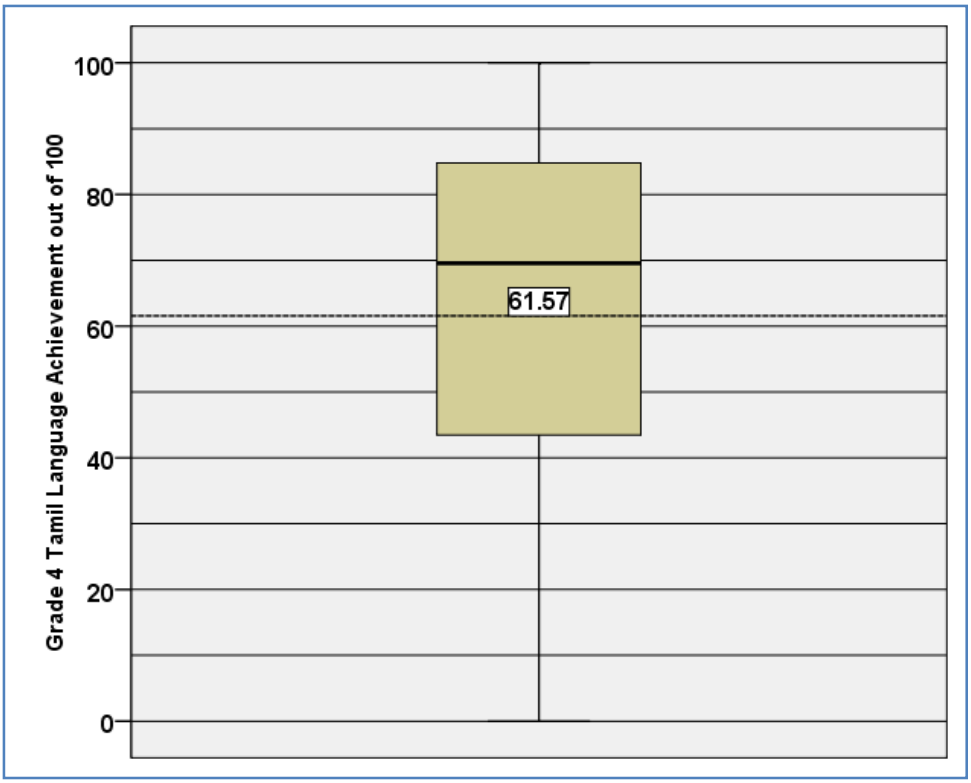

Fig. 4.2: Box plot and whisker chart representing all island Tamil language achievement

As Fig. 4.2, the box plot displays more than 50% of students has reached the 67.39 mark level. Further 75% of students has reached the 82.61 mark level. Twenty five percent of the students has reached only 41.3%.

Summary of national level achievement

- National level mean is 61.57, while the median is 67.39
- Disparity in achievement prevails with approximately 22.62% of students scoring below 40% and 19.65% of students scoring between 80-89 marks and another 13.72% scoring between 90-100 marks. Therefore, student heterogeneity is high in Tamil as a first language performance.

Provincial wise student achievement in the Tamil language would be discussed next.

4.3 Provincial wise student achievement

The nature of the distribution of scores in the Tamil language provincial wise reveals certain patterns. First these patterns are discussed using Table 4.2.

Table 4.2: Provincial achievement in Tamil language 2015 – Summary statistics

Province	Mean	Rank	Standard Error of Mean	Standard Deviation	skewness	Percentile (p25)	Median (p50)	Percentile (p75)
North Central	66.93	1	0.37	21.64	-0.64	52.17	71.74	84.78
Sabaragamuwa	64.46	2	0.39	27.09	-0.64	41.3	73.91	86.96
Central	63.98	3	0.20	26.28	-0.53	43.48	69.57	86.96
Northern	63.92	4	0.18	24.56	-0.52	43.48	69.57	84.78
Western	61.94	5	0.19	20.27	-0.64	50	65.22	76.09
Eastern	60.04	6	0.15	24.85	-0.48	41.3	65.22	80.43
North Western	59.09	7	0.31	26.26	-0.34	34.78	65.22	82.61
Uva	58.95	8	0.31	27.47	-0.28	32.61	63.04	84.78
Southern	49.74	9	0.51	29.81	0.11	19.57	47.83	80.43
All Island	61.57		0.08	25.26	-0.48	41.3	67.39	82.61

As Table 4.2 indicates based on provincial wise mean achievements North Central Province ranks first and its mean value is above the all island value as well.

Achievement wise the provinces fall into three main categories. North Central, Sabaragamuwa, Central, Northern and Western with mean scores above the national mean, fall into the higher category.

Eastern, North Western and Uva, cluster in the middle and in these three provinces the mean value is above 58. On the other hand, Southern Province falls into the lowest category. Between the Southern and North Central Provinces there is approximately 17 point difference in mean values indicating the disparity in achievement among the provinces.

These disparities are further highlighted through the bar chart given in Fig. 4.3.

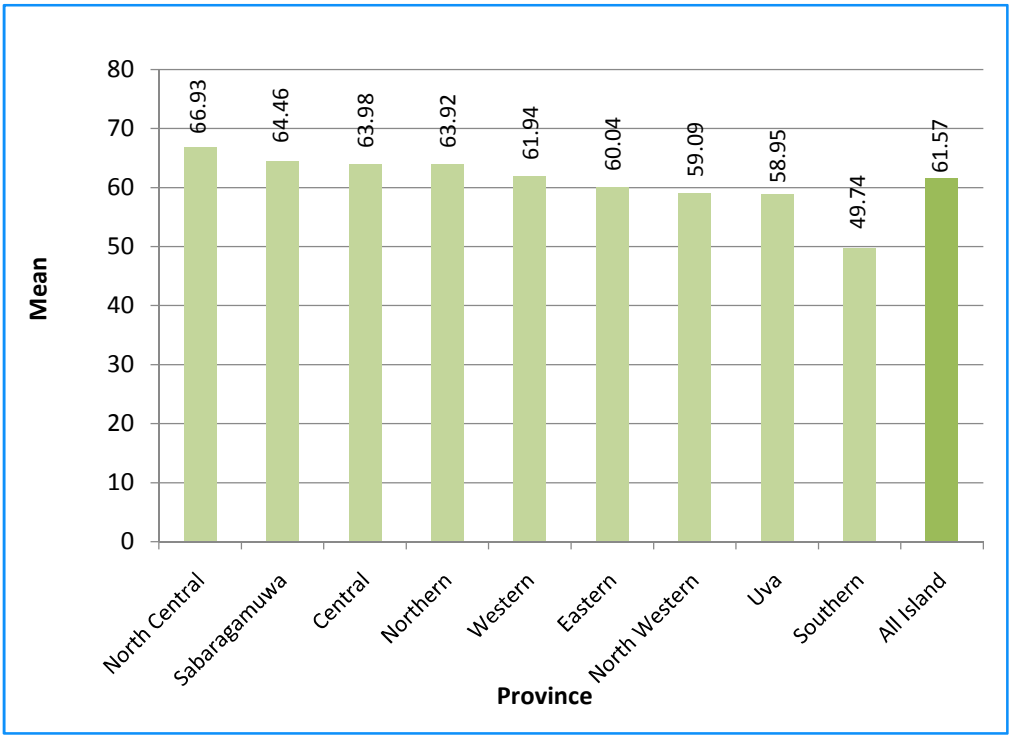

Fig. 4.3: Bar chart to represent mean among the provinces- Tamil language

Disparity in achievement among provinces

According to Table 4.2, Southern Province has the highest SD value. The SD values of Uva and Sabaragmuwa are also higher than the all island SD value indicating the disparity in achievement within the province and among the provinces.

Fig. 4.4, the box plot graphically illustrates this diversity further.

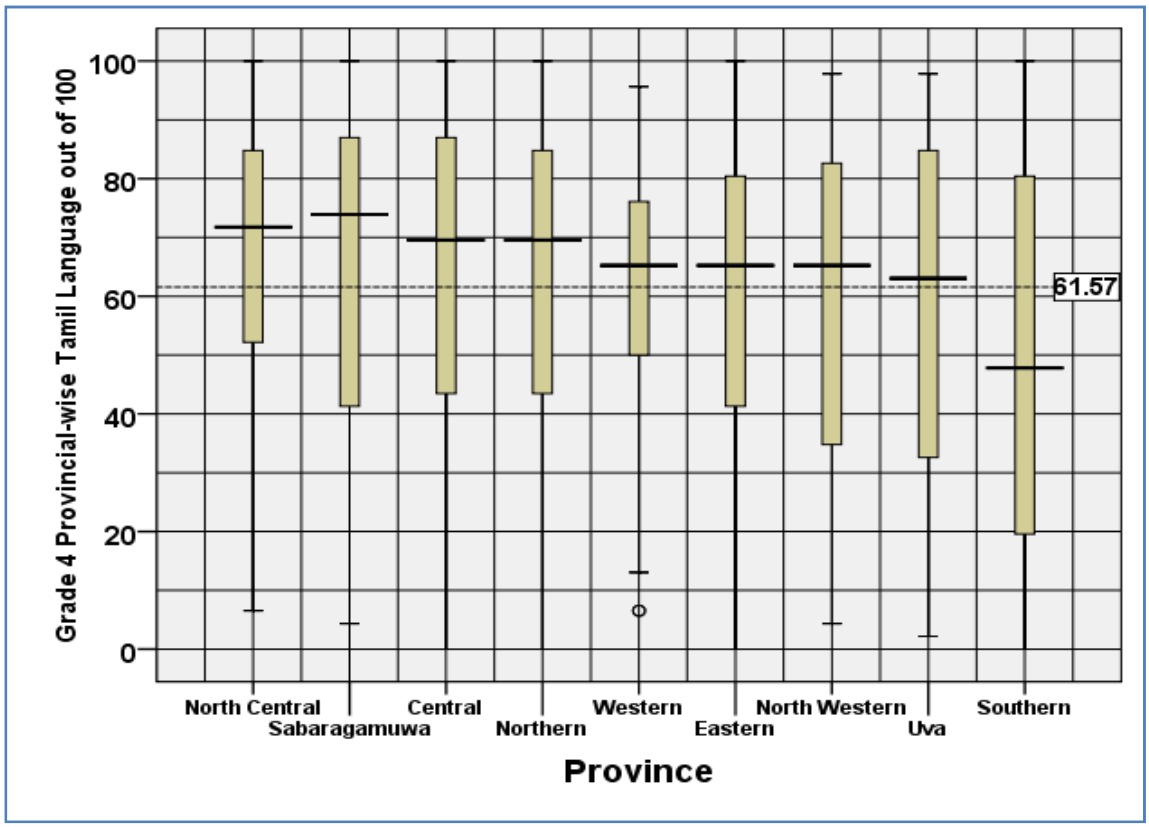

Fig. 4.4: Box plot and whisker chart representing provincial wise Tamil language achievement

North Central Province's 25th as well as the 75th percentile is high indicating the homogeneity of the province. Western Province's 25th percentile is also high compared to other provinces. On the other hand, its 75th percentile is the lowest. Further, its SD is also the lowest (20.27). Although Northern and Eastern Provinces differ in the 25th percentile, they become equal at the 50th percentile. In the 75th percentile Southern province is higher than the Western Province but it has the lowest 25th percentile value. As the SD of the Western Province indicated, the pattern depicted in the box plot confirms that the students achievement in the Western Province is more homogeneous while the Southern Province shows greater heterogeneity in achievement.

Table 4.3 provides the provincial wise percentage of students scoring 50 or above marks. It also confirms that except in the Southern Province in all the other provinces more than 60% of the students has scored marks greater than or equal to 50.

Table 4.3: Percentage of students scoring 50 or above, and below 50

Province	Above or equal to 50	Below 50
North Central	78.70%	21.30%
Sabaragamuwa	72.51%	27.49%
Central	73.31%	26.69%
Northern	72.41%	27.59%
Western	76.86%	23.14%
Eastern	67.72%	32.28%
North Western	64.88%	35.12%
Uva	64.40%	35.60%
Southern	46.15%	53.85%
All Island	**70.04%**	**29.96%**

The above Table 4.3 indicates that even though Western Province was ranked fifth according to the mean scores it is the second when the percentage of students scoring 50 or above is considered.

Summary of provincial level analysis – Tamil language

- Achievement wise the provinces fall into three categories.
  Category 1 – North Central, Sabaragamuwa, Central, Northern and Western above the national mean, fall into the higher category.
  Category 2 – Eastern, North Western and Uva, cluster in the middle (Mean scores above 58)
  Category 3 – Southern Province.

- Disparity of marks within a province is highest in the Southern Province. In Sabaragamuwa and Uva Provinces also the disparity of marks is high. However, there are more high achievers.
- Performance is more homogeneous in the Western and North Central Provinces.

Achievement levels in relation to the types of school would be discussed next.

4.4 Achievement levels by type of school

Table 4.4: Tamil language achievement according to school type

School Type	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
1AB	70.36	0.17	22.26	-0.89	56.52	76.09	89.13
1C	61.62	0.15	24.63	-0.51	45.65	65.22	82.61
Type 2	54.31	0.18	26.02	-0.15	32.61	56.52	76.09
Type 3	61.57	0.14	25.30	-0.47	41.3	67.39	82.61
All Island	61.57	0.08	25.26	-0.48	41.3	67.39	82.61

As Table 4.4 indicates there is variation in achievement among school types. While the achievement level is highest in the 1AB schools, it is lowest in the Type 2 schools. Further, the mean value of Type 2 schools is lower than the all island mean value.

The difference in mean values is also shown graphically in the bar chart in Fig. 4.5.

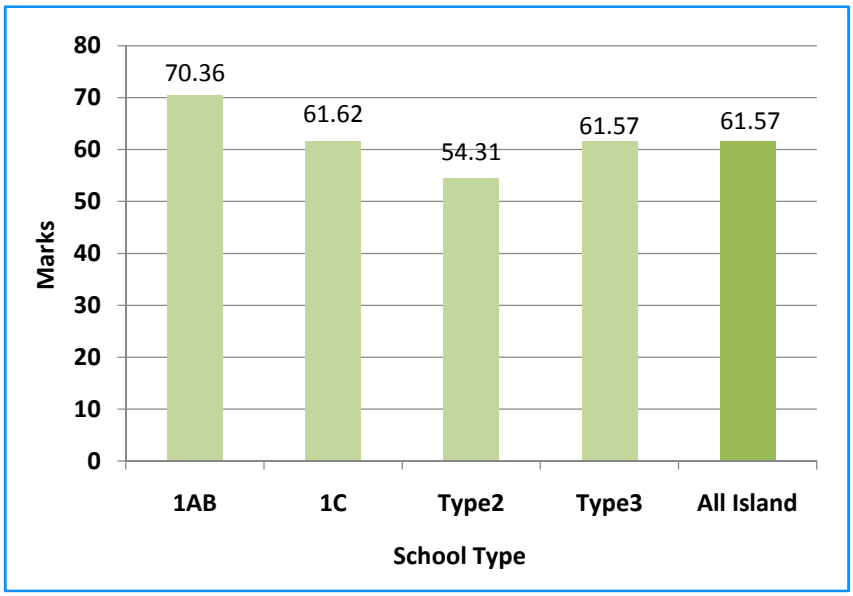

Fig. 4.5: Bar chart representing the mean among the school types- Tamil language

The performance of the school types is further highlighted when the median scores are considered in Table 4.4. Except for Type 2 schools, all the other school types have achieved median values above the national mean for the Tamil language.

Variation among students

Variation in student achievement in 1AB school type is the lowest. The lowest standard deviation values are shown by 1AB schools (22.26). This value is lower than the all island SD value as well. The SD values of 1C schools is also below the all island SD value. In Type 3 schools the SD is quite close to the all island SD value. However, in all school types the SD value is quite high indicating that there is greater variation from the mean. In Type 2 schools while the mean value is the lowest its SD value is high. Therefore, there is greater variation among low achievers.

Disparity in achievement

All school types have obtained negative skewed values. It reveals that in all school types higher number of students has achieved high marks while lower marks are obtained by a lower number of students. Highest skewed value has been obtained by 1AB schools. Next higher value has been obtained by 1C schools. Both values are above the all island skewness value. Lowest negative skewed value has been obtained by Type 2 schools. This means that there are many low achievers in Type 2 schools.

The variation among school types is further indicated through the line curve displaying the dispersion of marks (Fig. 4.6).

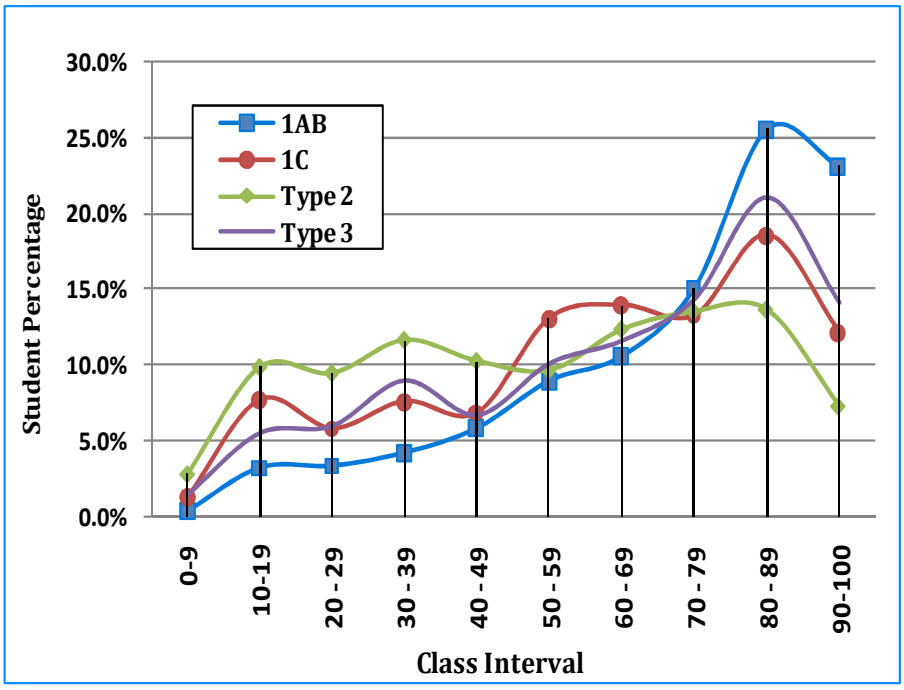

Fig. 4.6: Dispersion of marks by school type–Tamil language

All curves are negatively skewed indicating that there are more high achievers than low achievers. However, when the highest peaks are considered the four curves differ. While 1AB schools have the highest peak the lowest is the Type 2 schools, Type 3 and 1C are in between these two types.

The patterns of these curves are further elaborated in the cumulative percentage Table 4.5.

Table 4.5: Cumulative student percentages according to school type- Tamil language

Class Interval	1AB		1C		Type 2		Type 3	
	Student %	Cumulative %	Student %	Cumulative %	Student %	Cumulative %	Student %	Cumulative %
0 - 9	0.25	0.25	1.23	1.23	2.78	2.78	1.39	1.39
10 - 19	3.14	3.40	7.67	8.90	9.81	12.59	5.49	6.87
20 - 29	3.27	6.67	5.78	14.68	9.42	22.00	5.97	12.84
30 - 39	4.15	10.82	7.58	22.25	11.60	33.60	8.98	21.82
40 - 49	5.79	16.60	6.82	29.07	10.21	43.81	6.69	28.51
50 - 59	8.93	25.53	13.07	42.14	9.61	53.42	10.13	38.64
60 - 69	10.57	36.10	13.92	56.06	12.29	65.71	11.63	50.27
70 - 79	15.09	51.19	13.26	69.32	13.48	79.19	14.41	64.68
80 - 89	25.66	76.86	18.56	87.88	13.58	92.77	21.16	85.83
90 - 100	23.14	100.00	12.12	100.00	7.23	100.00	14.17	100.00
Total	100.00		100.00		100.00		100.00	

As Table 4.5 indicates in all school types the highest percentage of students belongs to the class interval 80-89. However, the highest percentage of students that belongs to this class interval (25.66%) is in 1AB schools. In addition there is 23.14% of students that belong to the class interval 90-100. On the other hand the percentage of students that belong to these two class intervals in Type 2 schools is 13.58% and 7.23% respectively.

The percentage of students who has scored less than the pass mark (40%) is considered the 1AB schools have the lowest percentage (10.82%). On the other hand, the highest percentage is (33.60%) in Type 2 schools.

Therefore, it could be concluded that there is heterogeneity in achievement among the different types of schools.

This pattern of performance among different school types is further illustrated through the box plot in Fig. 4.7.

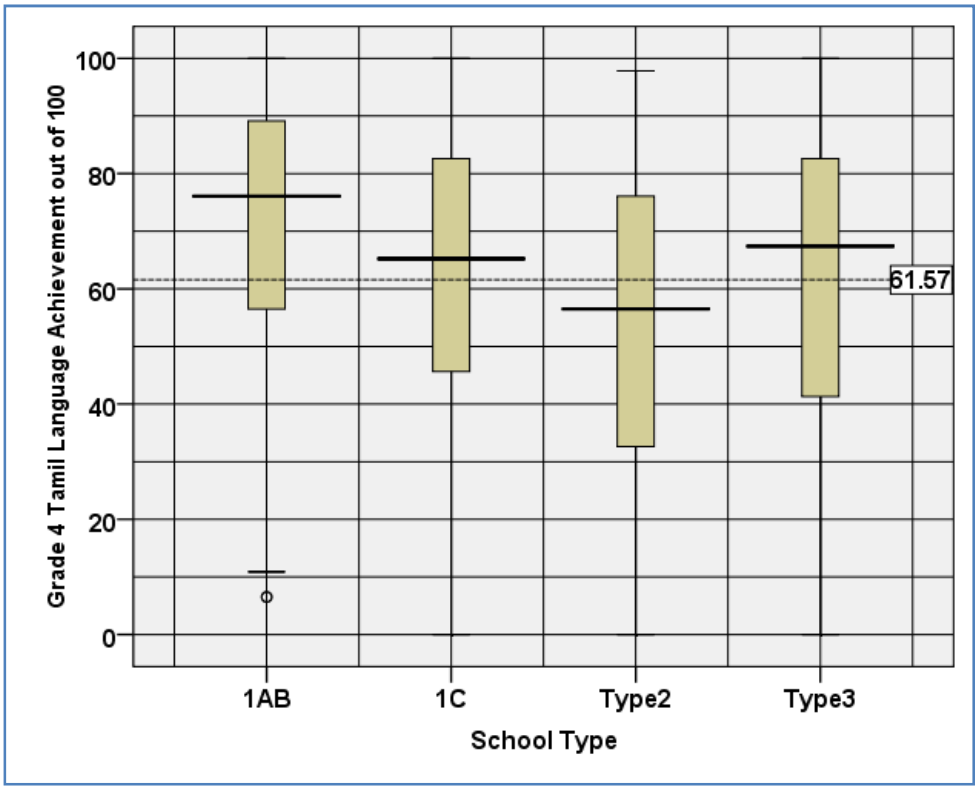

Fig. 4.7: Tamil language marks according to school types using box plot and whisker plot

As can be seen from Fig 4.7 in 1AB schools both the 25th percentile and the 75th percentile is high. Yet, there is also an outlier in these schools. On the other hand in other school types there are no outliers. In Type 3 and 1C schools the percentage of students who has reached the 75th percentile is similar. This means that there are equal number of high achievers in these two school types. However, in Type 3 schools the 25th percentile is lower than in the 1C schools. While in 1C schools 25% of students has scored equal or less than 45.65% in Type 3 schools 25% of students has scored 41.3%. On the other hand, in Type 2 schools 25% of students has scored only 32.61% or less. Further, the Fig. 4.7 illustrates the disparity between the performance of 1AB and Type 2 schools.

Summary

- The achievement in Tamil language in 1AB schools is the highest. (70.36). On the other hand, it is the lowest in the Type 2 schools (54.31%). 1C and Type 3 schools performance is relatively similar and closer to the national mean (61.57).
- The gap in achievement between 1AB and Type 2 schools remains where as 1C and Type 3 performances are similar.

4.5 Achievement levels by gender

Table 4.6: Tamil language achievement according to gender

Student Gender	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
Male	56.74	0.12	25.99	-0.26	34.78	58.70	80.43
Female	65.96	0.10	23.75	-0.68	50.00	71.74	84.78
All Island	61.57	0.08	25.26	-0.48	41.30	67.39	82.61

There is a considerable difference in achievement in the Tamil language between males and females. As Table 4.6 indicates this difference is almost ten points.

Further the male performance (56.74) is also below the all island mean (61.57). These differences are further illustrated in Fig. 4.8.

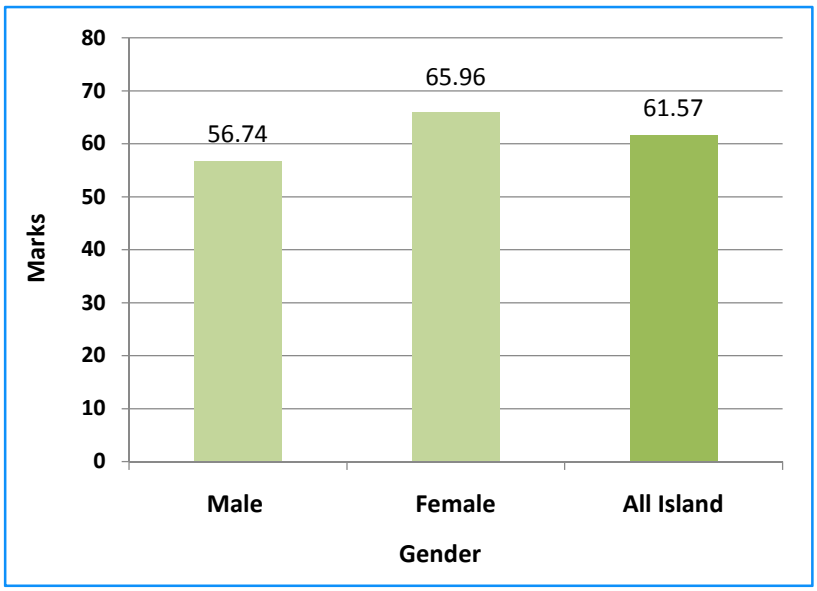

Fig. 4.8: Bar chart representing mean values according to gender –Tamil language

Variation among students

Variation in achievement among males is higher than that of the female students. This is indicated by the male students obtaining a higher SD value. However, it is equal to all island SD (Table 4.6). On the other hand, the female students SD is below the all island SD which indicates that there is less variation among the females.

Fig. 4.9 graphically illustrates the dispersion of marks according to gender.

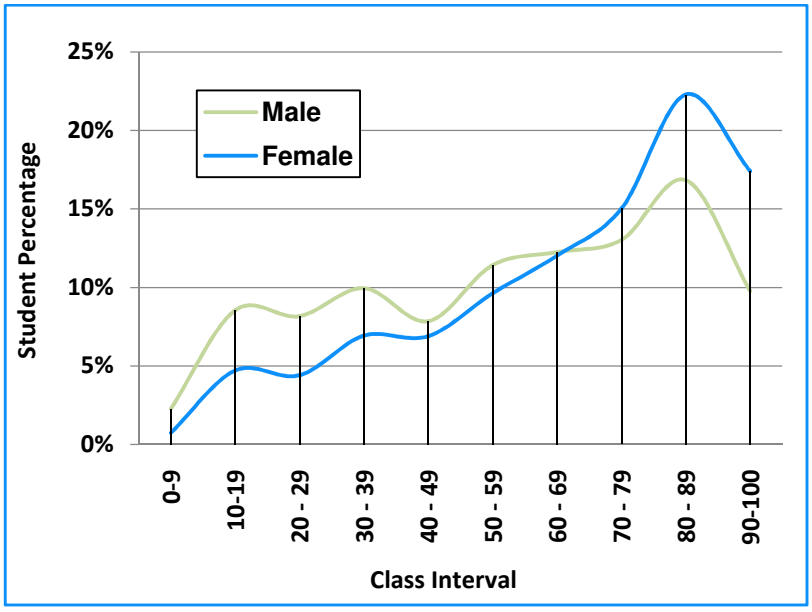

Fig. 4.9: Dispersion of marks by gender – Tamil language

The two line curves for males and females are negatively skewed. However, both curves have two high peaks. However, when the two high peaks are considered the high peak in the female curve is higher than in the male curve which means that there are more high achievers among the females. On the other hand, when the low achievers' are concerned the male curve is higher denoting that there are more low achievers among the males. This pattern indicates that while the low performers among the boys are greater, among the girls high performers are greater.

The disparity in the male students' achievement can be elaborated better through the cumulative percentages.

Table 4.7: Cumulative student percentages according to gender –Tamil language

Class Interval	Male		Female	
	Student %	Cumulative %	Student %	Cumulative %
0 - 9	2.25	2.25	0.73	0.73
10 - 19	8.53	10.77	4.70	5.43
20 - 29	8.16	18.94	4.41	9.84
30 - 39	9.95	28.89	6.93	16.77
40 - 49	7.84	36.73	6.89	23.65
50 - 59	11.42	48.14	9.62	33.28
60 - 69	12.24	60.39	12.02	45.30
70 - 79	13.02	73.41	15.01	60.31
80 - 89	16.83	90.23	22.28	82.59
90 - 100	9.77	100.00	17.41	100.00
Total	100.00		100.00	

According to Table 4.7 and Fig. 4.9 it could be concluded that, there are more high performing female students than male students. The highest percentage (22.28%) of female students falls into the class interval 80-89. Even though, the highest percentage of male students, also falls into the class interval 80-89, the percentage is less (16.89%). Further, there is also 17.41% of females who has scored between 90–100, there is only 9.77% males who has scored between 90-100. This supports the claim that there are more high achievers among the females than among the males.

On the other hand, while there is only 16.77 cumulative percent of female students who has scored below 40 marks, there is 28.89 of male students who has scored less than 40 marks. Therefore, the overall achievement in Tamil language of the boys is lower than the girls.

Box plot and whisker for gender wise Tamil language achievement elaborates the performance further.

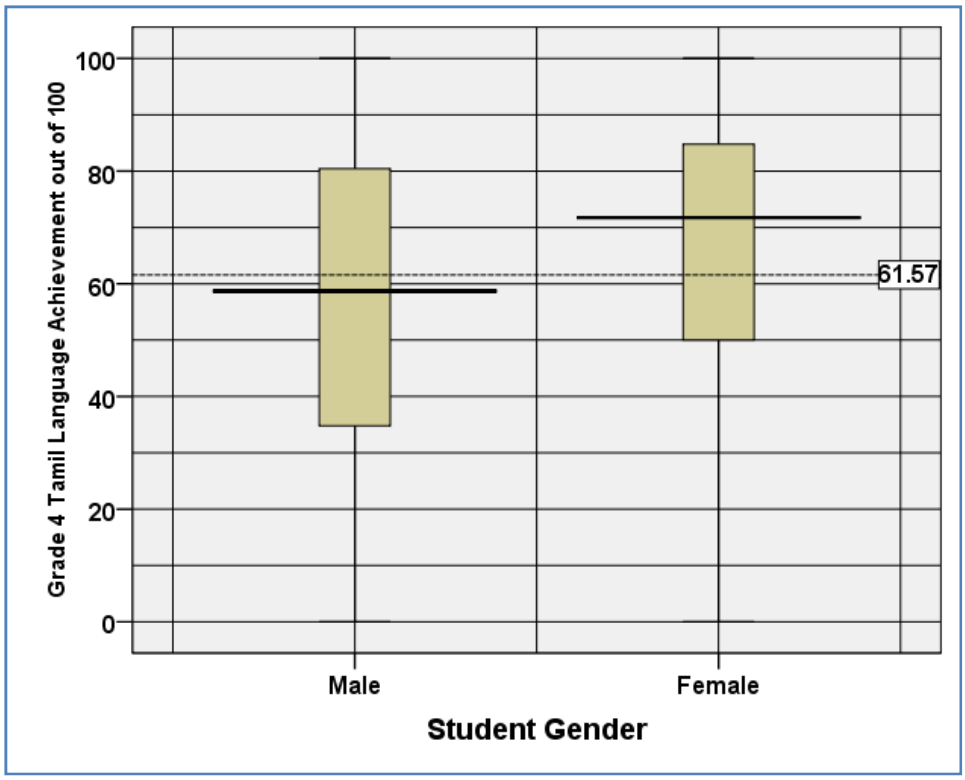

Fig. 4.10: Box plot and whisker plot representing gender wise Tamil language marks

Box plot and whisker chart shows that female students' marks dispersion is higher than the male students. Fifty percent of male students' achievement lie below the female students' achievement. Median of the male students also lie close to the all island mean value line, where as the female students median is higher than the all island mean.

Female students' 25th, 50th and 75th percentile values are higher than male student's percentile values and all island percentile values. This emphasises that the female students' performance is higher.

Summary

- Female students' achievement is higher than male students' achievement.
- There are more high achievers among girls than among boys.

Student achievement by location would be discussed next.

4.6 Achievement levels by location

Table 4.8: Tamil language achievement according to location

Location	Mean	Std. Error of Mean	Standard Deviation	Skewness	Percentile 25	Median 50	Percentile 75
Rural	58.67	0.10	25.81	-0.33	36.96	63.04	80.43
Urban	68.65	0.13	22.33	-0.85	56.52	73.91	86.96
All Island	61.57	0.08	25.26	-0.48	41.30	67.39	82.61

As Table 4.8 indicates, there is variation in achievement among the schools in the different localities. The urban area schools have performed the best and their mean value is above the national mean. On the other hand, the lowest performance is recorded in the rural area schools and their performance is below the national mean. The difference in mean values is graphically shown in Fig. 4.11.

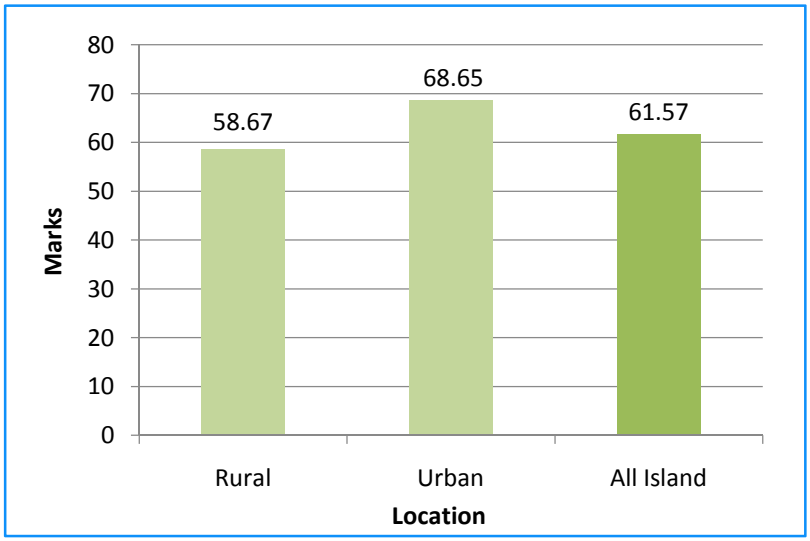

Fig. 4.11: Bar chart representing mean values according to location– Tamil language

As Fig. 4.11 indicates the mean values in the rural area schools are lower than the schools in the urban areas. While the urban area schools achievement is above the national mean, the rural schools performance is lower than the national mean. On the other hand, when the median values given in Table 4.8 are considered in the urban area schools the median is also higher than the rural schools.

The deviation of the marks from the mean according to Table 4.8 is high in the rural area schools (25.81). However, this is quite close to the national SD (25.26). This indicates that there is variation in achievement within Sri Lanka as well as among rural schools.

The dispersion of marks according to location, further illustrates this disparity.

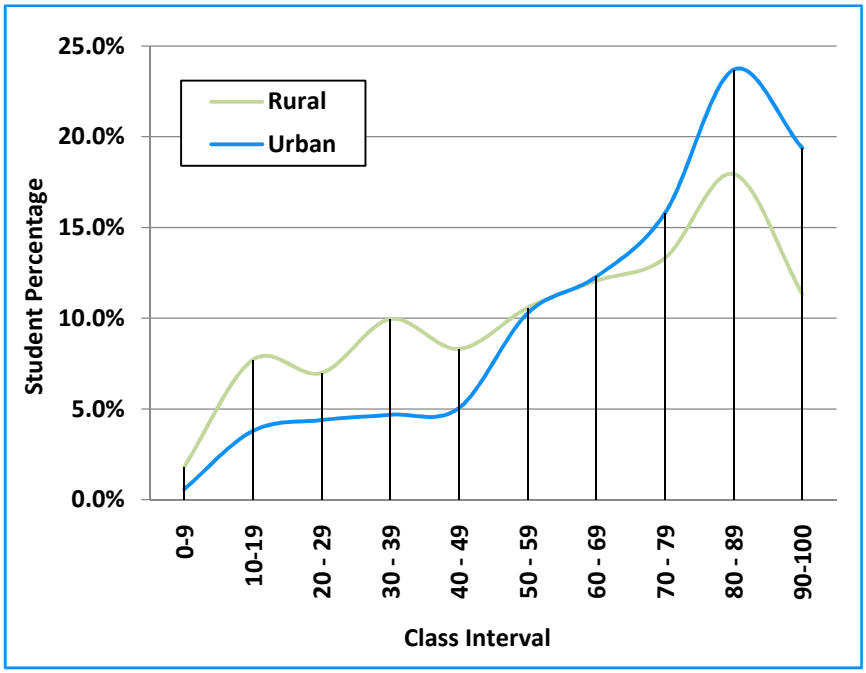

Fig. 4.12: Dispersion of marks by location – Tamil language

Fig. 4.12 displays two negatively skewed curves. Hence, the number of high achievers in both localities are high. However, as has been already discussed the dispersion of marks in the urban area schools are high while the performance in the rural schools is lower. Hence, the patterns of the urban area schools and the rural area schools' curves differ.

These differences can be further illustrated in the cumulative percentage Table 4.9.

Table 4.9: Cumulative student percentages according to the location –Tamil language

Class Interval	Rural		Urban	
	Student %	Cumulative %	Student %	Cumulative %
0-9	1.83	1.83	0.60	0.60
10-19	7.71	9.54	3.80	4.40
20 - 29	6.99	16.53	4.40	8.79
30 - 39	9.95	26.47	4.69	13.49
40 - 49	8.31	34.78	5.07	18.55
50 - 59	10.58	45.36	10.28	28.84
60 - 69	12.06	57.41	12.30	41.13
70 - 79	13.31	70.73	15.80	56.93
80 - 89	**17.94**	**88.67**	**23.70**	**80.63**
90-100	11.33	100.00	19.37	100.00
Total	100.00		100.00	

As Table 4.9 indicates the highest percentage of students in the urban council area schools and rural area schools fall into the class interval 80-89. On the other hand, even though there is 23.70% of students in the urban area schools that falls into this class interval, a lower percentage of (17.94%) rural area students falls into the same class interval. Thus, in Fig 4.12 the two peaks of high achievers differ.

On the other hand, while there are 13.49% of students scoring below 40% in urban area schools, in the rural area schools there is 26.47% of students who has obtained less than 40%. Thus, there is greater variation in achievement in urban council area schools.

Box plot and whisker for location wise Tamil language achievement elaborates the performance further.

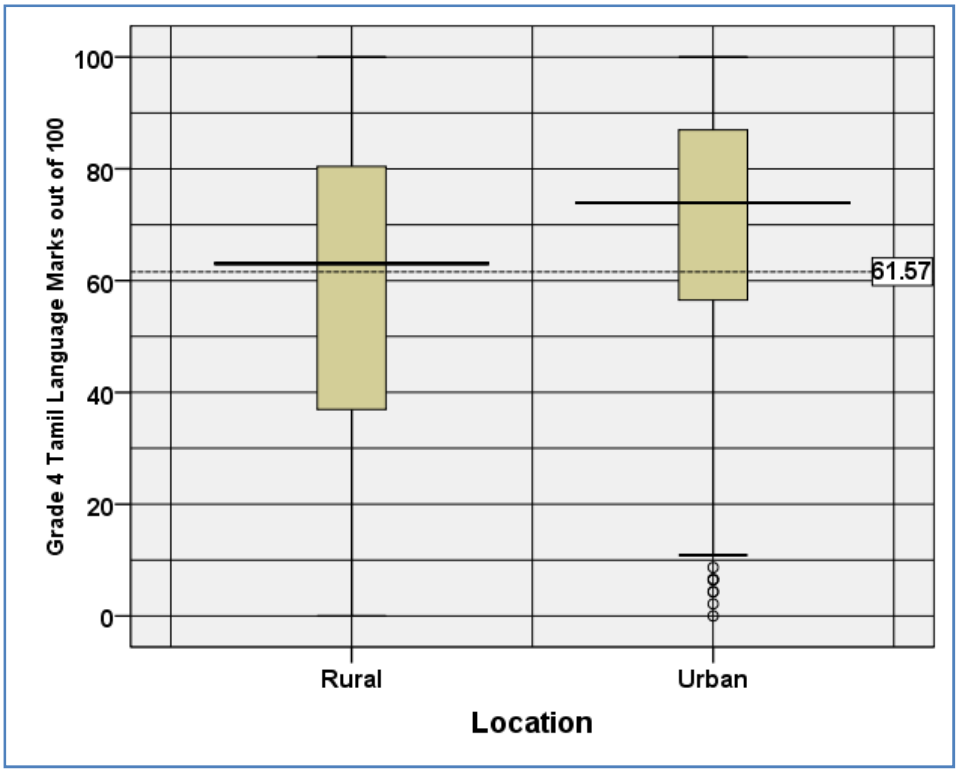

Fig. 4.13: Box plot and whisker plot representing location wise Tamil language marks

As the box plot displays there are differences between the urban and rural school performances at the 25th, 50th and 75th percentiles. The difference at the 25th percentile is quite high. This indicates that there are high number of low achievers in the rural area schools. On the other hand, in spite of the high performers in the urban area schools there are also few outliers.

Further, the spread of the two box plots of the urban and rural schools indicate the greater diversity in performance already discussed.

Summary

- Urban area schools achievement is higher than the rural area schools, when considering the mean values.
- The student achievement is more homogeneous in the urban area schools as their SD is lower than the all island and rural area schools.

4.7 Analysis of achievement by sub skills

The test items in the Tamil language paper too, were designed in relation to the sub skills of language as given in Table 2.5 in chapter 2. Further, the test items were prepared according to the ELCs and the syllabus as indicated in the Pupil's text, workbook and the teacher's guide. The performance of students according to the different sub skills is presented in Fig. 4.14.

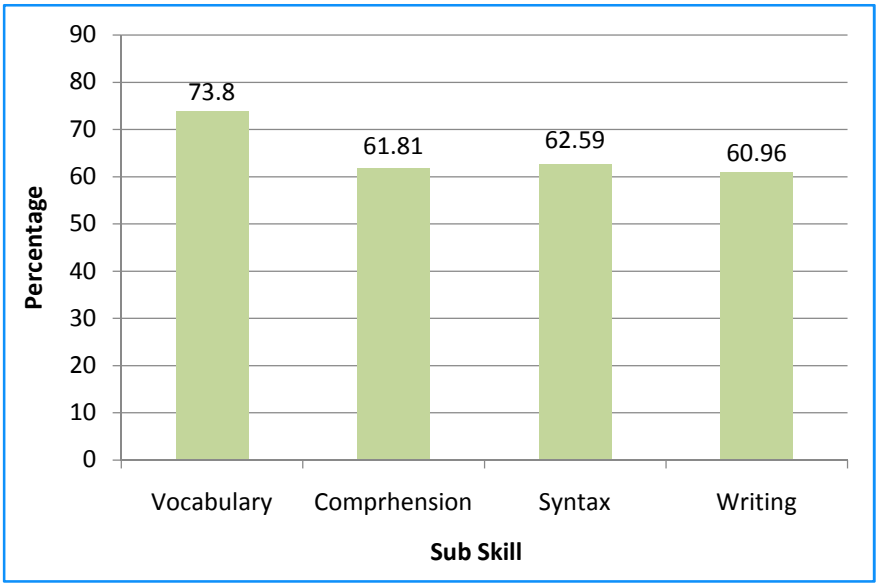

Fig. 4.14: Achievement in sub skills in Tamil language

As Fig. 4.14 indicates, the weakest sub skill is writing. However, there is not much difference between the achievement of skills except in vocabulary.

Student achievement in relation to Essential Learning Competencies (ELCs)/skills

Table 4.10 indicates student performance in relation to the ELCs/skills

Table 4.10: Student achievement inrelation to ELCs/language skills

(ELC No)	Content of the paper	QS No	Correct %
	Vocabulary	1	74.40%
		2	78.00%
		3	84.30%
		4	83.50%
	Similar words	5	60.70%
	Opposite words	6	77.00%
	Terms related to various careers	7	63.30%
	Language terms related to the text book	8	85.80%
	Place, material and Personal nouns	9	68.60%
		10	62.40%
		11	67.40%
3	Filling a form	12	67.70%
		13	68.70%
		14	56.00%
6	Punctuation	15	72.70%
		16	76.10%
8	Spellings	17	64.70%
		18	37.70%
4	Subject verb agreement	19	82.80%
		20	24.30%
		21	56.80%
		22	42.30%
5	Sequencing	23	59.10%
		24	55.20%
7	Read and comprehend simple poem	25	68.40%
		26	67.20%
		27	66.40%
47	Read and comprehend invitations	28	83.90%
		29	74.50%
		30	52.10%
		31	62.60%
	Writing meaningful sentences	32	60.10%
		33	82.80%
		34	73.50%
	Writing	35	59.00%
		36	58.70%
		37	56.80%
		38	55.70%
		39	52.60%
		40	48.00%

According to this table students are weak in subject verb agreement (syntax), spellings of some words and sequencing.

Facility index values for the Tamil language paper

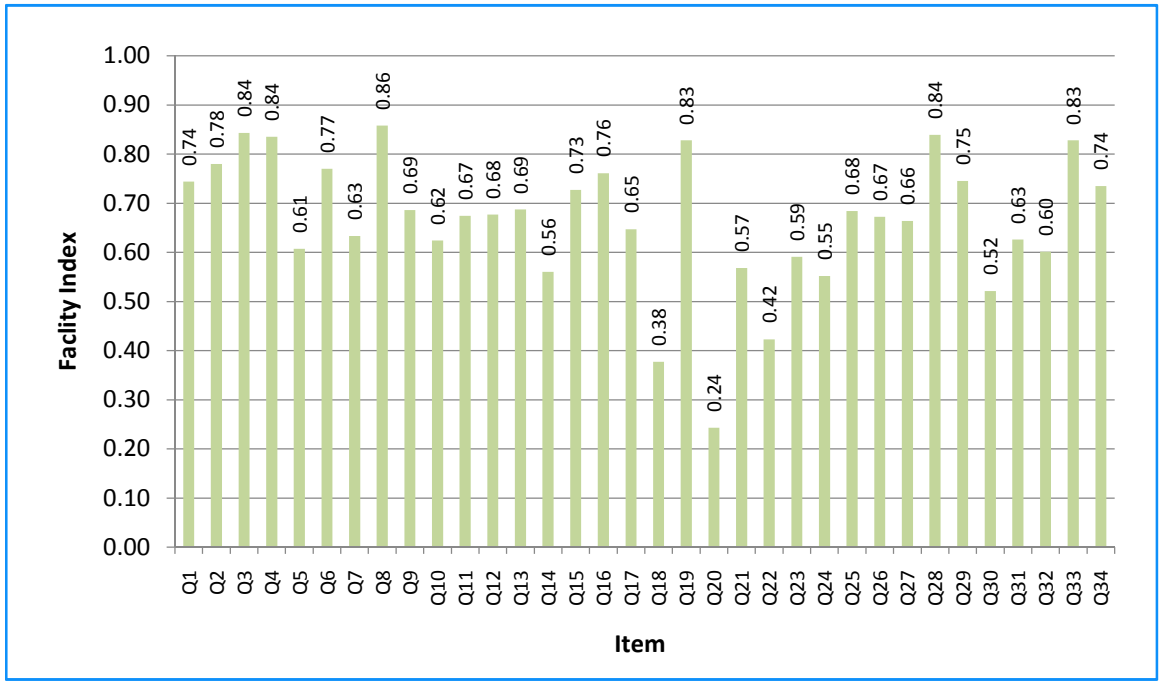

Fig. 4.15: Facility values for the different test items –Tamil language

According to Table 4.10 students' achievement is lowest in question numbers 18 and 20. These questions were related to spellings and syntax. This is also evident in the Figure 4.15 where the facility values are lowest for these two questions. Therefore, it is not possible to conclude that students' knowledge of syntax is satisfactory.

The achievement in the writing task is further analyzed in Fig. 4.16. This analysis indicates the percentage of completely grammatically correct sentences, partially correct and incorrect sentences and the percentage not attempted.

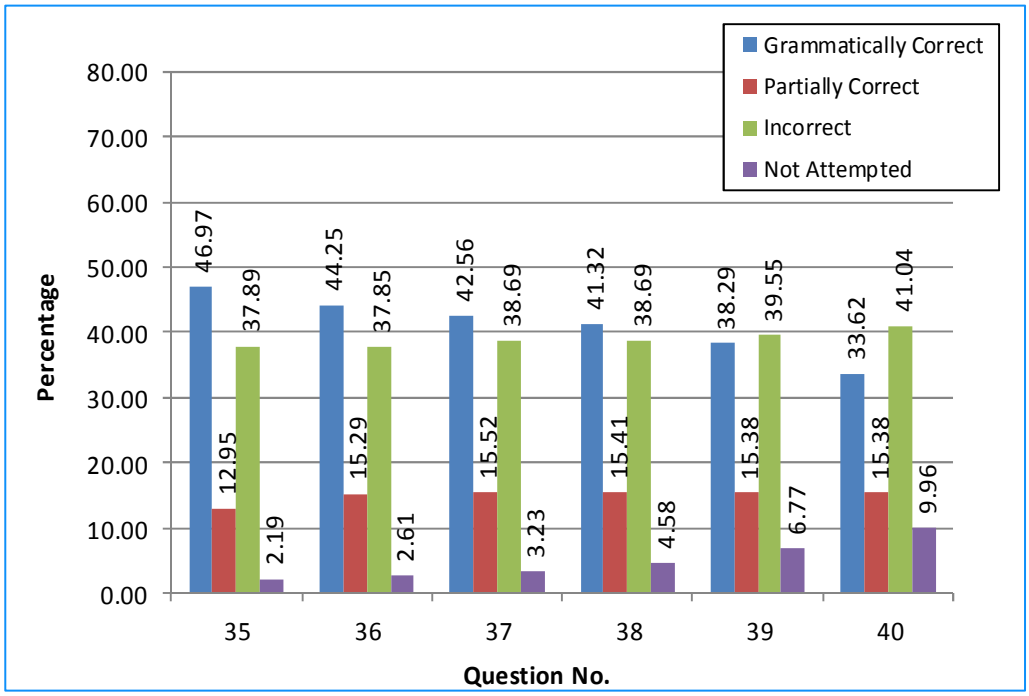

Fig. 4.16: Competency related to writing skills- Tamil language

The writing task was to describe a picture which related to a specified ELC for the grade. As Fig. 4.16, displays there is more than 37% of students who has given incorrect sentences. There is also 12 -15% of students who has given partially correct sentences. Further, there are 2-9% of students who has not even attempted to write at least one sentence. Therefore, it could be concluded that even though students' knowledge of vocabulary and syntax appears to be satisfactory they are unable to use this knowledge in producing sentences. This could be due to ELCs not been achieved. Further, as discussed in relation to Sinhala the ELCs do not go beyond the sentence level. However, in the textbook students are expected to write paragraphs.

While part I of this chapter discussed the patterns in achievement, part II will discuss the trends in achievement over the period 2013-2015.

Part II- Comparison of achievement level of students in 2013 with that of 2015

Trends in achievement over the period 2013-2015 will first be discussed at national level.

4.8 Trends in achievement at national level

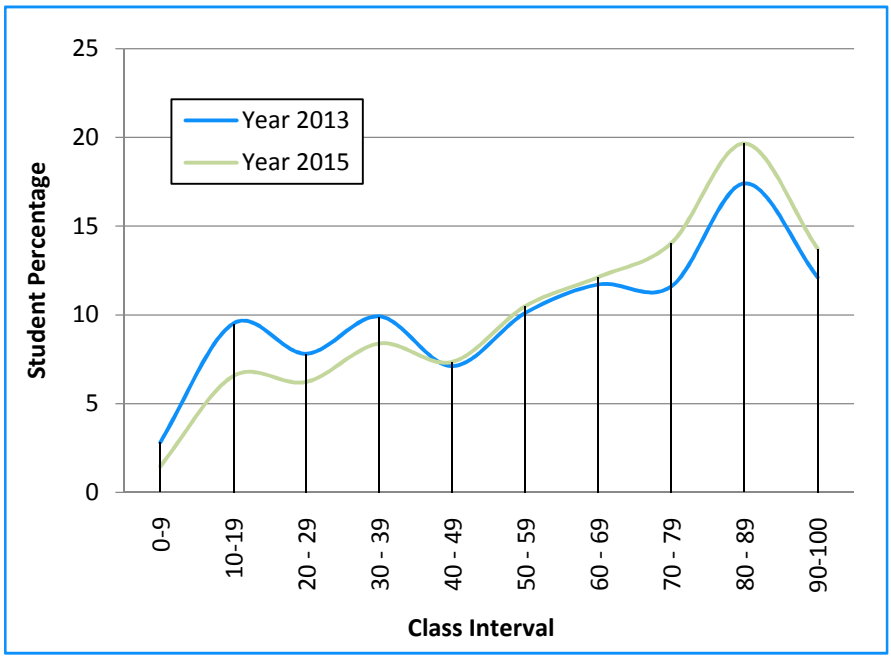

Fig. 4.17: Comparison of all island achievement in Tamil language 2013 -2015 – dispersion of marks

As Fig. 4.17 indicates there is an increase in student performance in the year 2015. This increase is due to the percentage of high achievers being increased and the percentage of low achievers being decreased.

This trend could be explained using the cumulative percentage table.

Table 4.11: Comparison of all island achievement in Tamil language – Cumulative percentages

Class Interval	Year 2013		Year 2015	
	Student %	Cumulative %	Student %	Cumulative %
0-9	2.80	2.80	1.46	1.46
10-19	9.50	12.30	6.55	8.01
20 - 29	7.80	20.10	6.22	14.23
30 - 39	9.90	30.00	8.39	22.62
40 - 49	7.10	37.10	7.35	29.96
50 - 59	10.10	47.20	10.49	40.45
60 - 69	11.70	58.90	12.13	52.58
70 - 79	11.60	70.50	14.05	66.63
80 - 89	17.40	87.90	19.65	86.28
90-100	12.10	100.00	13.72	100.00
Total	100.00		100.00	

According to Table 4.11 the percentage of high achievers belonging to the class intervals 50-59 to 90-100 has increased. On the other hand, the percentage of students belonging to the class intervals 0-9 up to 30-39 has decreased. This trend has resulted in an increase in the all island mean value from 58.28 to 61.57.

4.9 Provincial wise comparison of student achievement

As Fig 4.18 displays except in the Eastern Province in all other provinces the mean value has increased. While the decrease in the Eastern Province (.91) is very slight the increase in the North Central and Southern is quite high. While the increase in the Southern Province is 24.20% in the North Central Province it is 13.43%. These increases have contributed positively to increase the all island mean value.

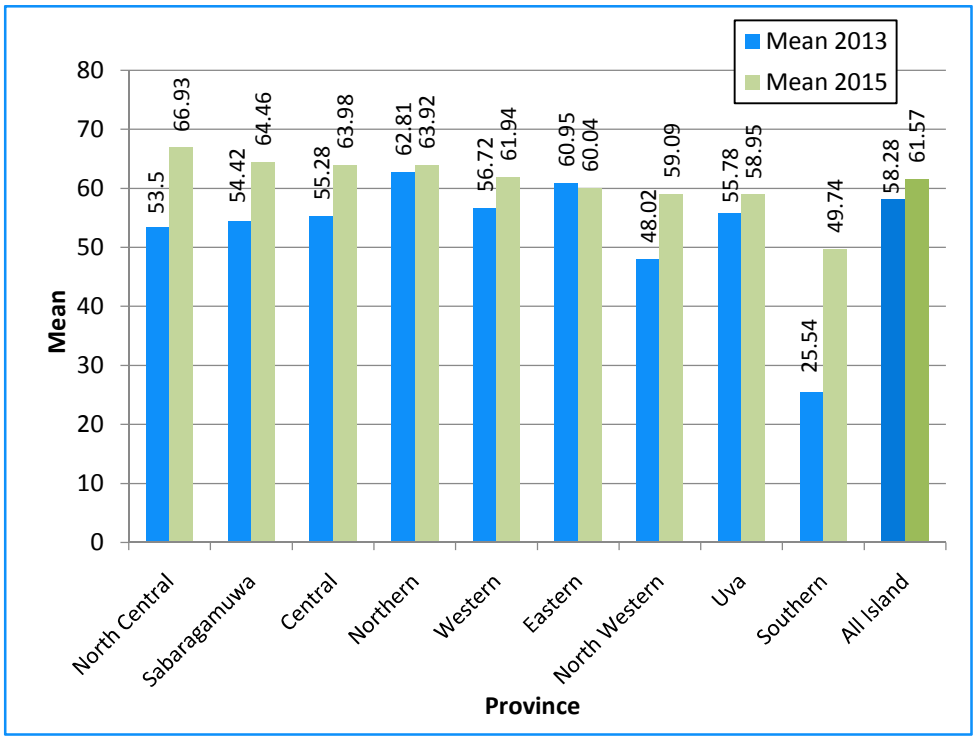

Fig. 4.18: Provincial wise comparison of student achievement – 2013 & 2015

Table 4.12: Provincial wise comparison of student achievement – 2013 & 2015

Province	Year 2013		Year 2015		Z
	Mean	Standard Deviation	Mean	Standard Deviation	
Central	55.28	27.01	63.98	26.28	5.60*
Eastern	60.96	27.69	60.04	24.85	0.83
North Central	53.50	26.67	66.93	21.64	4.69*
North Western	48.02	26.65	59.09	26.26	3.67*
Northern	62.81	24.71	63.92	24.56	1.11
Sabaragamuwa	54.42	25.13	64.46	27.10	3.83*
Southern	25.54	13.18	49.74	29.81	6.09*
Uva	55.78	27.81	58.95	27.47	1.34
Western	56.72	26.50	61.94	20.27	2.02*
All Island	58.28	26.98	61.57	25.27	5.62*

* Values are significant at 95%

As the line curves on page 85 illustrates percentage of high achievers has increased in all other provinces, except in the Eastern province.

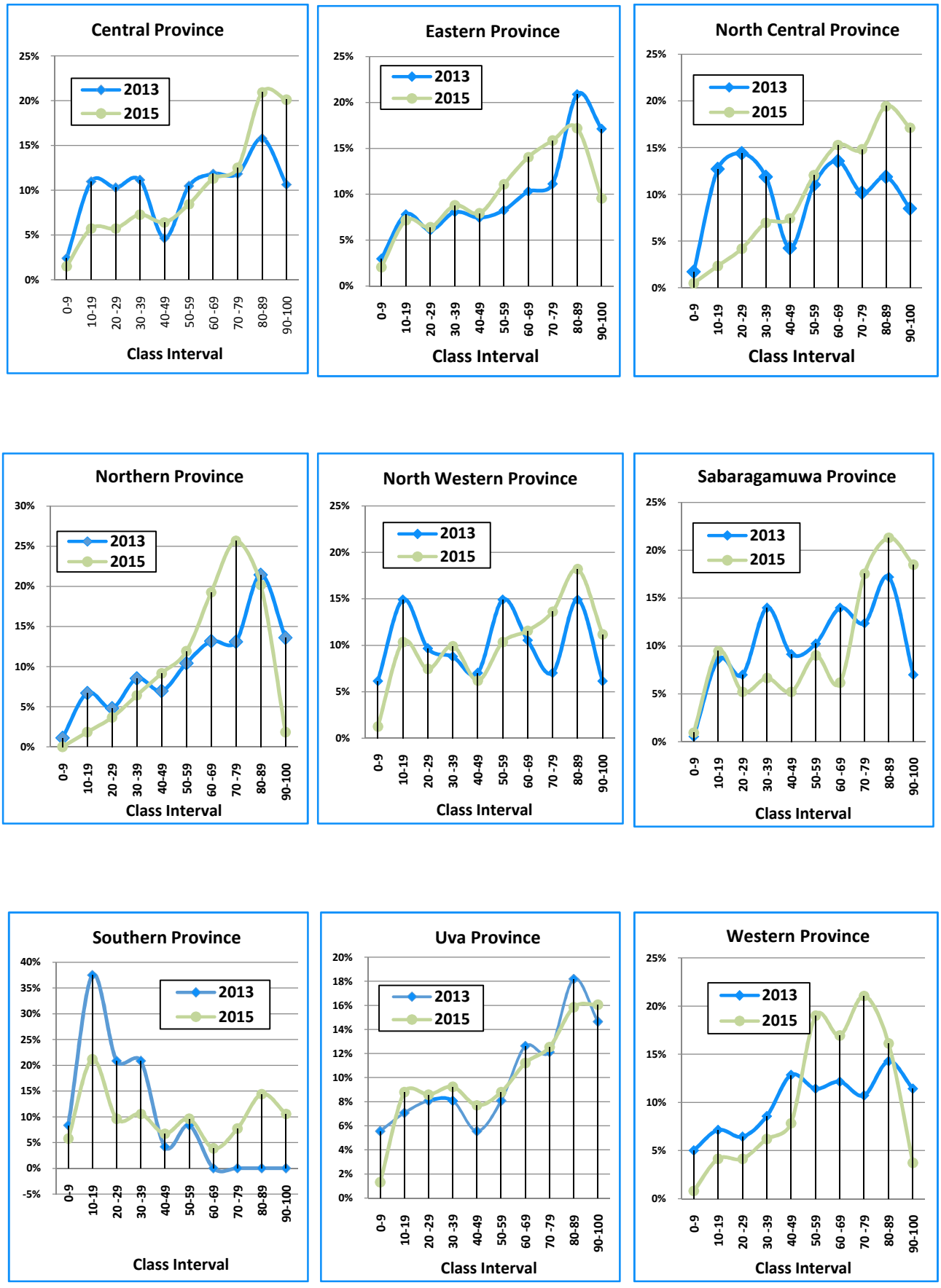

Fig. 4.19: Comparison of provincial wise distribution of marks – Tamil language

4.10 Comparison of marks according to school type

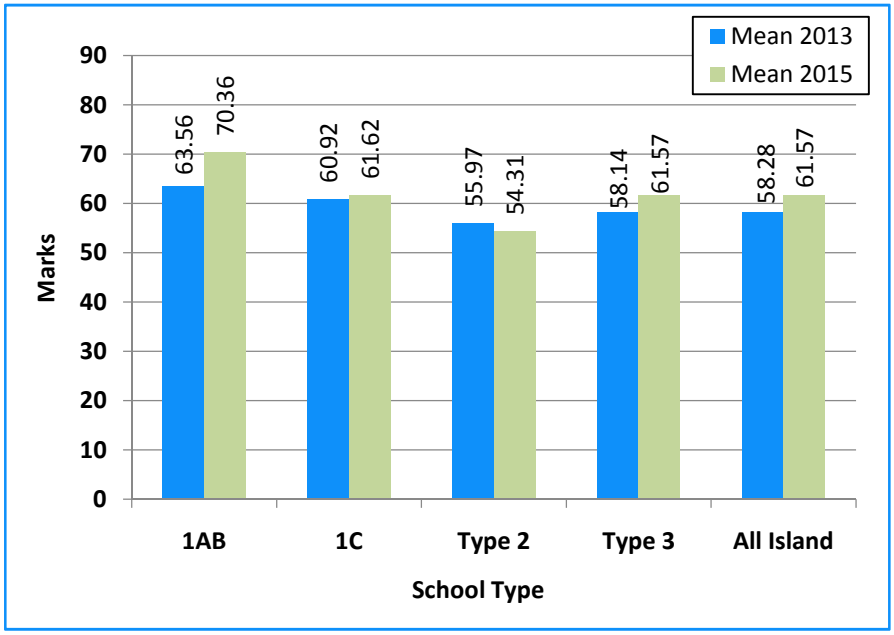

Fig. 4.20: All island comparison of mean values according to school type

Performance in all school types except in Type 2 schools has increased while in 1C schools this is slight, the improvement in 1AB schools is quite high. On the other hand, the improvement in the other two school types is also not very high. Therefore, 1AB school performance has greatly contributed to the improvement in the all island performance.

Table 4.13: Comparison of achievement of 1AB schools

Class Interval	1AB-Year 2013		1AB-Year 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	0.52	0.52	0.25	0.25
10-19	6.22	6.74	3.14	3.40
20 - 29	5.44	12.18	3.27	6.67
30 - 39	8.81	20.98	4.15	10.82
40 - 49	8.29	29.27	5.79	16.60
50 - 59	9.59	38.86	8.93	25.53
60 - 69	10.36	49.22	10.57	36.10
70 - 79	12.44	61.66	15.09	51.19
80 - 89	21.76	83.42	25.66	76.86
90-100	16.58	100.00	23.14	100.00
Total	100		100	

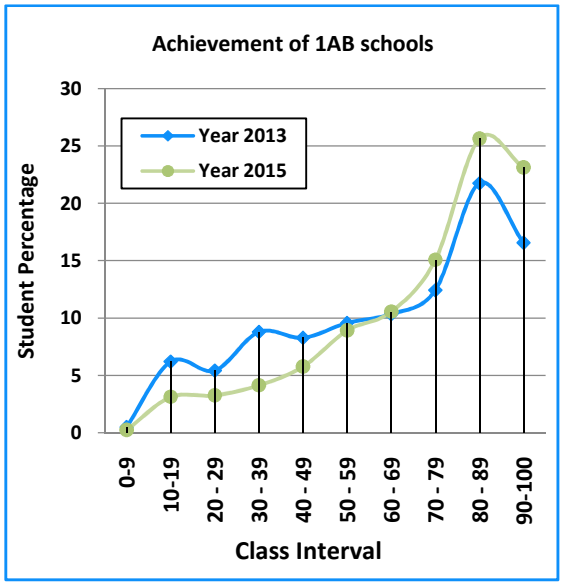

Fig. 4.21: Comparison of achievement of 1AB schools – 2013 & 2015

As Table 4.13 and Fig. 4.21 display the increase in the performance of 1AB schools is due to the increase in the percentage of high achievers.

Table 4.14: Comparison of achievement of Type 3 schools

Class Interval	Type 3 - 2013		Type 3 - 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	1.94	1.94	1.39	1.39
10-19	9.77	11.71	5.49	6.87
20 - 29	6.64	18.34	5.97	12.84
30 - 39	8.29	26.64	8.98	21.82
40 - 49	7.56	34.19	6.69	28.51
50 - 59	10.78	44.98	10.13	38.64
60 - 69	12.44	57.42	11.63	50.27
70 - 79	12.90	70.32	14.41	64.68
80 - 89	17.97	88.29	21.16	85.83
90-100	11.71	100.00	14.17	100.00
Total	100		100	

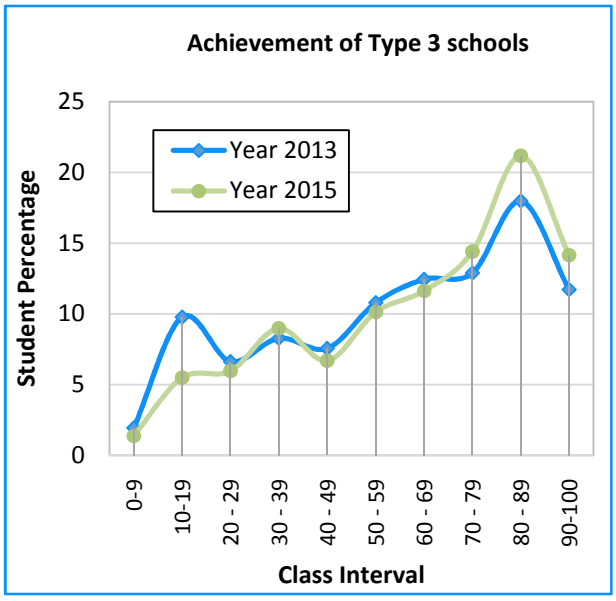

Fig. 4.22: Comparison of achievement of Type 3 schools – 2013 & 2015

The same pattern could be observed in Type 3 schools. As Table 4.14 and Fig. 4.22 display the percentage of low achievers has decreased and the percentage of high achievers has increased.

Table 4.15: Comparison of achievement of 1C schools

Class Interval	1C - 2013		1C - 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	2.30	2.30	1.23	1.23
10-19	7.92	10.22	7.67	8.90
20 - 29	6.39	16.60	5.78	14.68
30 - 39	8.81	25.42	7.58	22.25
40 - 49	6.64	32.06	6.82	29.07
50 - 59	9.83	41.89	13.07	42.14
60 - 69	11.37	53.26	13.92	56.06
70 - 79	9.96	63.22	13.26	69.32
80 - 89	19.92	83.14	18.56	87.88
90-100	16.86	100.00	12.12	100.00
Total	100		100	

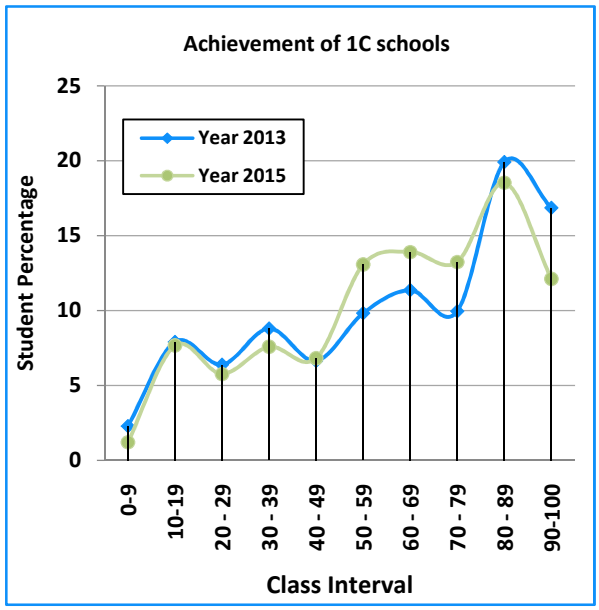

Fig. 4.23: Comparison of achievement of 1C schools – 2013 & 2015

On the other hand, when Table 4.15 and Fig. 4.23 are considered in 1C schools the percentage of high achievers has decreased. This decrease is compensated by the increase in percentage of students that falls into the class intervals 40-79.

Table 4.16: Comparison of achievement of Type 2 schools

Class Interval	Type 2 - 2013		Type 2 - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	3.54	3.54	2.78	2.78
10-19	8.52	12.06	9.81	12.59
20 - 29	8.09	20.14	9.42	22.00
30 - 39	10.40	30.54	11.60	33.60
40 - 49	6.14	36.68	10.21	43.81
50 - 59	9.10	45.78	9.61	53.42
60 - 69	12.20	57.98	12.29	65.71
70 - 79	11.62	69.60	13.48	79.19
80 - 89	18.63	88.23	13.58	92.77
90-100	11.77	100.00	7.23	100.00
Total	100		100	

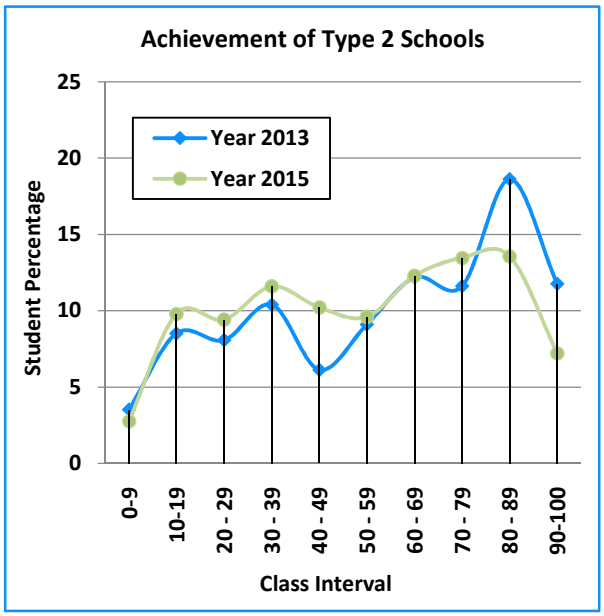

Fig. 4.24: Comparison of achievement of Type 2 schools – 2013 & 2015

As Table 4.16 and Fig. 4.24 indicate percentage of students that falls into the class interval 80-89 has decreased. This has resulted in a decrease in student performance in Type 2 schools.

4.11 Comparison of marks according to gender

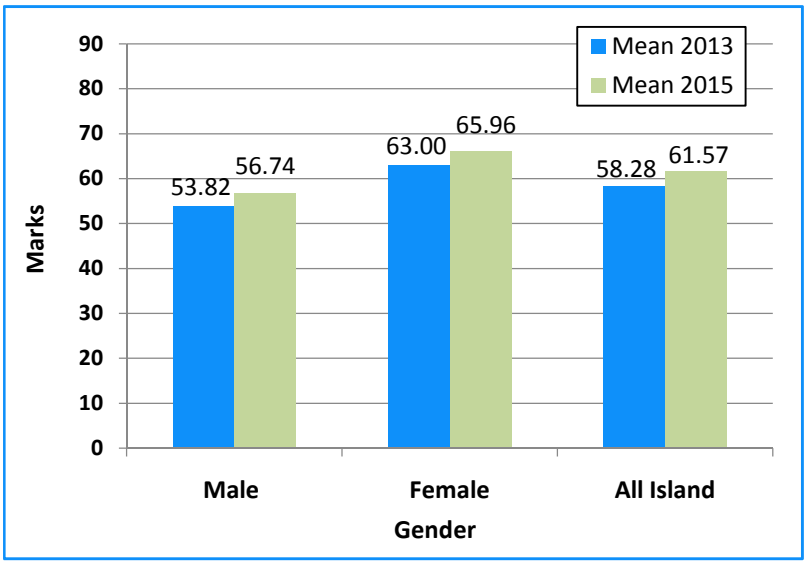

Fig. 4.25: All island comparison of mean values according to gender

As Fig. 4.25 indicates there is an improvement in achievement in both males and females. Although this increase is not very high it has contributed to the increase in the all island achievement in the Tamil language.

Table 4.17: Comparison of achievement of male students

Class Interval	Male - 2013		Male - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	3.37	3.37	2.25	2.25
10-19	10.69	14.06	8.53	10.77
20 - 29	8.23	22.29	8.16	18.94
30 - 39	9.99	32.28	9.95	28.89
40 - 49	7.96	40.25	7.84	36.73
50 - 59	10.10	50.35	11.42	48.14
60 - 69	11.06	61.41	12.24	60.39
70 - 79	10.64	72.05	13.02	73.41
80 - 89	18.01	90.06	16.83	90.23
90-100	9.94	100.00	9.77	100.00
Total	100		100	

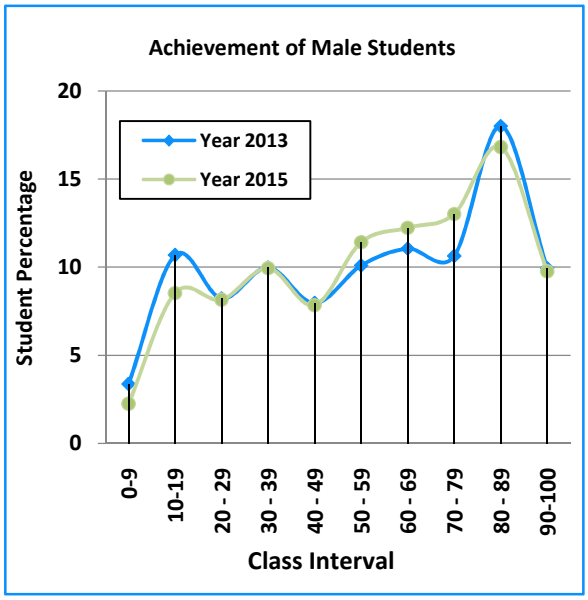

Fig. 4.26: Comparison of achievement of male students – 2013 & 2015

As Table 4.17 and Fig. 4.26 display the percentage of high achievers (80-89) has decreased. However, the percentage that falls between 50-80 has increased. This has resulted in the increase in the overall achievement of males.

Table 4.18: Comparison of achievement of female students

Class Interval	Female - 2013		Female - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	1.53	1.53	0.73	0.73
10-19	6.22	7.75	4.70	5.43
20 - 29	5.71	13.46	4.41	9.84
30 - 39	8.48	21.95	6.93	16.77
40 - 49	5.77	27.71	6.89	23.65
50 - 59	9.50	37.22	9.62	33.28
60 - 69	12.78	50.00	12.02	45.30
70 - 79	12.90	62.90	15.01	60.31
80 - 89	20.14	83.03	22.28	82.59
90-100	16.97	100.00	17.41	100.00
Total	100		100	

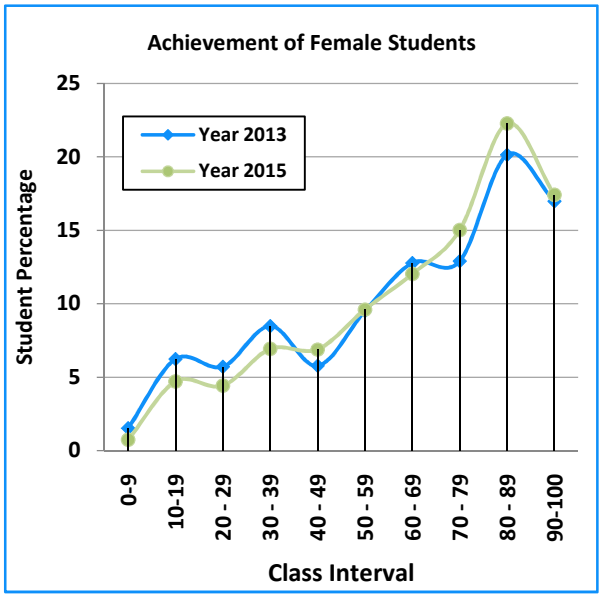

Fig. 4.27: Comparison of achievement of female students – 2013 & 2015

In comparison to male performance there is an increase in the performance of high achievers among the females. The percentage that falls between the class interval 80-100 has increased while the percentage of low achievers has decreased.

4.12 Comparison according to location

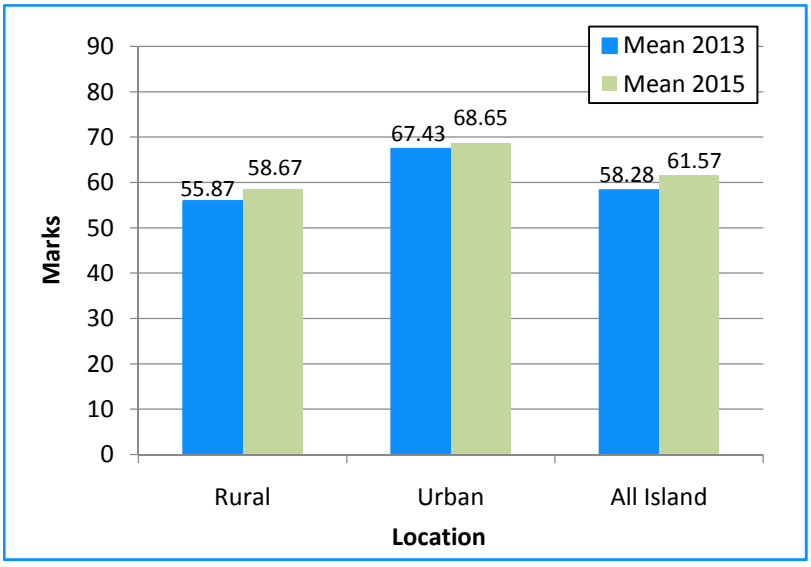

Fig. 4.28: All island comparison of mean values according to location

As Fig. 4.28 indicates there is an improvement in the achievement of Tamil language both in the urban and rural area schools. Although the gap between the rural schools and the urban schools still exists, it is a positive sign that the increase in student achievement in the rural areas is greater than the increase in the urban areas. Therefore, the improvement in the rural schools' performance has contributed positively to the all island performance.

Table 4.19: Comparison of achievement of rural schools

Class Interval	Rural - 2013		Rural - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	3.18	3.18	1.83	1.83
10-19	9.81	12.99	7.71	9.54
20 - 29	8.05	21.05	6.99	16.53
30 - 39	10.10	31.15	9.95	26.47
40 - 49	7.06	38.21	8.31	34.78
50 - 59	10.32	48.54	10.58	45.36
60 - 69	11.79	60.32	12.06	57.41
70 - 79	11.93	72.25	13.31	70.73
80 - 89	17.24	89.49	17.94	88.67
90-100	10.51	100.00	11.33	100.00
Total	100		100	

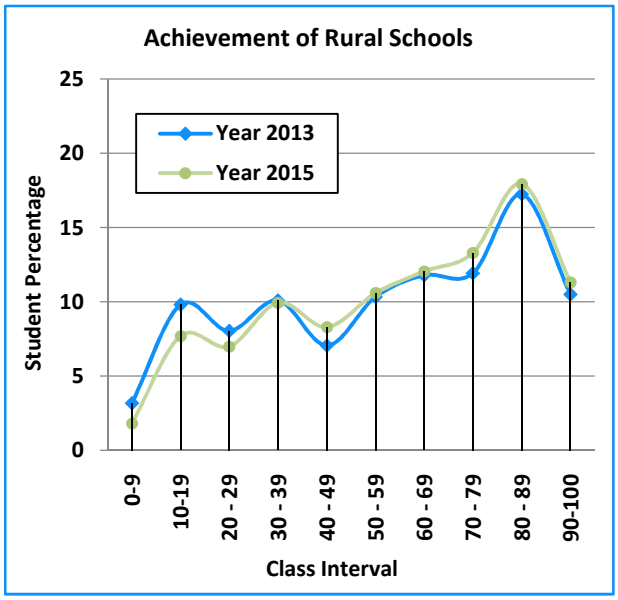

Fig. 4.29: Comparison of achievement of rural schools – 2013 & 2015

Table 4.19 and Fig. 4.29 indicate the percentage of students that falls between the class interval 40-100 has increased.

Table 4.20: Comparison of achievement of urban schools

Class Interval	Urban - 2013		Urban - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	0.33	0.33	0.60	0.60
10-19	4.63	4.96	3.80	4.40
20 - 29	3.86	8.82	4.40	8.79
30 - 39	6.73	15.55	4.69	13.49
40 - 49	6.39	21.94	5.07	18.55
50 - 59	8.27	30.21	10.28	28.84
60 - 69	12.24	42.45	12.30	41.13
70 - 79	11.14	53.58	15.80	56.93
80 - 89	24.48	78.06	23.70	80.63
90-100	21.94	100.00	19.37	100.00
Total	100		100	

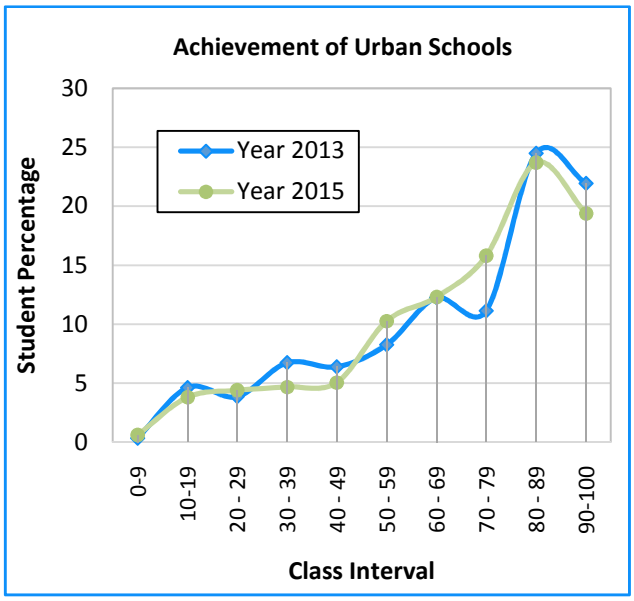

Fig. 4.30: Comparison of achievement of urban schools – 2013 & 2015

On the other hand, as Table 4.20 and Fig. 4.30 illustrate the percentage of students that falls between the class interval 80-100 had decreased. However, there is an increase in the percentage that falls between 50-59 and 70-79.

4.13 Skill analysis comparison

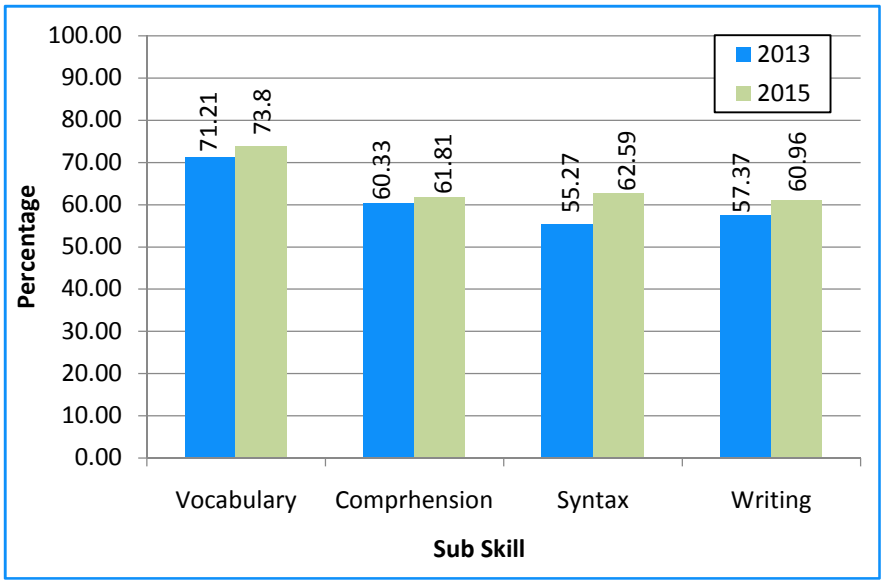

Fig. 4.31: Comparison of achievement of sub skills in Tamil language

When student performance in the language skills are considered there is an increase in performance in all sub skills.

In order to understand how this trend has affected the overall achievement of ELCs Table 4.21 analyzes the achievement of ELCs.

Table 4.21: Comparison of achievement of ELCs/language skills

ELC no	Description	Q.No	% of correct responses - 2013	% of correct responses - 2015	change
	Vocabulary	1	77.70%	74.40%	-
		2	79.00%	78.00%	-
		3	79.80%	84.30%	+
		4	86.00%	83.50%	-
	Similar words	5	53.90%	60.70%	+
	Opposite words	6	75.40%	77.00%	+
	Terms related to various careers	7	63.30%	63.30%	No change
	Language terms related to the text book	8	82.90%	85.80%	+
	Place, material and Personal nouns	9	64.00%	68.60%	+
		10	57.90%	62.40%	+
		11	63.40%	67.40%	+
3	Filling a form	12	62.10%	67.70%	+
		13	64.20%	68.70%	+
		14	52.00%	56.00%	+
6	Punctuation	15	54.50%	72.70%	+
		16	64.90%	76.10%	+
8	Spellings	17	60.10%	64.70%	+
		18	36.10%	37.70%	+
4	Subject verb agreement	19	79.60%	82.80%	+
		20	24.40%	24.30%	-
		21	55.10%	56.80%	+
		22	37.90%	42.30%	+
5	Sequencing	23	53.20%	59.10%	+
		24	48.10%	55.20%	+
7	Read and comprehend simple poem	25	65.10%	68.40%	+
		26	62.80%	67.20%	+
		27	63.00%	66.40%	+
47	Read and comprehend invitations	28	79.30%	83.90%	+
		29	68.90%	74.50%	+
		30	47.40%	52.10%	+
		31	57.80%	62.60%	+
	Writing meaningful sentences	32	55.50%	60.10%	+
		33	77.20%	82.80%	+
		34	62.70%	73.50%	+
	Writing	35	64.80%	59.00%	-
		36	60.50%	58.70%	-
		37	58.10%	56.80%	-
		38	57.50%	55.70%	-
		39	53.90%	52.60%	-
		40	49.40%	48.00%	-

Table 4.21 displays there is improvement in students' achievement in skills and competencies during the period 2013-2015. However, students' knowledge of spellings is still weak. Further, subject verb agreement is another area that needs to improve further. Low performance in these competencies seems to have affected the writing skills.

Therefore, the performance in the writing task was further analysed in Table 4.22.

Table 4.22: Comparison of achievement of writing skills

Question No	Writing	Year 2013	Year 2015	Change
35	Grammatically Correct	46.72%	46.97%	+
	One Word Answer	20.94%	12.95%	-
	Incorrect	29.73%	37.89%	+
	Not Attempted	2.61%	2.19%	-
36	Grammatically Correct	42.92%	44.25%	+
	One Word Answer	20.77%	15.29%	-
	Incorrect	33.17%	37.85%	+
	Not Attempted	3.13%	2.61%	-
37	Grammatically Correct	40.52%	42.56%	+
	One Word Answer	20.75%	15.52%	-
	Incorrect	35.15%	38.69%	+
	Not Attempted	3.49%	3.23%	-
38	Grammatically Correct	38.64%	41.32%	+
	One Word Answer	21.02%	15.41%	-
	Incorrect	35.86%	38.69%	+
	Not Attempted	4.48%	4.58%	+
39	Grammatically Correct	36.16%	38.29%	+
	One Word Answer	20.01%	15.38%	-
	Incorrect	37.46%	39.55%	+
	Not Attempted	6.38%	6.77%	+
40	Grammatically Correct	31.46%	33.62%	+
	One Word Answer	19.98%	15.38%	-
	Incorrect	40.07%	41.04%	+
	Not Attempted	8.49%	9.96%	+

As the analysis in Table 4.22 indicates although the percentage of grammatically correct sentences has slightly increased the percentage of incorrect responses has increased even more.

4.14 Summary

Part I of this chapter described student performance in relation to the achievement of learning outcomes in the Tamil language. The discussion pertained to both national and provincial level. Further, achievement was analyzed according to school type, gender and location.

Test items used to assess students' performance were analyzed to assess how far they have been successful in achieving sub skills of the language expected to be achieved by grade 4 pupils.

Part II described the trends in achievement between 2013-2015.

It could be concluded that even though overall the achievement of learning outcomes in the Tamil language is satisfactory there is still disparity in achievement provincial wise as well as location and gender wise.

Chapter Five

Pattern and Trends in Achievement: Second Language – English 2015

5.1 Introduction

This chapter presents the patterns and trends in achievement of the students in the English Language.

Part I – Patterns of achievement in English Language

First, national level student achievement in the English language will be discussed.

5.2 Patterns of achievement at national level

The frequency polygon shown in Fig. 5.1 outlines the total picture of the distribution of marks of grade 04 students in the English language.

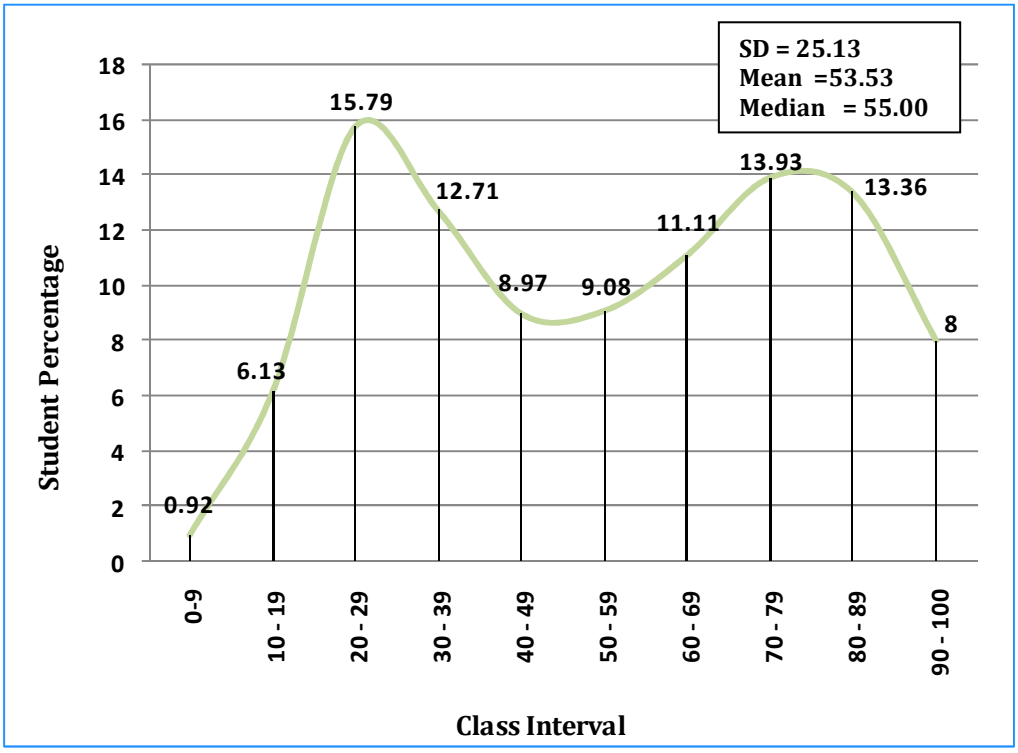

Fig. 5.1: All island achievement in English language 2015 – dispersion of marks

Fig. 5.1 depicts a bi model distribution of marks. As can be seen there is a higher percentage of students with low marks. At the same time those who have scored high marks are also relatively high. The characteristics of this curve can be further elaborated through the cumulative percentage table given below.

Table 5.1: All island achievement in English language 2015– cumulative percentages

Class Interval	Student %	Cumulative %
0 - 9	0.92	0.92
10 - 19	6.13	7.05
20 - 29	**15.79**	**22.84**
30 - 39	12.71	35.55
40 - 49	8.97	44.52
50 - 59	9.08	53.59
60 - 69	11.11	64.71
70 - 79	13.93	78.64
80 - 89	13.36	92.00
90 - 100	8.00	100.00
Total	100.00	

As can be seen from Table 5.1, the highest percentage of students (15.79) has scored marks between the class interval 20-29. Further, there is 12.71% of students who has scored marks between 30-39. Therefore, there is a cumulative percentage of 36 students who has scored less than the pass mark of 40.

On the other hand, the highest percentage of students who has scored high marks falls between the marks range of 70-79 and it is 13.93%.

These two groups of high achievers and the low achievers had resulted in the bi model line curve. The national median is 55. This means that 55% of the students has scored above the mean which is 53.53. The high achievers have contributed positively to increase the national mean value.

However, the Standard Deviation is **25.13** which is quite high**.** The high SD suggests that there is wide variation in student achievement.

The box plot graph in Fig. 5.2 illustrates student achievement patterns further.

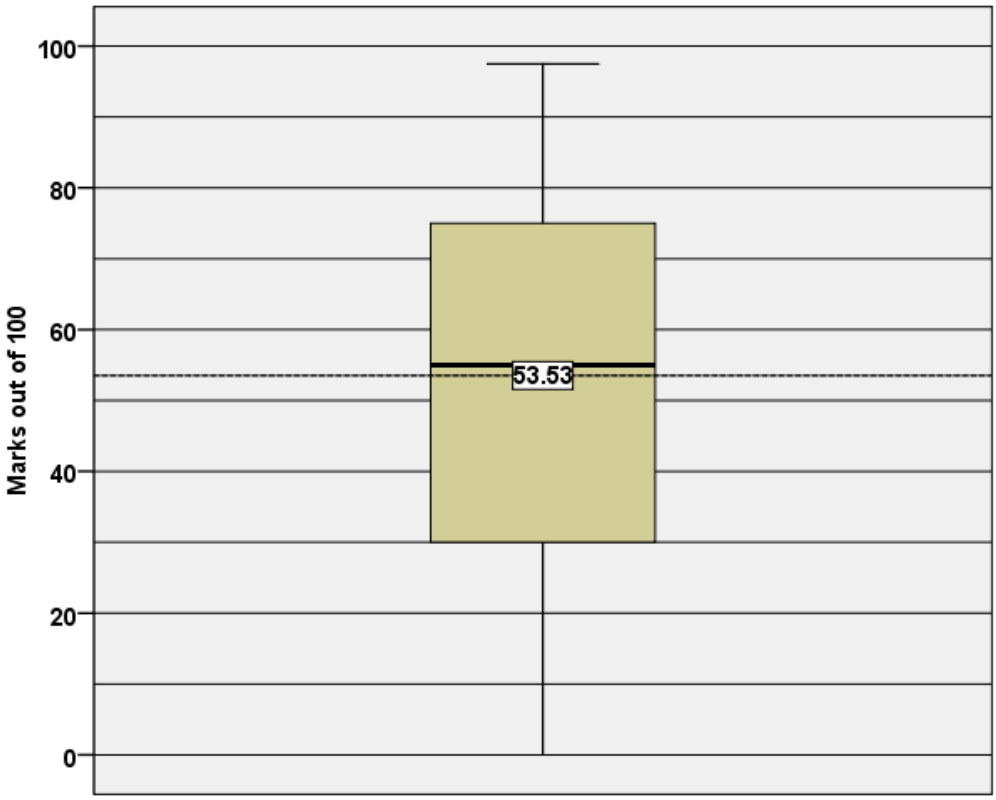

Fig. 5.2: Box plot chart representing all island English language achievement

According to Fig. 5.2, the median is above the mean value, illustrating that 50% of students has scored above the mean value.

This graph also shows that more than 25% of the students' achievement lies below the 30 marks point. Similarly 25% of students' achievement lies above the 75 marks point. On the other hand 50% of students marks range between 30 and 75.

Summary of national level achievement

- National level mean and median values are 53.53 and 55.0 respectively.
- Even though the overall achievement in English language is satisfactory, there is wide disparity in achievement resulting in an SD of 25.13.

Provincial wise student achievement will be discussed next.

5.3 Provincial wise student achievement

Table 5.2: Provincial achievement in English language 2015 – Summary statistics

Province	Mean	Rank	Standard Error of Mean	Standard Deviation	skewness	Percentile (p25)	Median (p50)	Percentile (p75)
Western	58.85	1	0.09	24.95	-0.29	35.0	62.5	80.0
Southern	57.20	2	0.12	25.49	-0.23	32.5	62.5	80.0
Sabaragamuwa	54.30	3	0.14	24.81	-0.04	30.0	55.0	77.5
North Western	54.01	4	0.12	25.21	-0.01	30.0	55.0	77.5
Central	52.15	5	0.11	24.20	0.00	30.0	52.5	72.5
North Central	49.88	6	0.15	23.24	0.15	27.5	47.5	70.0
Northern	47.88	7	0.18	24.82	0.30	25.0	42.5	70.0
Eastern	47.86	8	0.13	25.12	0.22	25.0	45.0	70.0
Uva	46.44	9	0.16	24.01	0.34	25.0	42.5	67.5
All Island	**53.53**		**0.04**	**25.13**	**-0.02**	**30.0**	**55.0**	**75.0**

As Table 5.2 indicates based on provincial wise mean achievements, Western Province ranks first. Southern Province is ranked second with a slightly lower mean value.

Achievement wise, the provinces fall into two categories. Western, Southern, Sabaragamuwa and North Western with mean scores above the national mean, fall into the higher category. Central, North Central, Northern, Eastern and Uva Provinces which are below the national mean fall into the lower category. However, among the lower category there is much variation in achievement than in the higher category. There is a six point difference between Central and Uva Provinces mean scores. There is even greater variation between the highest scoring Western and the lowest scoring Uva Province, with a difference of 12 points.

However, the significant feature is that in all the provinces the mean score is above the pass mark of 40.

These disparities are further highlighted through the bar chart given in Fig. 5.3.

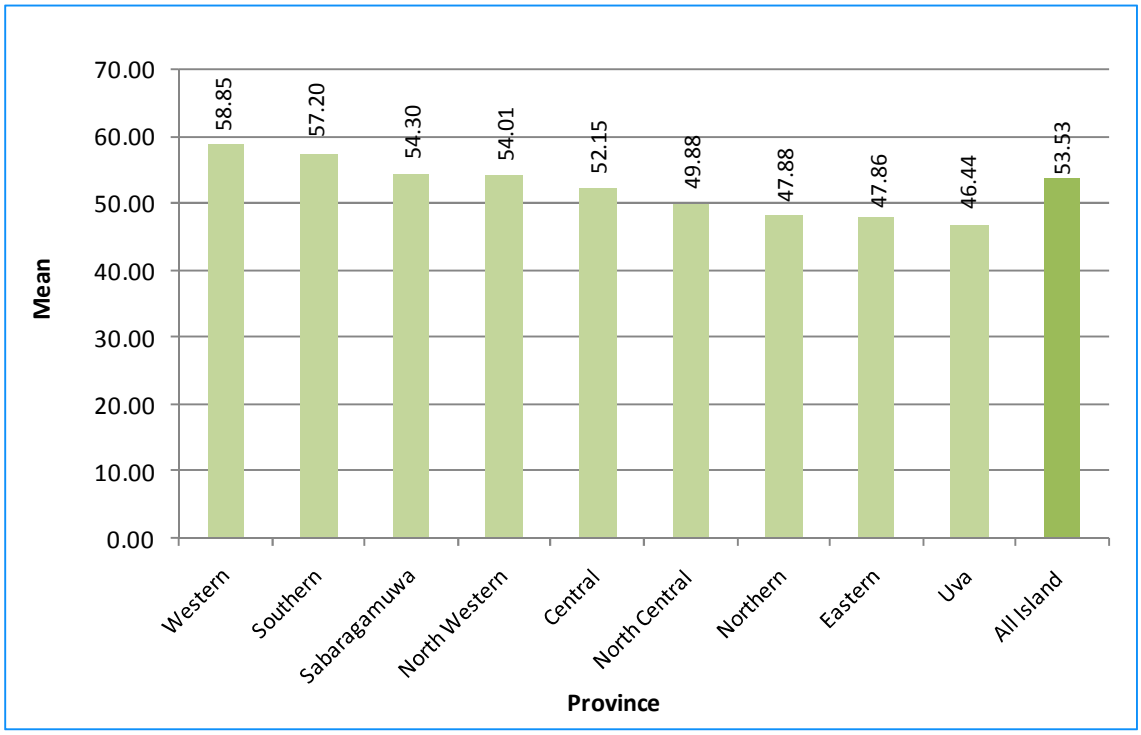

Fig. 5.3: Bar chart to represent mean among the provinces- English language

Disparity in achievement among provinces

Although, there are four provinces that have scored above the all island mean, their median values differ. According to Table 5.2, in both Western and Southern Provinces 50% of the students has scored 62.50 or above marks. However, in both Sabaragamuwa and North Western Provinces 50% of the students has scored 55 marks respectively. In the Central Province the mean and the median are almost the same with 52.15 and 52.50 respectively. On the other hand in the Northern and Uva Provinces it is 42.50. Therefore, it could be concluded that there is disparity in achievement among provinces, especially between the high scoring provinces like Western and Southern and the low performing provinces like Uva.

According to Table 5.2, all the standard deviation values are very high. Southern Province SD value is the highest among the provinces followed by North Western. In these two provinces SD is even higher than the all island SD. Central Province has obtained the lowest SD value among the provinces, but there is not a considerable difference between the highest (25.49) and the lowest (23.24). The high SD values indicate that there is greater deviation of student achievement from the mean in all

provinces. Therefore, it could be concluded that heterogeneity in student achievement is high, island wide.

In four provinces, the skewness values are negative but in the other provinces they are positive. All island skewness value is also negative. The provinces which show negative skewness indicate that there are more high achievers. On the other hand, the provinces that show positive skewness indicate that there are more low achievers.

These differences are further illustrated through the box plot (Fig. 5.4).

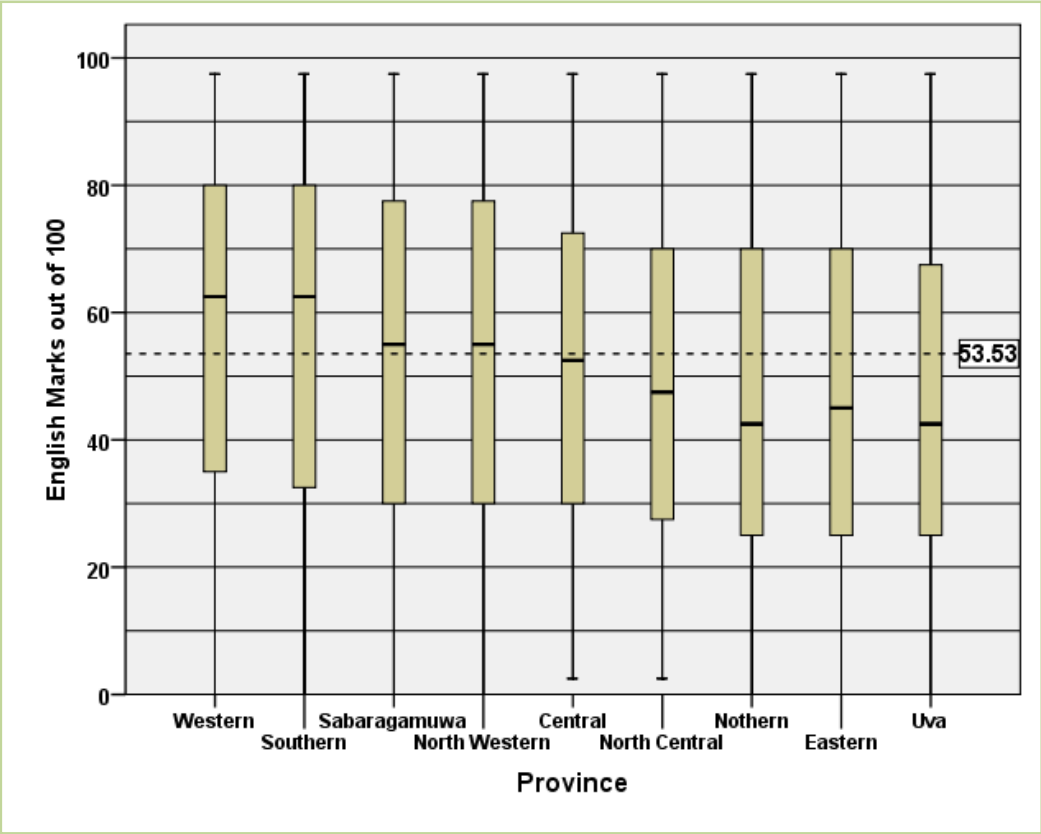

Fig. 5.4: Box plot and whisker chart representing provincial wise English language achievement

As Fig, 5.4 and Table 5.2 illustrate there is high variation in achievement among and within provinces. In the Western Province students achievement lies between 35 to 80 marks point. On the other hand, in the Uva Province students' achievement lie between 25 to 68 marks point.

All the provinces have shown very low performance at the 25th percentile. Not a single province had been able to score 40 as the marks point. Even the Western Province

which has the highest mean value could obtain only 35 marks at the 25th percentile. Uva Province's 25th percentile is very low. Sabaragamuwa, North Western and Central have obtained similar values of 30 for the 25th percentile. Northern, Eastern and Uva display even a lower mark of 25 at the 25th percentile.

All provinces have obtained a median above 40. Four provinces have obtained the median above the mean. This means that 50 percent of students in these provinces have scored above the mean 53.53. On the other hand, in the Northern and Uva Provinces 50 percent of the students have scored 42 or less.

At the 75th percentile, Southern and Western Provinces have shown higher values than other provinces. Sabaragamuwa, North Western and Central Provinces have also achieved high values at the 75th percentile.

These disparities are further highlighted in Table 5.3.

Table 5.3: Percentage of students scoring 50 or above, and below 50

Province	Above or equal to 50	Below 50
Western	66.00%	34.00%
Southern	64.39%	35.61%
Sabaragamuwa	59.41%	40.59%
North Western	56.91%	43.09%
Central	55.68%	44.32%
North Central	51.02%	48.98%
Northern	47.98%	52.02%
Eastern	47.80%	52.20%
Uva	45.89%	54.11%
All Island	55.48%	44.52%

In the Western Province while 66.00% of students score above or equal to 50, in the Uva Province only 45.89% has scored 50 or above.

Therefore, it could be concluded that there is variation among as well as within the provinces with respect to achievement in English language.

Summary

- Achievement wise the provinces fall into two categories.
  Category 1 – Southern, Western, Sabaragamuwa and North Western with mean scores above the national mean (53.53)
  Category 2 – Central, North Central, Uva, Eastern and Northern Provinces which are below the national mean.
- There is variation among as well as within the provinces with respect to achievement in English language.
- However, all provinces have obtained mean values above 40.

5.4 Achievement levels by type of school

Table 5.4: English language achievement according to school type

School Type	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
1AB	63.60	0.09	23.56	-0.56	45.0	70.0	82.5
1C	50.29	0.09	24.36	0.14	27.5	47.5	72.5
Type 2	46.74	0.08	24.35	0.35	25.0	40.0	67.5
Type 3	55.43	0.08	25.05	-0.14	32.5	57.5	77.5
All Island	53.53	0.04	25.13	-0.02	30.0	55.0	75.0

As Table 5.4 indicates, mean values of 1AB and Type 3 schools are above the all island mean, while the mean values of the other two school types are below the all island mean.

The difference in mean scores is graphically shown in Fig. 5.5

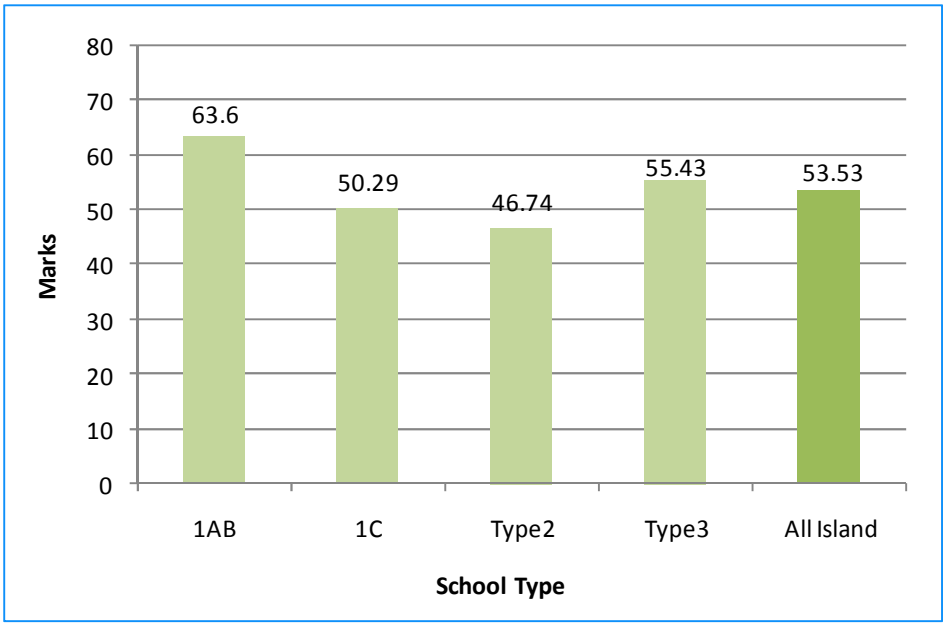

Fig. 5.5: Bar chart representing the mean among the school types- English language

The gap between the school types is further highlighted when the median scores are considered. The median value of the 1AB schools is considerably higher than the other three School types. This reveals that 50% of student achievement is above or equal to 70 marks in the 1AB schools. In Type 3 schools, 50% of the students have reached 58 or above. On the other hand, in Type 2 schools 50% has scored above or equal to 40.

Variation among student achievement

There is considerable variation in student achievement in all school types. As shown in Table 5.4 the standard deviations of all four school types are very high. As a result, the all island SD is also very high. However, compared to other school types SD of 1AB schools is less denoting less variation in student achievement. On the other hand, student variation is highest in Type 3 schools indicating high variation.

The variation in student achievement is also illustrated in Fig. 5.6

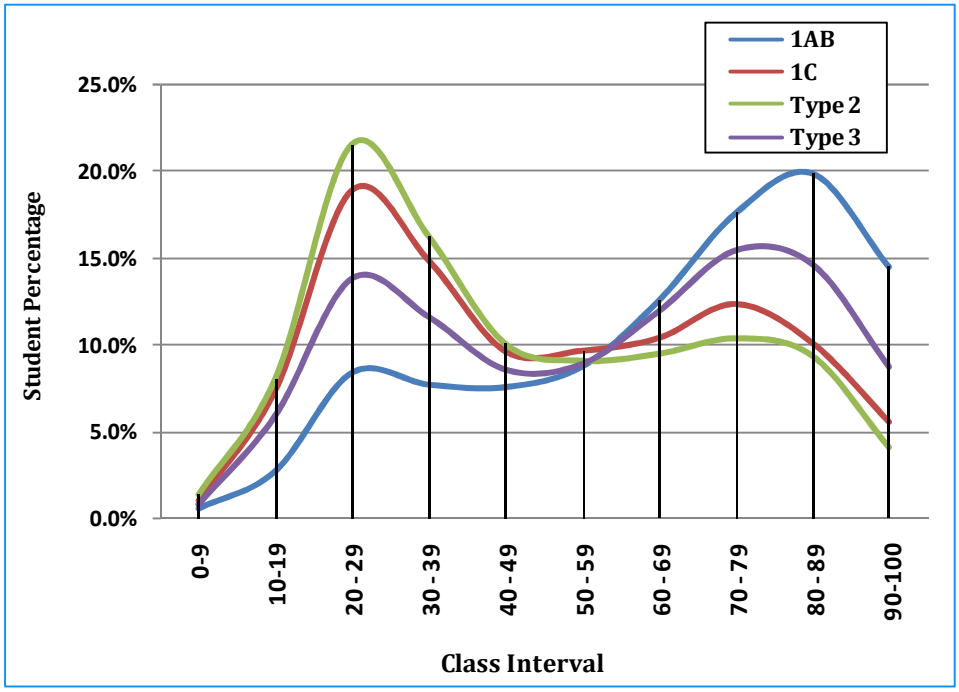

Fig. 5.6: Dispersion of marks by school type– English language

Disparity in marks

The bi model nature of the above curves indicates that there are groups of high achievers as well as low achievers. However, the curves of 1AB and Type 3 schools are negatively skewed. Although, they indicate two high peaks, the peak that corresponds to high achievers is greater than the peak representing low achievers. On the other hand, in the case of Type 2 and 1C schools the peak representing low achievers is greater than the peak representing high achievers. Hence, they are positively skewed. The performance of these two types of schools has negatively affected the all island performance and the all island curve is also positively skewed.

The skewness of the curves can be further explained through the cumulative percentages indicated in Table 5.5.

Table 5.5: Cumulative student percentages according to school type- English language

Class Interval	1AB		1C		Type 2		Type 3	
	Student %	Cumulative %	Student %	Cumulative %	Student %	Cumulative %	Student %	Cumulative %
0 - 9	0.50	0.50	1.04	1.04	1.40	1.40	0.73	0.73
10 - 19	2.67	3.17	7.38	8.42	8.08	9.49	5.87	6.60
20 - 29	8.36	11.54	18.92	27.33	21.58	31.07	13.79	20.39
30 - 39	7.68	19.21	14.88	42.21	16.28	47.35	11.58	31.97
40 - 49	7.53	26.75	9.64	51.85	10.09	57.44	8.53	40.50
50 - 59	8.72	35.47	9.67	61.52	9.11	66.55	8.86	49.36
60 - 69	12.55	48.02	10.41	71.93	9.52	76.07	11.90	61.26
70 - 79	17.59	65.61	12.37	84.30	10.40	86.47	15.42	76.68
80 - 89	19.90	85.51	10.13	94.43	9.40	95.87	14.63	91.31
90 - 100	14.49	100.00	5.57	100.00	4.13	100.00	8.69	100.00
Total	100.00		100.00		100.00		100.00	

Fig. 5.6 displayed that in all schools the lower end of the curves peaked at the 20-29 class interval. However, Table 5.5, indicates that the percentage scores that fall within this class interval varies among the school types. In the 1AB schools only 8.36% of students' scores fall within this class interval. On the other hand, in Type 2 schools, 21.58%, in Type 3 schools 13.79% and in 1C schools 18.92% of the students' scores fall within this class interval. In addition, in 1AB schools 19.90% of students' scores also fall within the 80-89 class interval. However, in the other three school types the percentages corresponding to this class interval is less. Yet, except in Type 2 schools in the other three school types there are more than 10% of students' scores falling into this class interval. This shows the diversity in achievement within the school types. Further, except in 1AB schools in other school types more than 30% of cumulative percentage of students' scores are below 40%. In 1AB schools this percentage is only 19.21%. However, the highest percentage (47.35%) of those who have scored less than 40% is in Type 2 schools.

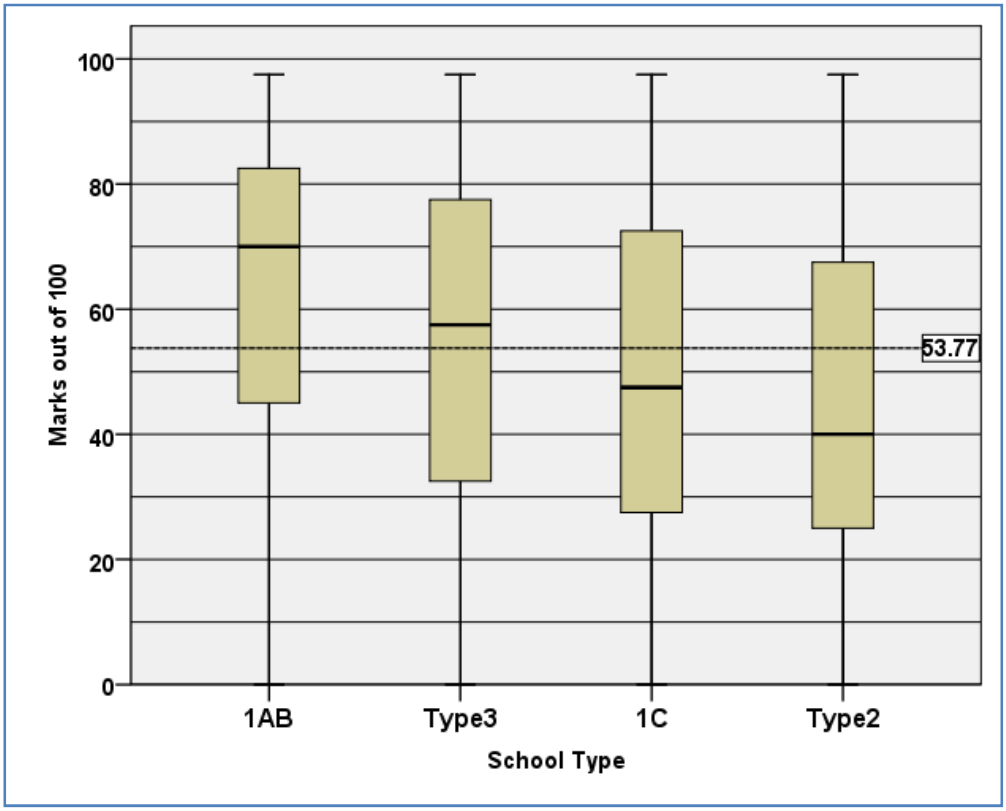

Fig. 5.7: English marks according to the school types using box plot and whisker plot

The discussion in the preceding sections regarding students' performance in the four school types is graphically presented in the box plot chart, Fig. 5.7. The students' achievement in 1AB schools spread more towards the higher values. On the other hand, in the other three school types the marks are more evenly spread. While in the 1AB schools the 25th percentile is 45 in other three school types it is below 35. This means that 25% of the students in these schools has not reached the pass mark of 40.

Summary

- The performance of 1AB and Type 3 schools (56.42 and 52.80) is above the national mean. The performance of Type 2 and 1C schools' is low.
- However, there is variation in achievement in school types with both high performers and low performers.

5.5 Achievement levels by gender

Table 5.6: English language marks achievement according to gender

Student Gender	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
Male	49.43	0.06	24.79	0.19	27.5	47.5	72.5
Female	57.66	0.06	24.80	-0.24	35.0	62.5	80.0
All Island	53.53	0.04	25.13	-0.02	30.0	55.0	75.0

Female students' English language mean (57.66) is relatively higher than the male students' English language mean (49.43) achievement. All island student mean is also above the male students' mean value. Female students' English language achievement has contributed greatly for the all island mean to rise.

These differences could also be seen in Fig.5.8.

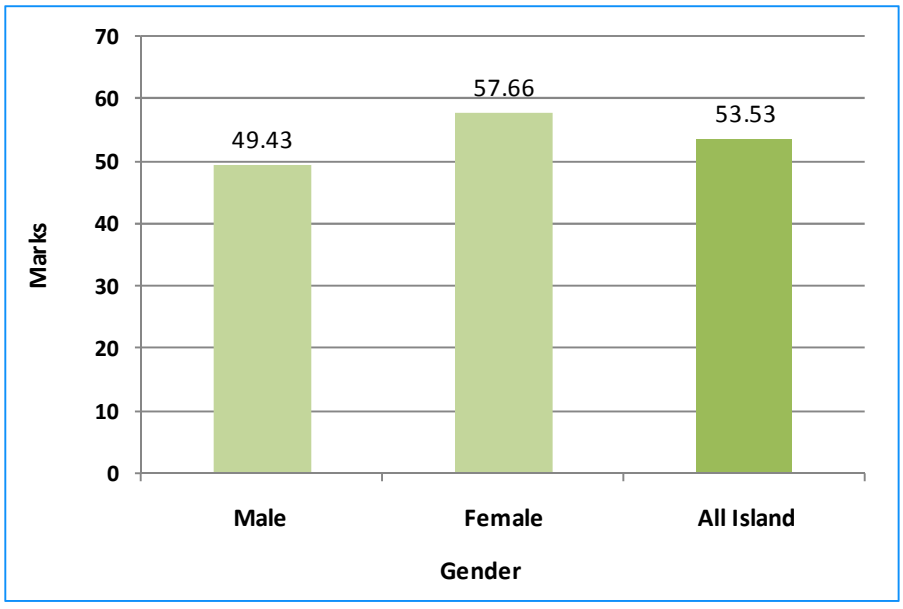

Fig. 5.8: Bar chart representing mean values according to gender – English language

Male students' performance is below that of the female students as well as below the all island mean.

Fig. 5.9 explains further this low performance of the male students.

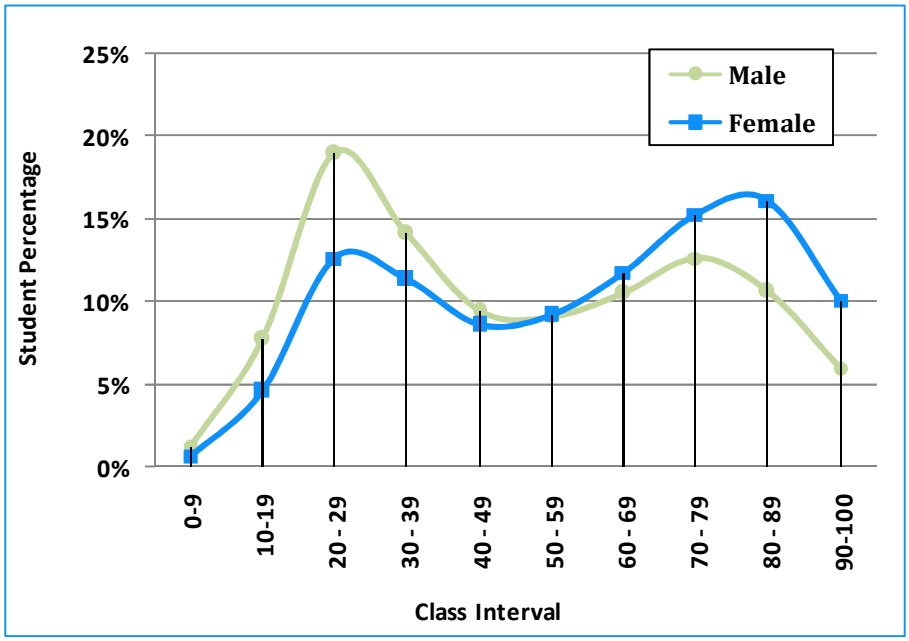

Fig. 5.9: Dispersion of marks by gender – English language

Fig. 5.9 displays two curves which are bi model. However, as Table 5.6 indicates while the female curve is negatively skewed the male curve is positively skewed.

This indicates that the percentage of high achievers is greater among the females, while the percentage of low achievers is greater among the males.

This pattern is further illustrated through the cumulative percentage Table 5.7.

Table 5.7: Cumulative student percentages according to gender – English language

Class Interval	Male		Female	
	Student %	Cumulative %	Student %	Cumulative %
0 - 9	1.23	1.23	0.61	0.61
10 - 19	7.69	8.92	4.57	5.18
20 - 29	18.97	27.89	12.61	17.79
30 - 39	14.08	41.97	11.34	29.13
40 - 49	9.39	51.36	8.54	37.67
50 - 59	9.02	60.38	9.14	46.80
60 - 69	10.47	70.85	11.75	58.55
70 - 79	12.60	83.46	15.27	73.82
80 - 89	10.61	94.07	16.11	89.94
90 - 100	5.93	100.00	10.06	100.00
Total	100.00		100.00	

According to Table 5.7 and Fig. 5.9 it could be concluded that both among females and males, there is a group of low performing students. However, the percentage of low performers among the males is higher than the females. The female student percentage that falls within the first class interval (0-9) is 0.61. On the other hand, the male student percentage is 1.23. There are also 29.13 cumulative percentage of females and 41.97% of males who has scored below 40 marks. The above analysis indicates that among both males and females there is a larger percentage of low achievers. However, the number of high achievers among females is higher than the males. The highest percent of students among females belongs to the class interval 80-89 (16.11%). In addition, there are also 15.27% and 10.06% belonging to the class intervals 70-79 and 90-100 respectively. On the other hand, among the males, the highest percentage (18.97%) belong to the class interval 20-29 and 30-39 (14.08%). Therefore, it could be concluded that while the female performance is better than the male performance, among both groups there are both high achievers and low achievers.

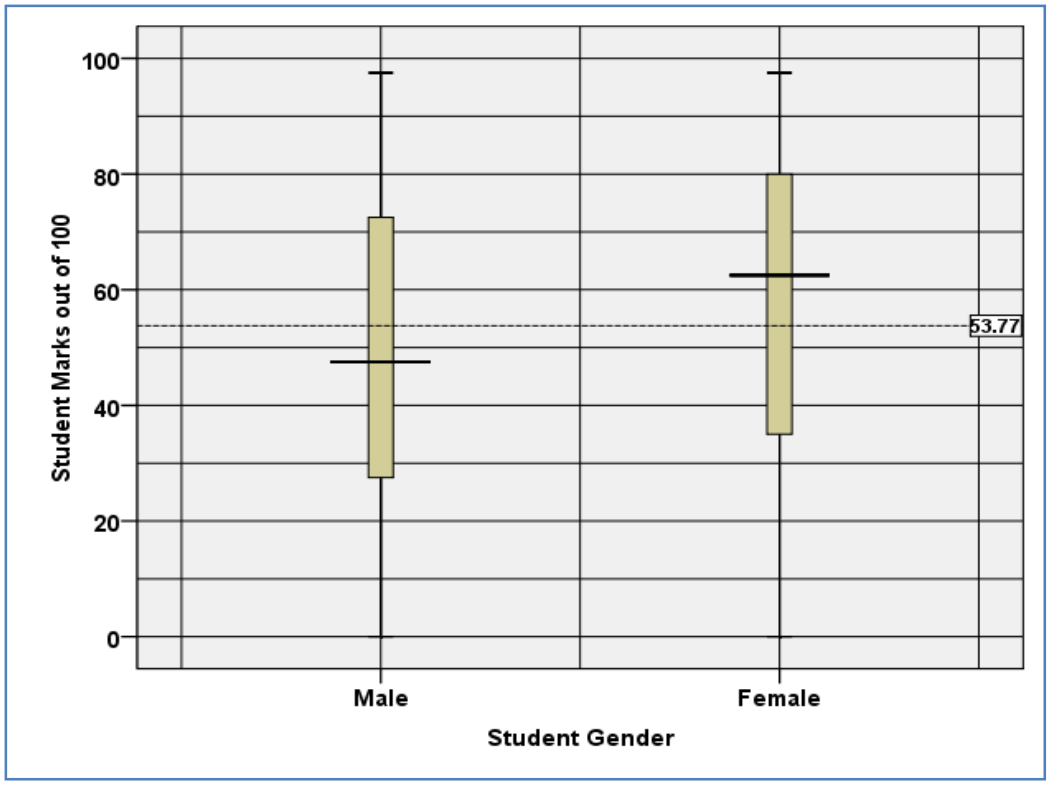

Fig. 5.10: Box plot and whisker plot representing gender wise English language marks

Box plot for gender wise English language achievement graphically shows similarities that have been already discussed. In the female box plot, the first quartile (Q1) starts a little ahead of the male students' first quartile (Q1) and it spreads higher than the male students' marks range. Male students median also lie below the female students' median. The box plot graphically illustrates the achievement differences among the two groups, male and female.

Summary

- Female performance is higher than all island and male performance.
- Among both males and females there is a larger percentage of low achievers. On the other hand, the number of high achievers among females is higher than the males.

5.6 Achievement levels by medium of instruction

Table 5.8: Achievement level by medium of instruction – English language

Medium of instruction	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
Sinhala	56.01	0.05	24.84	-0.15	32.5	60.0	77.5
Tamil	47.51	0.08	24.84	0.28	25.0	42.5	70.0
All Island	**53.53**	**0.04**	**25.13**	**-0.02**	**30.0**	**55.0**	**75.0**

There is disparity between the students belonging to the different medium of instruction. While the Sinhala medium students' mean achievement is above the all island mean value, the Tamil medium students' mean achievement is very much below the national mean.

The diversity in achievement scores among the students taught through the different medium of instruction, is further highlighted through the frequency distribution graphs.

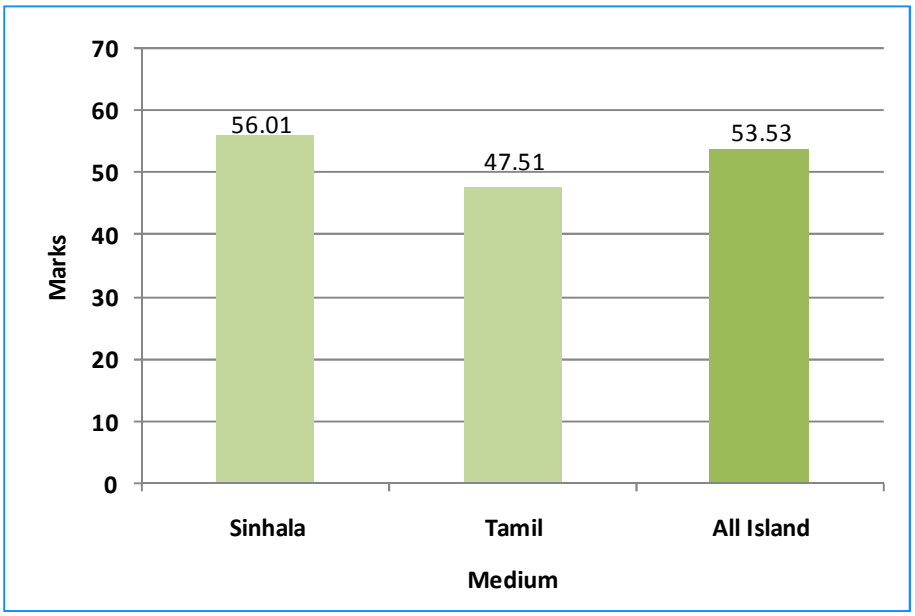

Fig. 5.11: Bar chart representing mean values according to medium of instruction – English language

Sinhala medium students' performance is above the all island performance with respect to the median value. While 50% of Sinhala medium students has scored equal or above 60%, equal percentage of Tamil medium students has scored only 42.5% or above.

Disparity in achievement medium wise

The disparity discussed using the mean and the median is also visible through the frequency distribution graph.

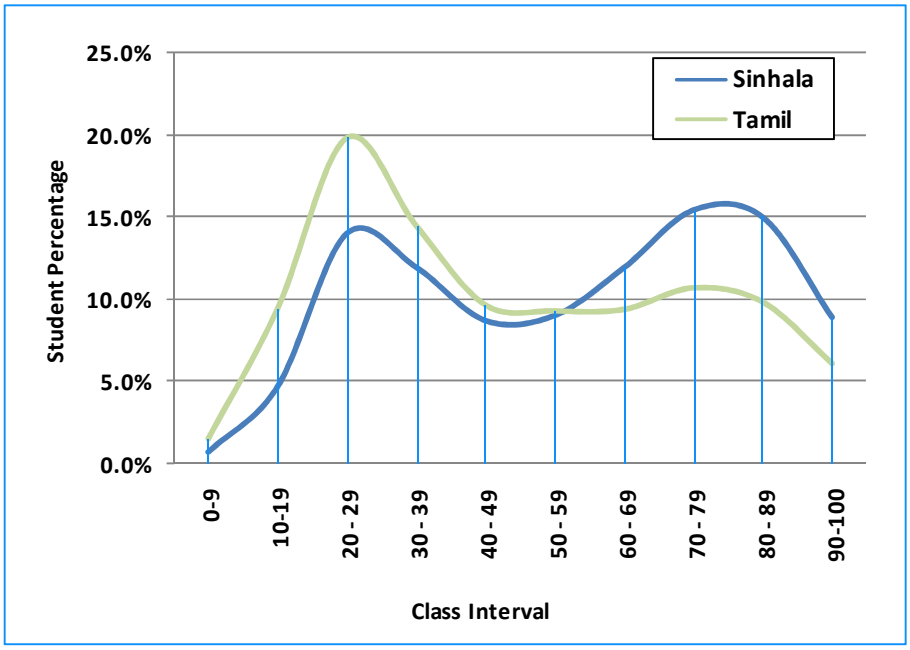

Fig. 5.12: Dispersion of marks by medium of instruction – English language

The above curves display the disparity in achievement that exists between the Tamil and Sinhala medium students. While the Sinhala medium students' curve is bimodal the Tamil medium students' curve is positively skewed. In the Tamil medium curve the peak is towards low marks denoting that majority of the students has scored low marks. On the other hand, in the Sinhala medium curve two peaks can be observed. This means that while there are large number of students with low marks there are even a greater number of high achievers among Sinhala medium students.

This pattern is further illustrated through the cumulative percentage Table 5.9.

Table 5.9: Medium wise cumulative percentage table – English language

Class Interval	Sinhala		Tamil	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.66	0.66	1.49	1.49
10-19	4.65	5.31	9.41	10.90
20 - 29	**13.98**	**19.29**	**19.80**	**30.70**
30 - 39	11.92	31.21	14.46	45.16
40 - 49	8.67	39.88	9.63	54.79
50 - 59	8.99	48.87	9.28	64.07
60 - 69	11.90	60.77	9.37	73.44
70 - 79	**15.40**	**76.17**	**10.68**	**84.12**
80 - 89	14.96	91.13	9.81	93.93
90-100	8.87	100.00	6.07	100.00

The highest percent of students' marks (15.40%) in the Sinhala medium corresponds to the class interval 70-79. On the other hand, when Tamil medium students' marks for the same class interval are considered only 10.68% falls into this class interval. On the other hand, while 19.80% of Tamil medium students' marks correspond to the class interval 20-29 only 13.98% Sinhala medium students' marks correspond to this class interval. This distribution of marks indicates that Sinhala medium students' performance is better than the Tamil medium students' performance.

Variation among students

According to Table 5.8 Sinhala, Tamil and all Island standard deviations are very high. Interestingly the standard deviation of both mediums are almost equal (24.84). Such a high value could be expected due to the high disparity among students of both mediums. This in turn has resulted in a very high all island standard deviation.

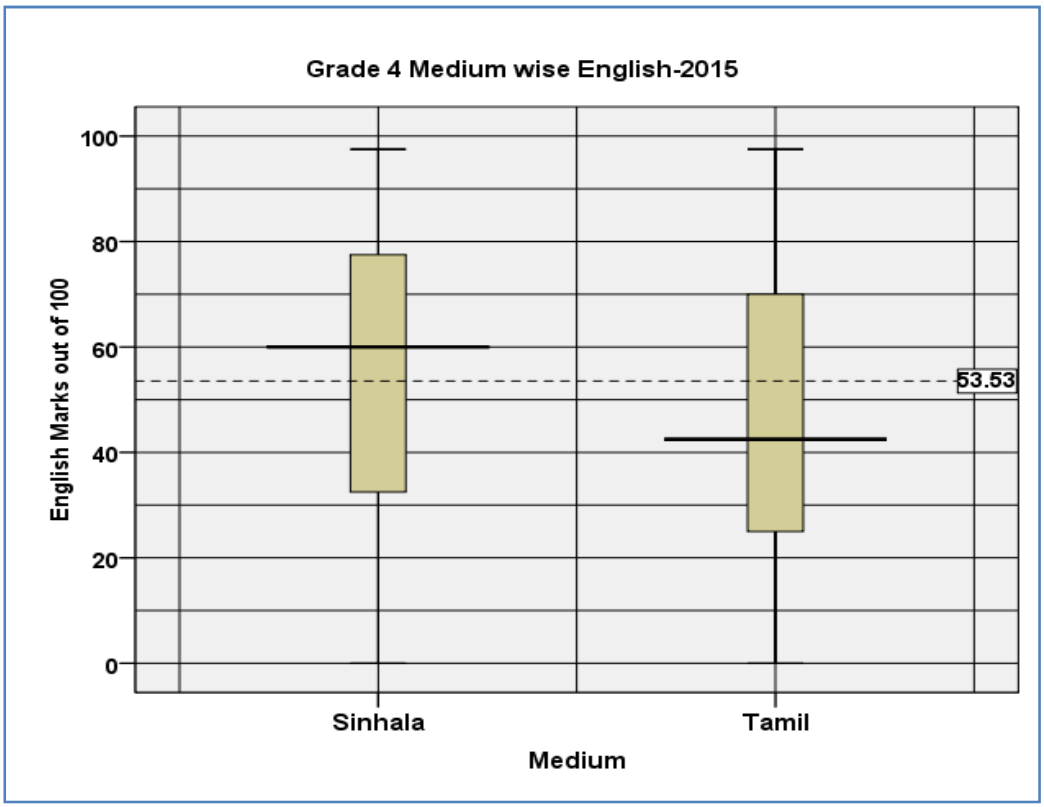

Fig. 5.13: Box plot for medium wise achievement – English language

Box plot for medium wise achievement graphically shows the differences that have been discussed already.

The spread of the box plot for Sinhala medium students illustrates the difference in achievement between the two mediums discussed above. Sinhala medium students have outperformed the Tamil medium students at the 25th, 50th and75th percentile.

Summary

- There is disparity among students belonging to different medium of instruction.
- Sinhala medium students' mean achievement is higher (56.01) than the national mean value (53.53)
- The Tamil medium students' mean achievement (47.51) is below the national mean and approximately nine points below that of the Sinhala medium students' mean.

Achievement levels by location would be discussed next.

5.7 Achievement levels by location

Table 5.10: English language achievement according to location

Location	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile 25	Median 50	Percentile 75
Rural	49.07	0.052	24.54	0.20	27.5	45	70.0
Urban	61.34	0.068	24.24	-0.43	40.0	67.5	82.5
All Island	53.53	0.043	25.13	-0.02	30.0	55.0	75.0

As Table 5.10 indicates, there is variation in achievement among the schools in the different localities. The urban schools have performed better than the rural schools. Their achievement with respect to both mean and median is very much higher than the performance of rural area schools.

The difference in mean values is graphically shown in Fig. 5.14

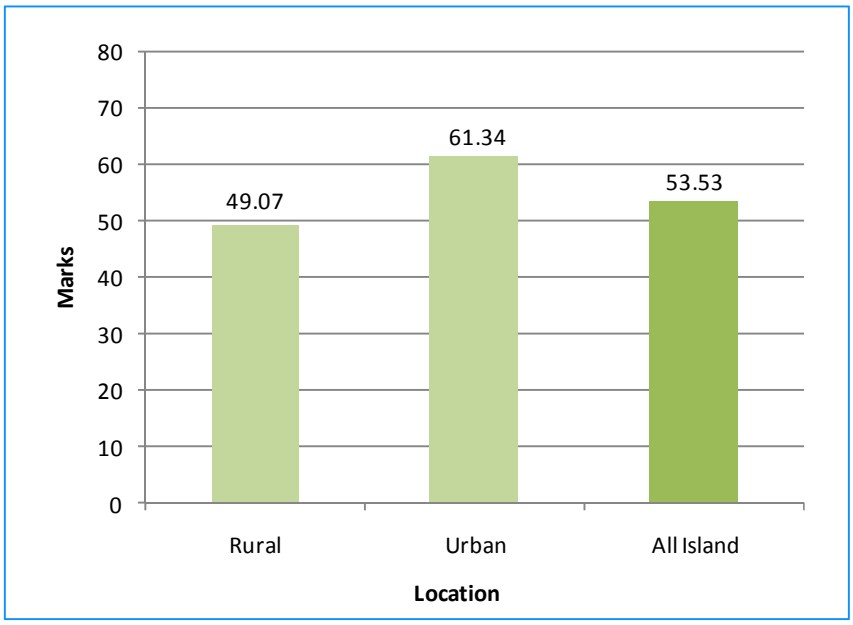

Fig. 5.14: Bar chart representing mean values according to location– English language

As Fig. 5.14 indicates the mean values in the rural area schools are lower than urban area schools. Further, these differences are quite high.

Even though there is disparity in achievement the deviation of the marks from the mean (SD) according to Table 5.10 appears to be quite close to each other. That is 24.54 and 24.24.

The dispersion of marks among the different localities is displayed in Fig. 5.15.

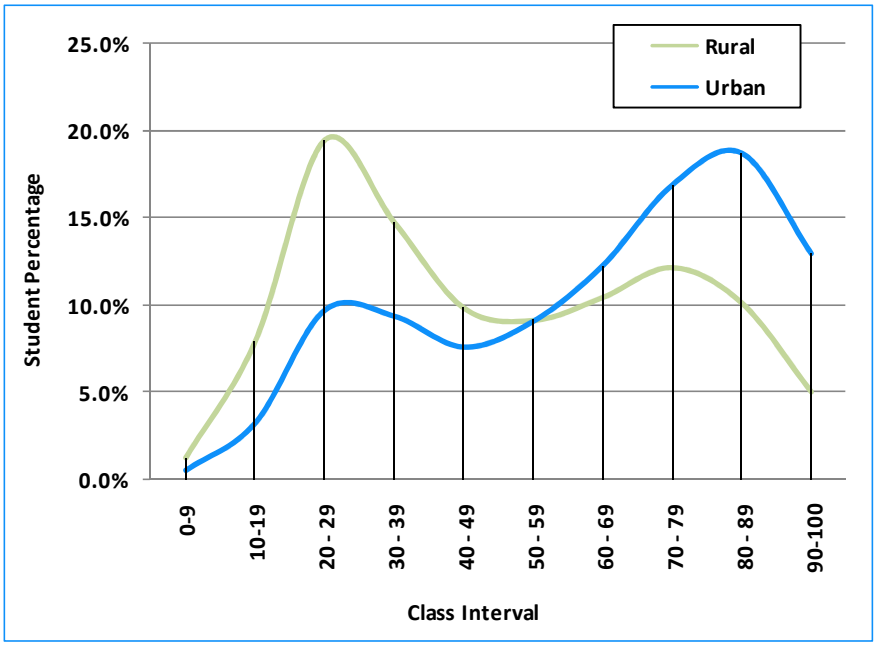

Fig. 5.15: Dispersion of marks by location – English language

Fig. 5.15 displays two curves which are bi model. However, while the urban area schools curve is negatively skewed the rural schools' curve is positively skewed. This indicates that the percentage of high achievers is greater among the urban area schools, while the percentage of low achievers is greater among rural area schools.

This pattern is further illustrated through the cumulative percentage Table 5.11.

Table 5.11: Cumulative student percentages according to the location – English language

Class Interval	Rural		Urban	
	Student %	Cumulative %	Student %	Cumulative %
0-9	1.20	1.20	0.46	0.46
10-19	7.91	9.12	3.19	3.65
20 - 29	**19.50**	**28.61**	**9.68**	**13.32**
30 - 39	14.76	43.37	9.33	22.65
40 - 49	9.83	53.20	7.55	30.20
50 - 59	9.10	62.31	9.03	39.23
60 - 69	10.43	72.73	12.24	51.48
70 - 79	12.15	84.88	16.88	68.35
80 - 89	**10.12**	**95.00**	**18.71**	**87.06**
90-100	5.00	100.00	12.94	100.00
Total	100.00		100.00	

According to Table 5.11, the highest percentage of students fall between 80-89 class interval in urban area schools. On the other hand, in the rural area schools the percentage is highest in the 20-29 class interval.

Box plot for location wise achievement graphically shows the differences that have been discussed already.

The spread of the box plot for urban area schools and the rural area schools is different. While the median of the rural schools is below the all island mean, in the urban area schools the median is above the all island mean.

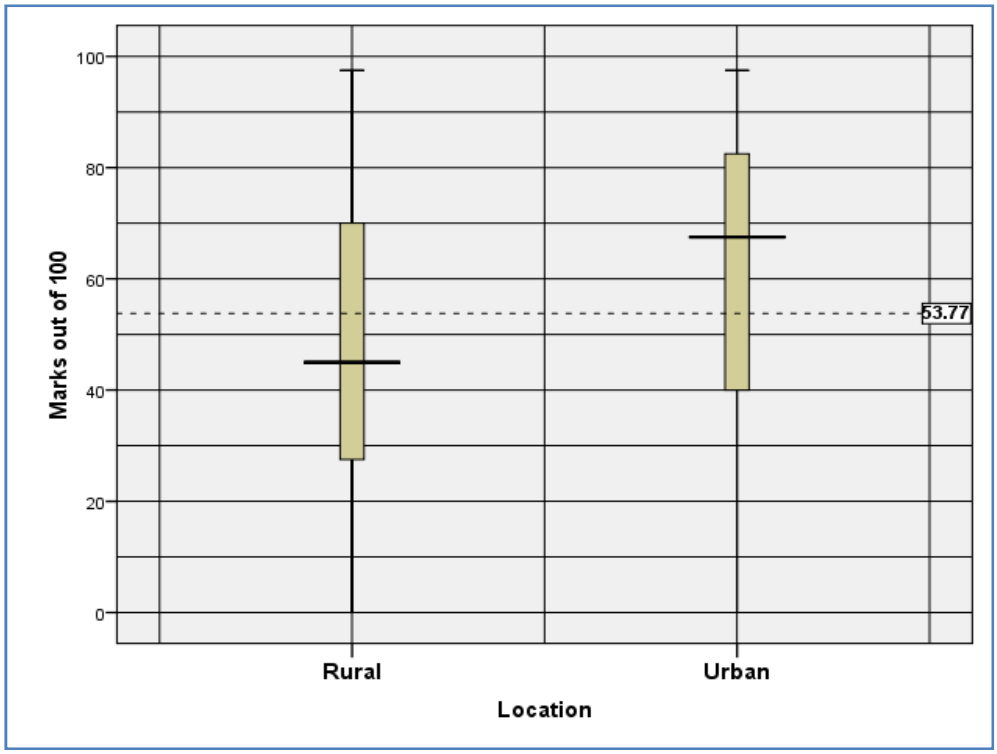

Fig. 5.16: Box plot for location – English language

Summary

- Location wise the performance in the rural area schools is below that of urban area schools.
- However, the deviation of the marks from the mean value is similar in both localities. This suggests that in both localities there is variation among student performance.

5.8 Analysis of achievement by sub skills

In constructing the achievement tests, the test items were designed in relation to the sub skills of language as given in Table 2.5 in chapter 2. The performance of students according to the different sub skills is presented in Fig. 5.17.

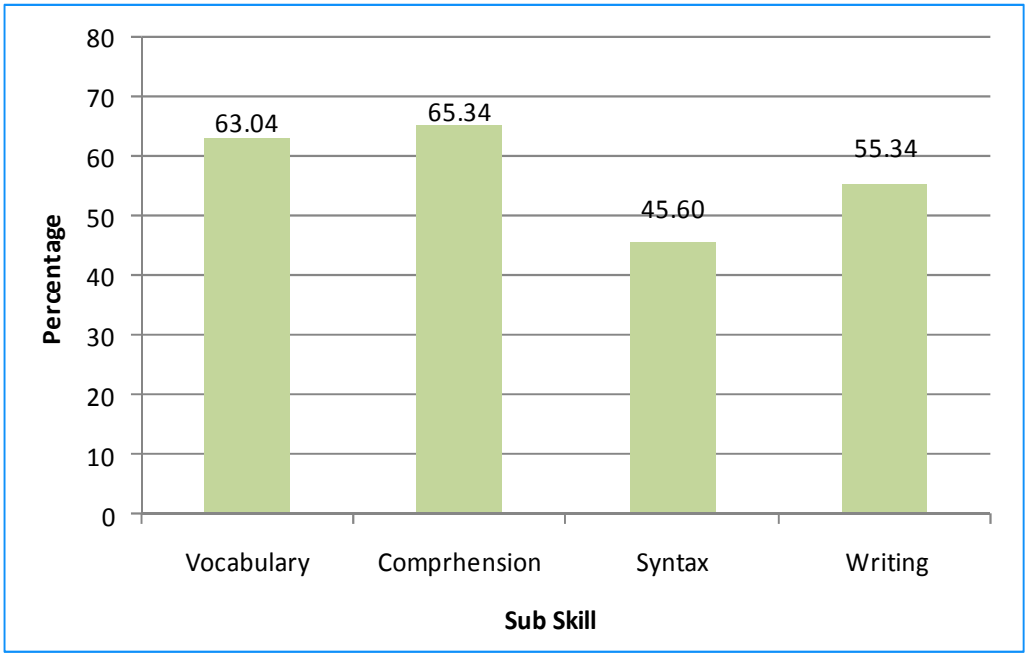

Fig. 5.17: Achievement in sub skills in English language

As the above Fig. 5.17 indicates students' achievement in vocabulary and reading comprehension appears to be satisfactory. However, achievement in the sub skills of syntax and writing is weak. The achievement in the writing task is further analyzed in Table 5.12

Table 5.12: Reponses to questions pertaining to -syntax

(ELC No)	Content of the paper/ according to the syllabus	QS No	2015 correct %
	Vocabulary related to different themes		
	My friends	1	81.60%
	village	2	75.00%
	time	3	60.60%
	nature	4	56.70%
	weather	5	60.40%
	time	6	64.90%
	time	7	60.40%
	My friends	8	51.30%
	Personal information	9	65.80%
	weather	10	53.70%
	Reading comprehension	11	56.70%
	Read and match - weather	12	62.90%
		13	59.60%
		14	54.00%
		15	51.50%
	Read and Find - Prices	16	74.50%
		17	76.10%
		18	75.00%
		19	77.00%
		20	66.10%
	Syntax - abilities	21	44.50%
	Demonstrative pronouns	22	61.80%
	Uses he/she correctly	23	26.60%
	Singular/plural	24	49.60%
	Simple present	25	50.20%
		26	54.30%
		27	48.90%
	Present continuous	28	43.90%
	Simple present	29	50.20%
	Simple present	30	26.00%
Writing meaningful sentences Write down personal information		31	69.20%
		32	47.10%
		33	56.30%
		34	51.90%
		35	52.30%

As Table 2.1 in chapter 2, indicated Q.20-30 in the question paper relate to the questions on syntax. Table 5.12 indicates percentage of students who has answered these questions correctly. For most items the percentage of correct responses is less than 50%. Only 26% has answered question number 30 correctly. The lowest percentage of students (26.6% and 26%) has responded correctly to question numbers 23 and 30. These questions relate to pronouns and third person singular present tense.

The writing task was to write five sentences utilizing the clue given. As can be seen from Fig. 5.18 most students have not been able to write a grammatically correct sentence for the second clue given. Further, more than 60% of the students has not been able to construct a grammatically correct sentence.

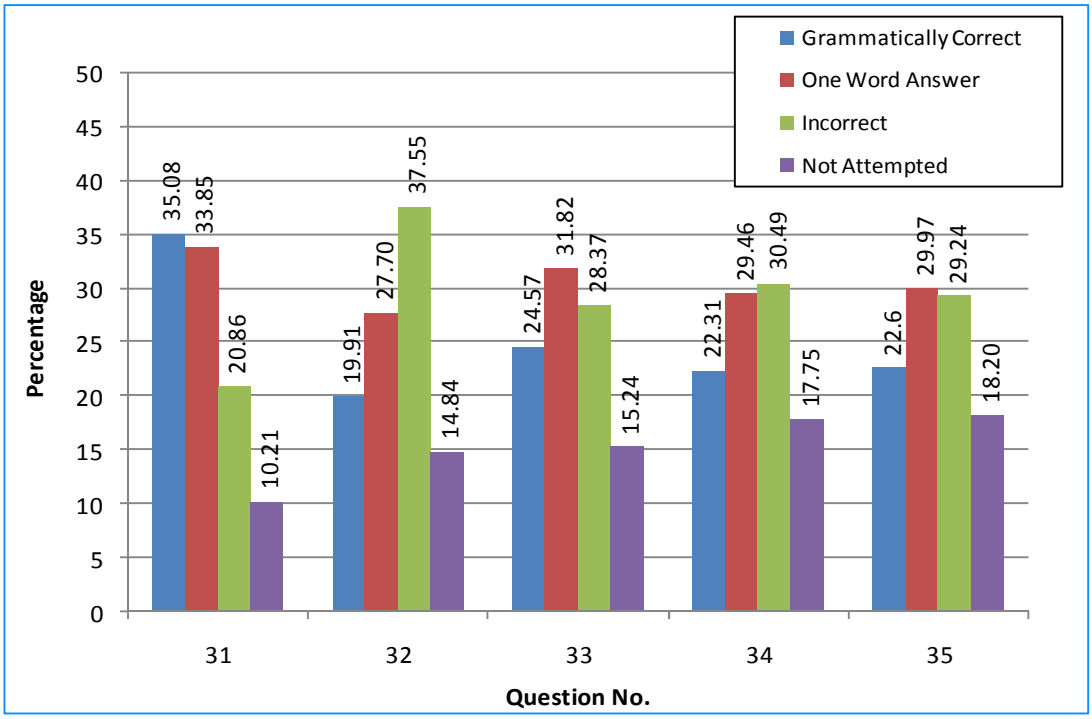

Fig. 5.18: Competency related to writing – English language

The percentage of students who has written grammatically correct sentences is less than 25%, except in the first sentence, Therefore, it appears that students, poor knowledge of grammar affects their writing skills.

In the first sentence the students had to write his/her name. This was the only Essential Learning Competency related to writing in English. As Fig. 5.18 indicates only 35.08% of

students has been able to write their name in a grammatically correct sentence. On the other hand, 33.85% of students has been able to write their name correctly. However, there are also 10.21% of students who has not even attempted to write their name. Further 20.86% has given incorrect responses. Therefore, approximately 31% of students are unable to write their names.

Facility index values for the English language paper

The English Language paper consisted of 35 questions. Of these 30 were multiple choice and the last five were open ended.

Fig. 5.19 displays the facility values for questions 1-30
According to this Figure facility index ranges from 0.260 to 0.816

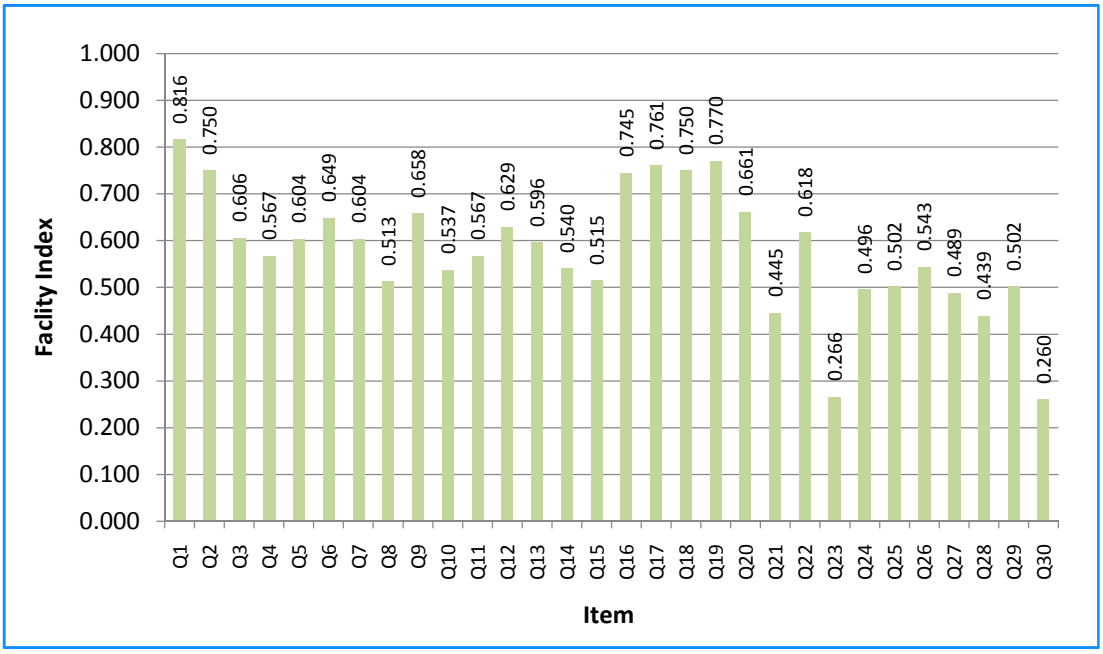

Fig. 5.19: Facility values for the different test items –English language

The lowest facility index is for question 30. This question relates to syntax.

Part I of this chapter discussed patterns of students' performance in the English language both at national and provincial level, according to school type, gender, medium of instruction and location.

Further, test items used to assess students' performance were analyzed to assess how far they have been successful in achieving the sub skills of the language expected to be achieved by grade 4 pupils.

It could be concluded that there is disparity in achievement of learning outcomes in the learning of the English language.

Part II of the chapter will compare student achievement in 2013 and 2015 to identify the trends in achievement of learning outcomes.

Part II- Comparison of achievement level of students in 2013 with that of 2015

5.9 Trends in achievement at national level

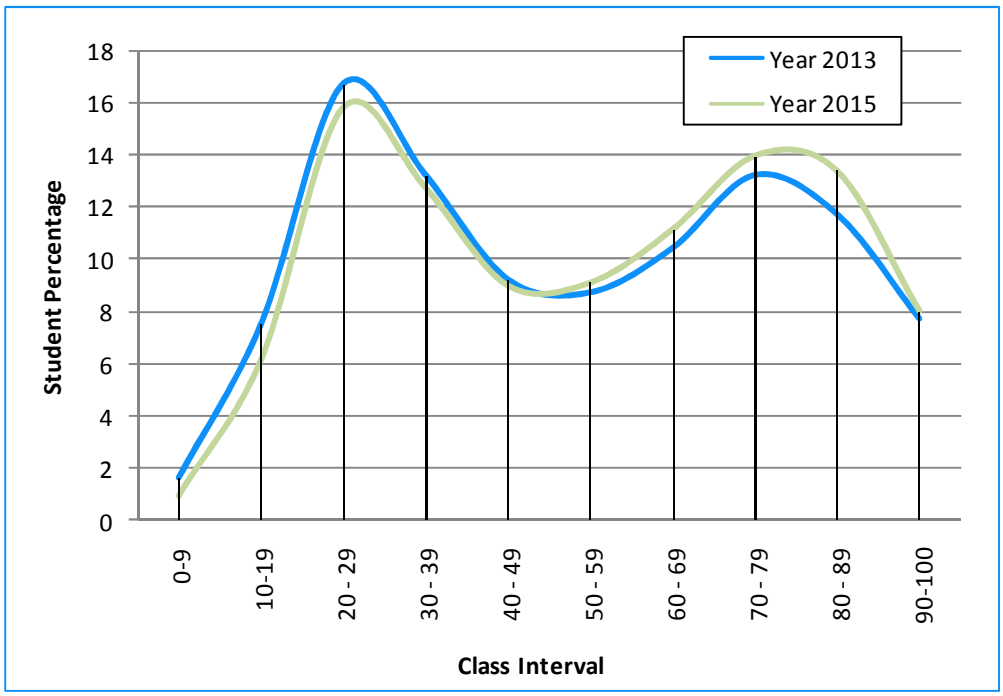

Fig. 5.20: All island achievement in English language comparison 2013 -2015 – dispersion of marks

As Fig. 5.20 indicates when the performance of students in 2013 and 2015 is compared there is an improvement. Although both curves are bimodal, in the year 2015 the number

of students who has scored high marks have increased and those who have obtained low marks have decreased. This trend could also be explained through Table 5.13.

Table 5.13: Comparison of all island achievement in English language – Cumulative percentages

Class Interval	Year 2013		Year 2015	
	Student %	Cumulative %	Student %	Cumulative %
0-9	1.6	1.6	0.92	0.92
10-19	7.5	9.1	6.13	7.05
20 - 29	**16.7**	**25.8**	**15.79**	**22.84**
30 - 39	13.2	39	12.71	35.55
40 - 49	9.2	48.2	8.97	44.52
50 - 59	8.7	56.9	9.08	53.59
60 - 69	10.4	67.3	11.11	64.71
70 - 79	**13.2**	**80.5**	**13.93**	**78.64**
80 - 89	**11.7**	**92.2**	**13.36**	**92.00**
90-100	**7.7**	**100**	**8.00**	**100.00**
Total	100		100.00	

As can be seen from the table the number of students who has scored between 20-29 has decreased and the number of students who has scored between 70–79, 80-89 as well as between 90-100 has increased. Therefore, it could be concluded that students' national level performance in the English language has improved in the year 2015.

5.10 Provincial wise comparison of student achievement

As Fig. 5.21 indicates there is an increase in student achievement in most of the provinces. This has resulted in an increase in the national performance in the English language with an increase in the mean value from 51.68 to 53.53. However, there is a slight decrease in student achievement in the Southern and Sabaragamuwa Provinces.

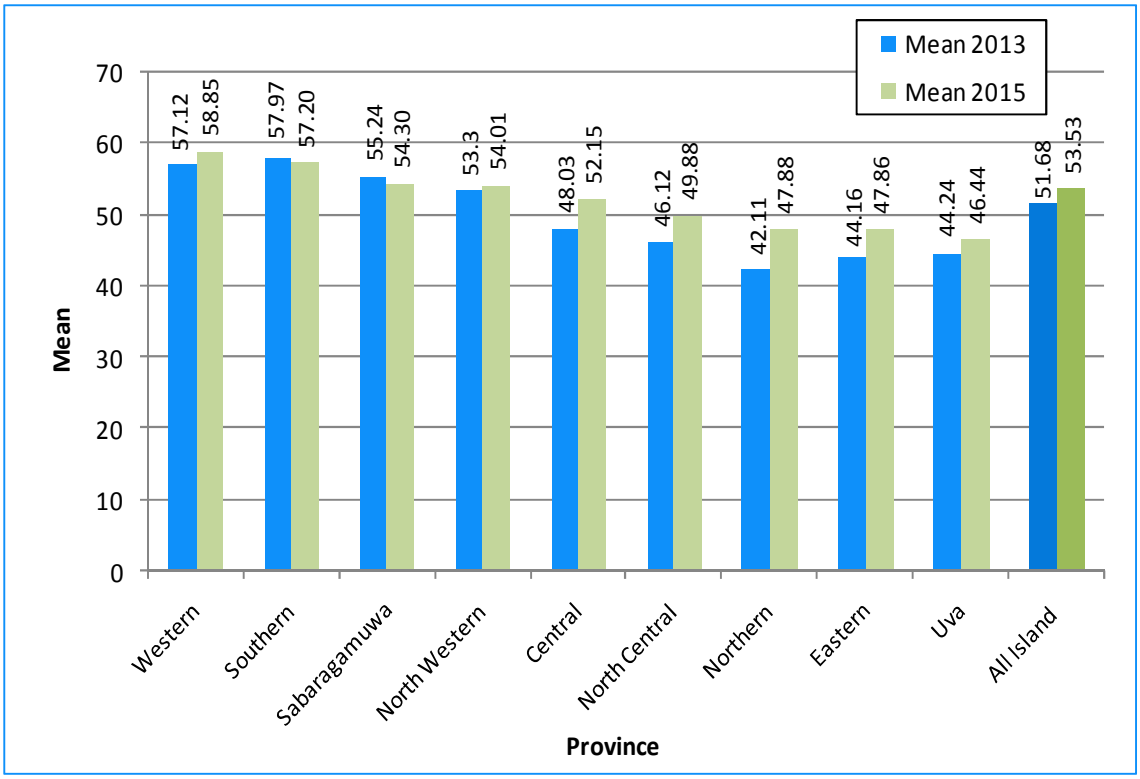

Fig. 5.21: Provincial wise comparison of student achievement - 2013 & 2015

Table 5.14: Provincial wise comparison of student achievement – 2013 & 2015

Province	Year 2013		Year 2015		Z
	Mean	Standard Deviation	Mean	Standard Deviation	
Central	48.03	25.55	52.15	24.20	4.75*
Eastern	44.16	24.59	47.86	25.12	3.95*
North Central	46.12	23.84	49.88	23.24	4.43*
North Western	53.30	24.95	54.01	25.21	0.80
Northern	42.11	24.80	47.89	24.82	5.91*
Sabaragamuwa	55.24	25.04	54.30	24.81	1.13
Southern	57.97	25.13	57.20	25.49	0.92
Uva	44.25	23.66	46.44	24.01	2.48*
Western	57.12	25.57	58.85	24.95	2.02*
All Island	**51.68**	**25.63**	**53.53**	**25.13**	**6.15***

* Values are significant at 95%

Fig. 5.22: Comparison of provincial wise distribution of marks – English language

5.11 Comparison of marks according to school type

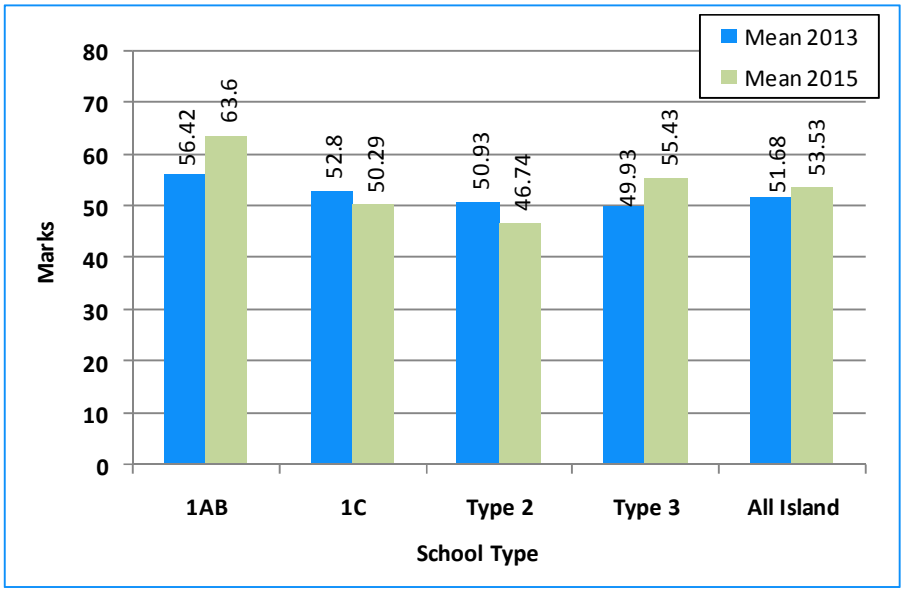

Fig. 5.23: All island comparison of mean values according to school type

As Fig. 5.23 indicates student achievement in 1AB and Type 3 schools has increased by more than 6 points. On the other hand, in Type 1C and Type 2 schools student achievement has decreased by 2 to 4 points. The differences in student achievement in the different school types is further elaborated through the line graphs and cumulative frequency tables.

Table 5.15: Comparison of achievement of 1AB schools

Class Interval	1AB-Year 2013		1AB-Year 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	0.7	0.7	0.50	0.50
10-19	6.5	7.2	2.67	3.17
20 - 29	13.6	20.8	8.36	11.54
30 - 39	**11.3**	**32.1**	**7.68**	**19.21**
40 - 49	8.1	40.2	7.53	26.75
50 - 59	8.5	48.7	8.72	35.47
60 - 69	12.1	60.8	12.55	48.02
70 - 79	13.8	74.6	17.59	65.61
80 - 89	**15.2**	**89.8**	**19.90**	**85.51**
90-100	10.2	100	14.49	100
Total	100		100	

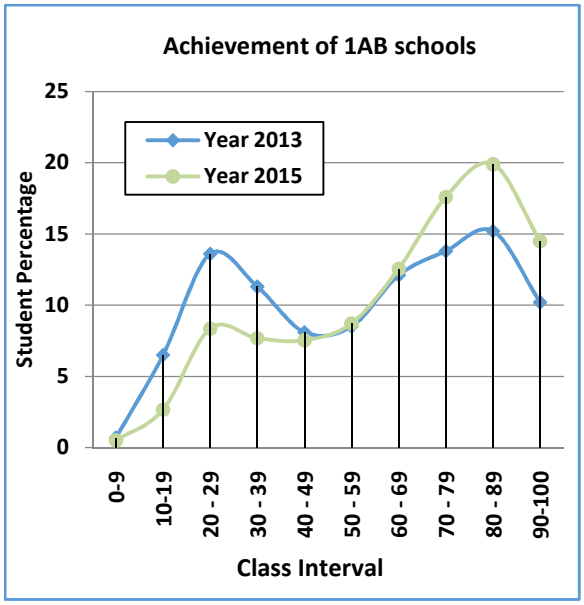

Fig. 5.24: Comparison of achievement of 1AB schools – 2013 & 2015

As the line graph depicts in 2013 the curve was negatively skewed and bi model with two distinct groups of students obtaining high and low marks. In 2015 also the curve depicts a similar pattern. However, in 2015 the high scoring group has increased and the low scoring group has decreased. This change can further be elaborated through the cumulative percentage Table 5.15. As the Table 5.15 indicates in 2013 the highest percentage of students, (15.2%) have scored marks between 80-89. In 2015, this percentage has increased to 19.90. Similarly the percentage of students who has scored between 70-79 and 90-100 also has increased. On the other hand, the percentage of students who scored between 20-29 and 30-39 has decreased.

Table 5.16: Comparison of achievement of Type 3 schools

Class Interval	Type 3 - 2013		Type 3 - 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	2.10	2.10	0.73	0.73
10-19	7.90	10.00	5.87	6.60
20 - 29	**17.90**	**27.90**	**13.79**	**20.39**
30 - 39	14.80	42.70	11.58	31.97
40 - 49	9.10	51.80	8.53	40.50
50 - 59	8.10	59.90	8.86	49.36
60 - 69	9.50	69.40	11.90	61.26
70 - 79	**12.50**	**81.90**	**15.42**	**76.68**
80 - 89	**11**	**92.90**	**14.63**	**91.31**
90-100	7.10	100	8.69	100.00
Total	100		100	

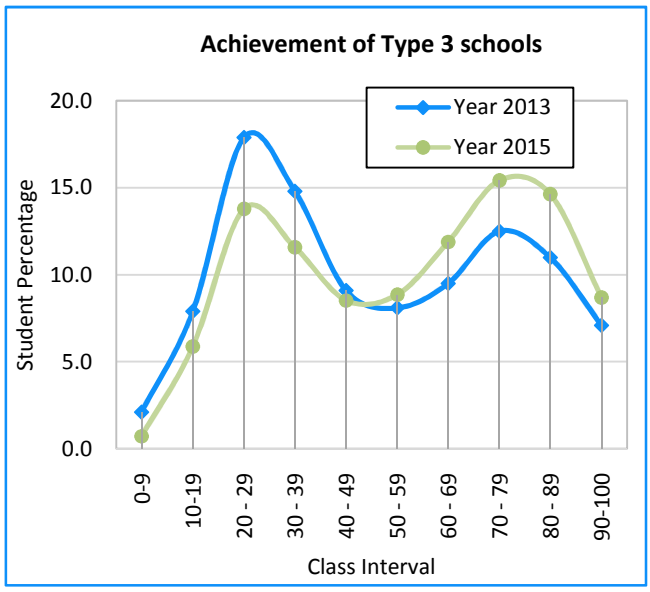

Fig. 5.25: Comparison of achievement of Type 3 schools – 2013 & 2015

A similar trend is observed in the performance of students in 1C schools in the year 2015. As Fig. 5.25 displays both curves are bi model. However, in 2015 the peak towards the right has increased and the peak towards the left has decreased.

This pattern is further explained through the cumulative percentage Table 5.16. As can be seen percentage of marks corresponding to the class interval 20-29 has decreased and the percentage of marks corresponding to 70-79 and 80-89 has increased.

Table 5.17: Comparison of achievement of 1C schools

Class Interval	1C - 2013		1C - 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	1.5	1.5	1.04	1.04
10-19	6.9	8.4	7.38	8.42
20 - 29	**16.7**	**25.1**	**18.92**	**27.33**
30 - 39	12.3	37.4	14.88	42.21
40 - 49	8.8	46.2	9.64	51.85
50 - 59	8.2	54.4	9.67	61.52
60 - 69	11.1	65.5	10.41	71.93
70 - 79	14	79.5	12.37	84.30
80 - 89	**12.9**	**92.4**	**10.13**	**94.43**
90-100	7.6	100	5.57	100.00
Total	100		100	

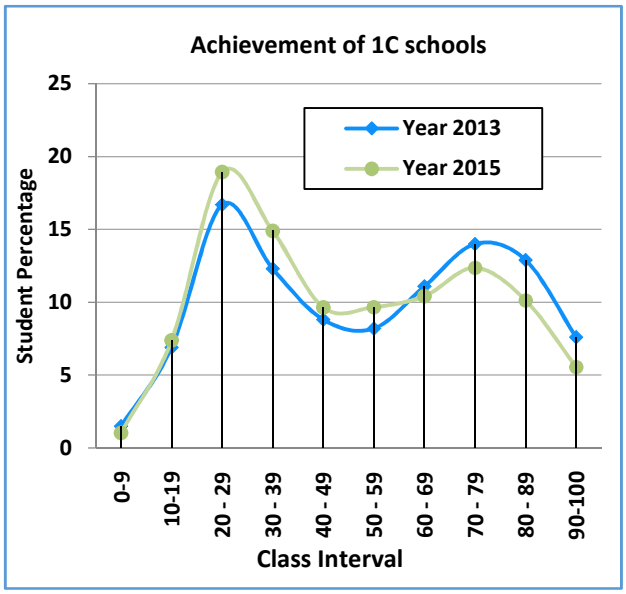

Fig. 5.26: Comparison of achievement of 1C schools – 2013 & 2015

In comparison to Type 3 schools in 1C schools the percentage of low performers scoring 20-29 has increased while the percentage that has scored between 80-89 has decreased.

Table 5.18: Comparison of achievement of Type 2 schools

Class Interval	Type 2 - 2013		Type 2 - 2015	
	Student %	Cumula - tive %	Student %	Cumula-tive %
0-9	1.5	1.5	1.4	1.40
10-19	7.9	9.4	8.08	9.49
20 - 29	**16.8**	**26.2**	**21.58**	**31.07**
30 - 39	13.2	39.4	16.28	47.35
40 - 49	9.9	49.3	10.09	57.44
50 - 59	9.5	58.8	9.11	66.55
60 - 69	10.2	69	9.52	76.07
70 - 79	13.1	82.1	10.4	86.47
80 - 89	**10.5**	**92.6**	**9.4**	**95.87**
90-100	1.5	1.5	1.4	1.40
Total	100		100	

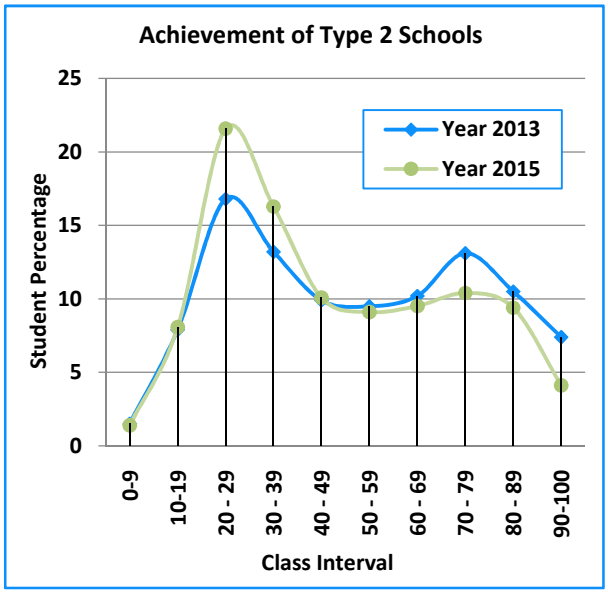

Fig. 5.27: Comparison of achievement of Type 2 schools – 2013 & 2015

A similar pattern can be observed in Type 2 schools as well. As Fig. 5.27 displays the peak towards the left has increased. Correspondently the percentage scoring 20-29 has increased. On other hand the peak towards the right has decreased and the percentage scoring between 80-89 has decreased.

5.12 Comparison of marks according to gender

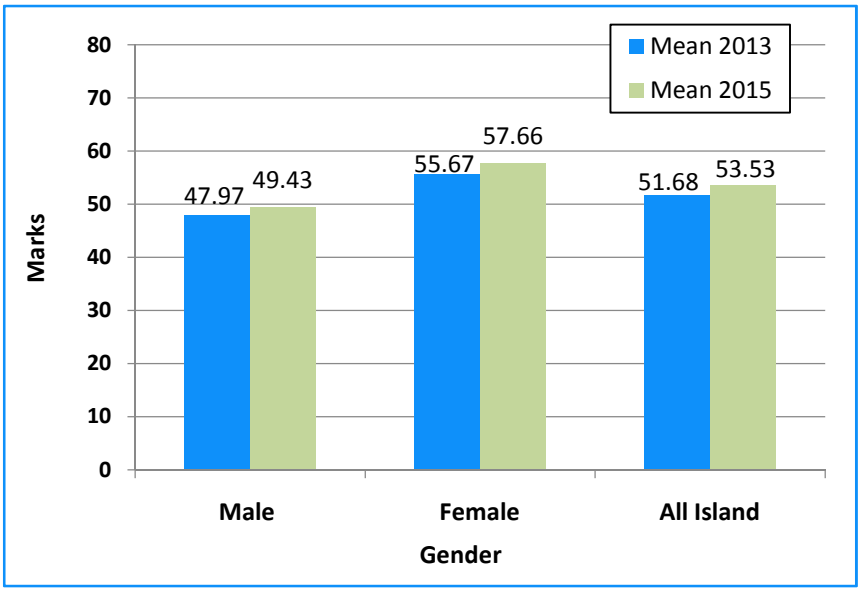

Fig. 5.28: All island comparison of mean values according to gender

As Fig. 5.28 indicates there is an increase in both male and female students' achievement in the year 2015. This increase is also seen in the cumulative percentage tables and the line graphs.

Table 5.19: Comparison of achievement of male students

Class Interval	Male - 2013		Male - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	2.08	2.08	1.23	1.23
10-19	9.23	11.31	7.69	8.92
20 - 29	**19.48**	**30.79**	**18.97**	**27.89**
30 - 39	14.40	45.19	14.08	41.97
40 - 49	9.29	54.48	9.39	51.36
50 - 59	8.40	62.88	9.02	60.38
60 - 69	9.40	72.28	10.47	70.85
70 - 79	12.2	84.5	12.60	83.46
80 - 89	9.35	93.92	10.61	94.07
90-100	6.08	100.00	5.93	100.00
Total	100		100	

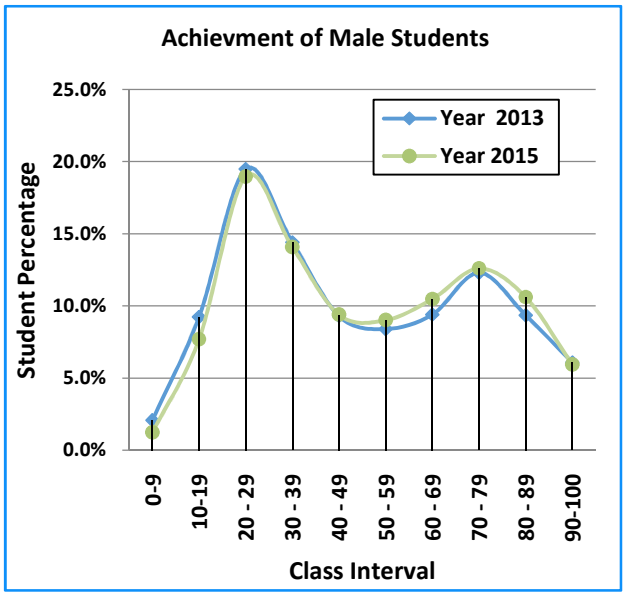

Fig. 5.29: Comparison of achievement of male students – 2013 & 2015

As Fig. 5.29 indicates there is only a very slight change in the shape of the two line curves. However, as Table 5.19 indicates the percentage of students scoring 20-29 has

decreased slightly. On the other hand the percentage scoring 80-89 has increased slightly.

Table 5.20: Comparison of achievement of female students

Class Interval	Female - 2013		Feale - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	1.08	1.08	0.61	0.61
10-19	5.70	6.78	4.57	5.18
20 - 29	13.73	20.51	12.61	17.79
30 - 39	11.96	32.47	11.34	29.13
40 - 49	9.11	41.58	8.54	37.67
50 - 59	9.00	50.58	9.14	46.80
60 - 69	11.45	62.03	11.75	58.55
70 - 79	14.22	76.25	15.27	73.82
80 - 89	14.26	90.51	16.11	89.94
90-100	9.49	100.00	10.06	100.00
Total	100		100	

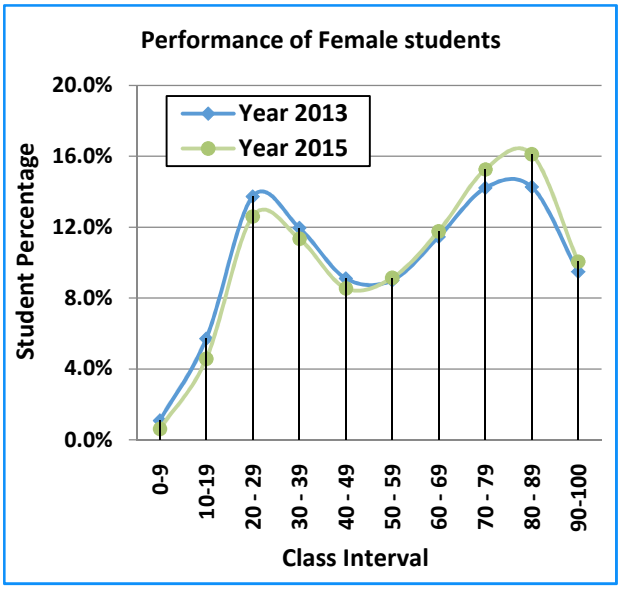

Fig. 5.30: Comparison of achievement of female students – 2013 & 2015

5.13 Comparison according to medium of instruction

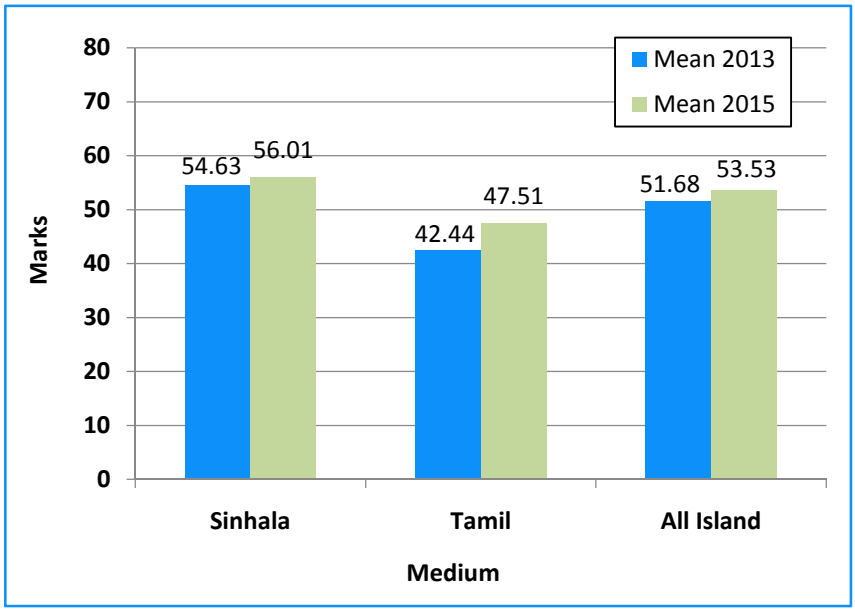

Fig. 5.31: All island comparison of mean values according to medium of instruction

As Fig. 5.31 displays achievement of both Sinhala and Tamil medium students has increased. However, the increase in the Tamil medium students is 5 points which is greater than the Sinhala medium students increase which is only 2 points.

These differences can be seen in the cumulative frequency table.

Table 5.21: Comparison of achievement of Sinhala medium students

Class Interval	Sinhala - 2013		Sinhala - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	1.17	1.17	0.66	0.66
10-19	5.70	6.87	4.65	5.31
20 - 29	14.50	21.37	13.98	19.29
30 - 39	12.65	34.02	11.92	31.21
40 - 49	9.18	43.20	8.67	39.88
50 - 59	8.90	52.10	8.99	48.87
60 - 69	10.90	63.00	11.90	60.77
70 - 79	14.40	77.40	15.40	76.17
80 - 89	13.94	91.34	14.96	91.13
90-100	8.66	100.00	8.87	100.00
Total	100		100	

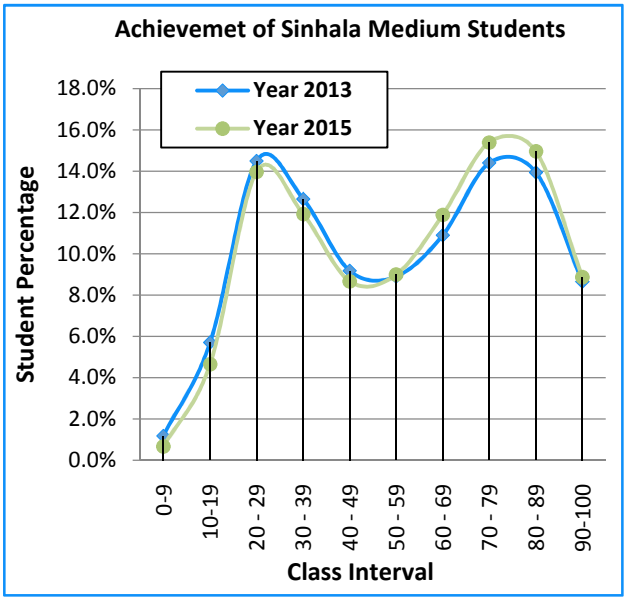

Fig. 5.32: Comparison of Achievement of Sinhala Medium Students – 2013 & 2015

As can be seen in Fig. 5.32 percentage of Sinhala medium students who has scored between 20-29 has dropped from 14.5 to 13.9. The high achievers between the class interval 80-89 has increased from 13.94 to 14.96 only. On the other hand the percentage of Tamil medium students between the class interval 20-29 has dropped from 23.55 to 19.80. The high achievers has increased from 5.59 to 9.81%.

Table 5.22: Comparison of achievement of Tamil medium students

Class Interval	Tamil - 2013		Tamil - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	2.95	2.95	1.49	1.49
10-19	12.97	15.92	9.41	10.90
20 - 29	23.55	39.47	19.80	30.70
30 - 39	14.95	54.42	14.46	45.16
40 - 49	9.27	63.69	9.63	54.79
50 - 59	7.98	71.67	9.28	64.07
60 - 69	8.61	80.28	9.37	73.44
70 - 79	9.39	89.67	10.68	84.12
80 - 89	5.59	95.26	9.81	93.93
90-100	4.74	100.00	6.07	100.00
Total	100		100	

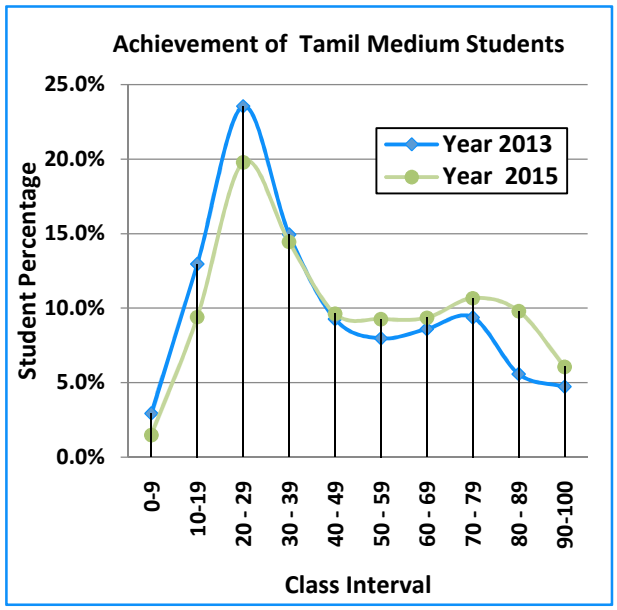

Fig. 5.33: Comparison of Achievement of Tamil Medium Students – 2013 & 2015

5.14 Comparison of marks according to location

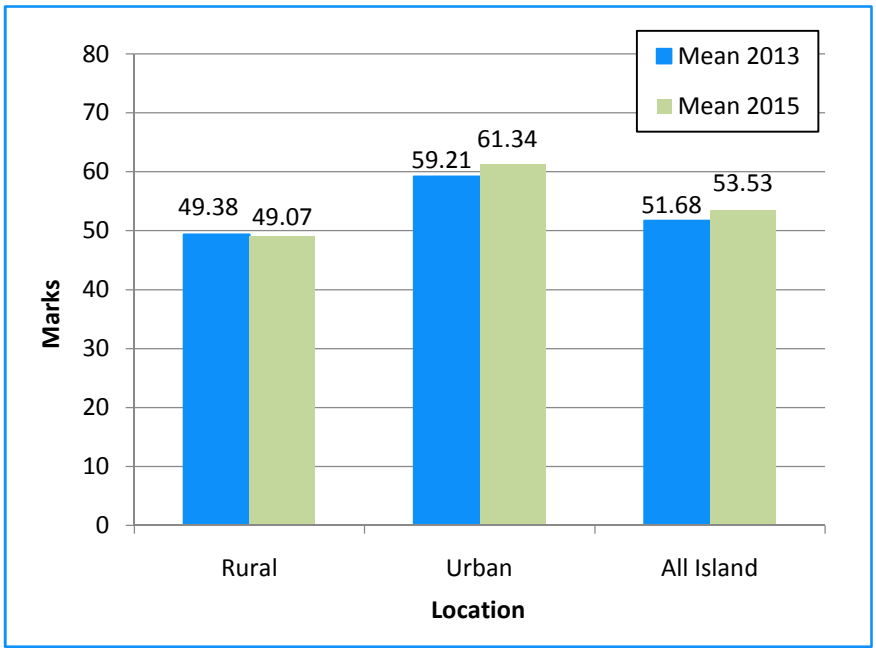

Fig. 5.34: All island comparison of mean values according to location

As can be seen from Fig. 5.34 the rural students' performance has decreased slightly while the urban students' performance has increased slightly. As a result the gap between the urban and rural students' performance has increased.

5.15 Skill analysis comparison

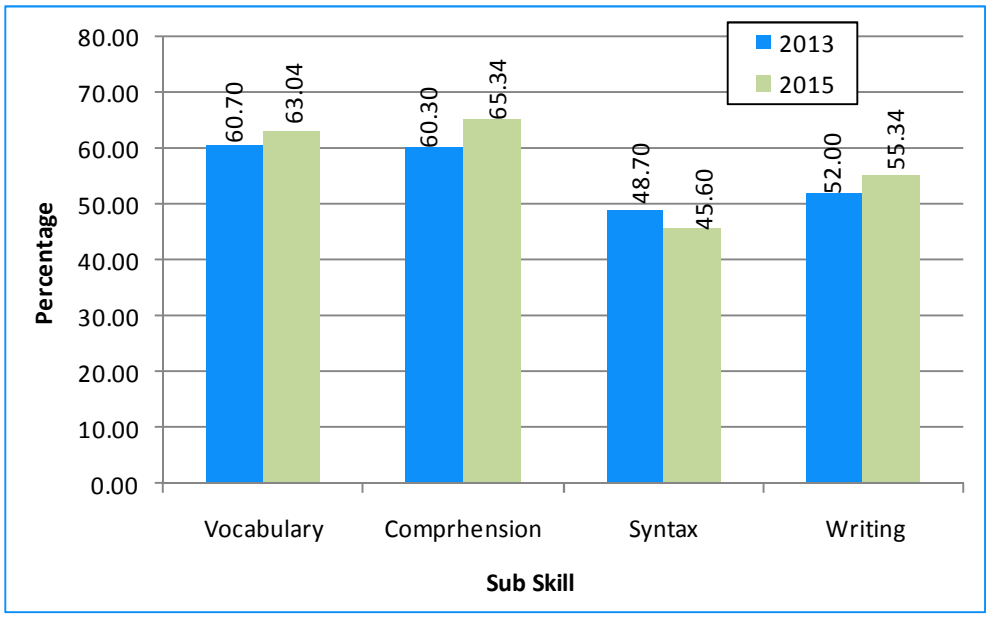

Fig. 5.35: Comparison of achievement of sub skills in English language

As Fig. 5.35 displays achievement in all subskills except in the achievement of syntax (grammar) has increased.

Table 5.23 indicates the comparison of the students' achievement in syntax questions in 2013 and 2015. Accordingly the students' correct esponses to question number 23, which relates to personal pronouns has been reduced considerably. This could have contributed much to the drop in achievemnt in syntax.

On the other hand students performance in question number 30 which relates to the third person singular present tense has been the lowest in both years.

Table 5.23: Trends in achievement in syntax

Question No.	Right/wrong answer	Year-2013	Year-2015	
		%	%	Change
Q21	0	54.10%	55.50%	+
	1	45.90%	44.50%	-
Q22	0	39.30%	38.20%	-
	1	60.70%	61.80%	+
Q23	0	33.30%	73.40%	+
	1	66.70%	26.60%	-
Q24	0	50.50%	50.40%	-
	1	49.50%	49.60%	+
Q25	0	49.40%	49.80%	+
	1	50.60%	50.20%	-
Q26	0	47.70%	45.70%	-
	1	52.30%	54.30%	+
Q27	0	53.60%	51.10%	-
	1	46.40%	48.90%	+
Q28	0	58.70%	56.10%	-
	1	41.30%	43.90%	+
Q29	0	53.80%	49.80%	-
	1	46.20%	50.20%	+
Q30	0	72.60%	74.00%	+
	1	27.40%	26.00%	-

The comparison of students' performance in the writing task is further analysed in Table 5.24.

Accordingly the percentage of grammatically correct and one word answers has increased for each response in the year 2015. This has contributed positively to the over all performance in writing.

Table 5.24: Trends in analysis of writing skills

Question No	Writing	Year 2013	Year 2015	Change
31	Grammatically Correct	32.85%	35.08%	+
	One Word Answer	32.78%	33.85%	+
	Incorrect	24.04%	20.86%	-
	Not Attempted	10.33%	10.21%	-
32	Grammatically Correct	16.29%	19.91%	+
	One Word Answer	29.43%	27.70%	-
	Incorrect	39.75%	37.55%	-
	Not Attempted	14.53%	14.84%	-
33	Grammatically Correct	22.71%	24.57%	+
	One Word Answer	31.07%	31.82%	+
	Incorrect	31.56%	28.37%	-
	Not Attempted	14.66%	15.24%	+
34	Grammatically Correct	19.91%	22.31%	+
	One Word Answer	29.31%	29.46%	+
	Incorrect	34.23%	30.49%	-
	Not Attempted	16.55%	17.75%	+
35	Grammatically Correct	20.18%	22.60%	+
	One Word Answer	29.88%	29.97%	+
	Incorrect	32.57%	29.24%	-
	Not Attempted	17.37%	18.20%	+

However, the overall achievement of the writing skill is weak. The grammatically correct sentences for each item from question 31-35 is less than 40%. Therefore, the analysis confirms the need to reformulate the ELCs as discussed in section 5.8.

Since there are no ELCs related to writing except to write the students name it is not clear whether students are expected to write complete sentences. On the other hand the grade 4 syllabus the activities in the text book and work book demands that students write sentences. This mismatch may have affected students writing.

5.16 Summary

Part I of this chapter discussed students' performance in the English language both at national and provincial level, according to school type, gender, medium of instruction and location.

Further, test items used to assess students' performance were analyzed to assess how far they have been successful in achieving the sub skills of the language expected to be achieved by grade 4 pupils.

Part II described the trends in achievement between 2013 and 2015.

It could be concluded that there is disparity in achievement of learning outcomes in the learning of English Language. However, the trend observed is that overall there is an increase in student performance.

Chapter Six

Patterns and Trends in Achievement: Mathematics 2015

6.1 Introduction

This chapter presents the patterns and trends in achievement of the students in mathematics.

The patterns of achievement in 2015 will be presented in part I and the trends will be presented in part II.

Part I – Patterns in achievement in mathematics

First, national level student achievement would be discussed in relation to student performance pertaining to mathematics.

6.2 Patterns of achievement at national level

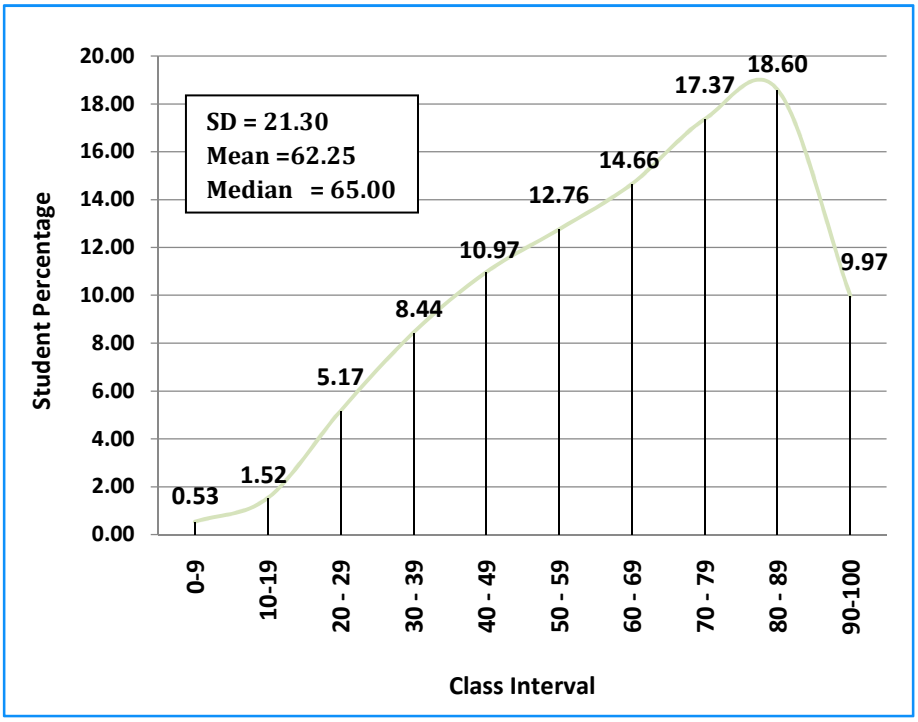

Fig. 6.1: All island achievement in mathematics 2015 – dispersion of marks

The frequency polygon shown in Fig. 6.1 outlines the total picture of the distribution of marks of grade 04 students in mathematics.

Fig. 6.1 depicts a negatively skewed distribution of marks displaying that majority of the students has scored high marks in mathematics. The distribution of marks is further clarified in Table 6.2.

Table 6.1: All island achievement in mathematics 2015– cumulative percentages

Class Interval	Student %	Cumulative %
0 –9	0.53	0.53
10 - 19	1.52	2.05
20 - 29	5.17	7.22
30 - 39	8.44	15.67
40 - 49	10.97	26.64
50 - 59	12.76	39.40
60 - 69	14.66	54.06
70 - 79	17.37	71.43
80 - 89	18.60	90.03
90 - 100	9.97	100.00
Total	100.00	

According to this table the highest percent of students (19%) has scored between 80-89 marks and another 10% has scored between 90-100. On the other hand, 15.67% of students has scored below 40 marks. This shows the disparity in achievement in mathematics. However, the percentage of students who has scored above 50 is high indicating that majority of the students are high achievers and that is the reason for the negatively skewed curve in Fig. 6.1.

Fig. 6.2 illustrates student achievement patterns further.

As Fig.6.2, the box plot displays more than 50% of students has scored 62.25 or above. Further 75% of students has scored 42.50 or above for the mathematics achievement. It also reveals that 50% of the marks lie between 42.5 and 80. For the mathematics achievement there are no outliers which means that there are no students who have scored exceptionally high or low marks.

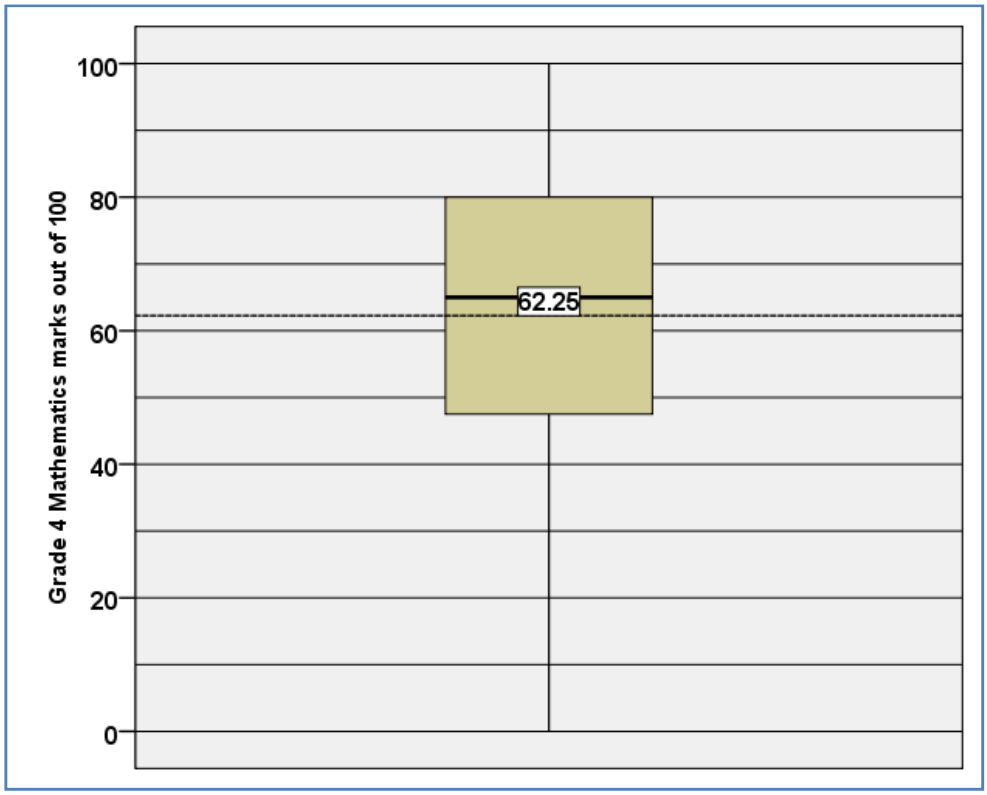

Fig. 6.2: Box plot and whisker chart representing all island mathematics achievement

Summary of national level achievement

- National level mean is 62.25, while the median is 65.00.
- Disparity in achievement prevails with approximately 15.67% of students scoring below 40% and 29% of students scoring above 80%. However, the highest number of students falls within the marks range of 81-90.

Provincial wise student achievement will be discussed next.

6.3 Provincial wise student achievement

The nature of the distribution of scores provincial wise reveals certain patterns. These patterns are discussed based on Table 6.2.

Table 6.2: Provincial achievement in mathematics 2015 – Summary statistics

Province	Mean	Rank	Standard Error of Mean	Standard Deviation	skewness	Percentile (p25)	Median (p50)	Percentile (p75)
Southern	65.27	1	0.10	21.25	-0.65	50.0	70.0	82.5
Sabaragamuwa	65.01	2	0.11	19.97	-0.54	50.0	67.5	82.5
North Western	64.56	3	0.10	20.56	-0.49	50.0	67.5	82.5
Western	63.83	4	0.08	21.34	-0.48	47.5	67.5	82.5
North Central	62.98	5	0.13	19.72	-0.42	47.5	65.0	77.5
Central	60.07	6	0.10	20.79	-0.33	45.0	62.5	77.5
Uva	59.11	7	0.14	21.61	-0.23	42.5	60.0	77.5
Northern	58.53	8	0.16	21.82	-0.25	42.5	60.0	77.5
Eastern	56.14	9	0.12	22.38	-0.21	40.0	57.5	75.0
All Island	62.25		0.036	21.30	-0.43	45.0	65.0	80.0

As Table 6.2 indicates based on provincial wise mean achievements Southern Province ranks first. However, Sabaragamuwa Province is ranked second with only a slightly lower mean value.

Western province is in the fourth place with North Western coming third with a slightly higher mean value.

Achievement wise the provinces fall into three categories. Southern, Sabaragamuwa, North Western, Western and North Central with mean scores above the national mean, fall into the higher category. Central, Uva and Northern Provinces cluster in the middle while Eastern fall into the lowest category. Between the Southern and Eastern Provinces there is almost nine point difference in mean values indicating the disparity in achievement among the provinces.

These disparities are further highlighted through the bar chart given in Fig. 6.3.

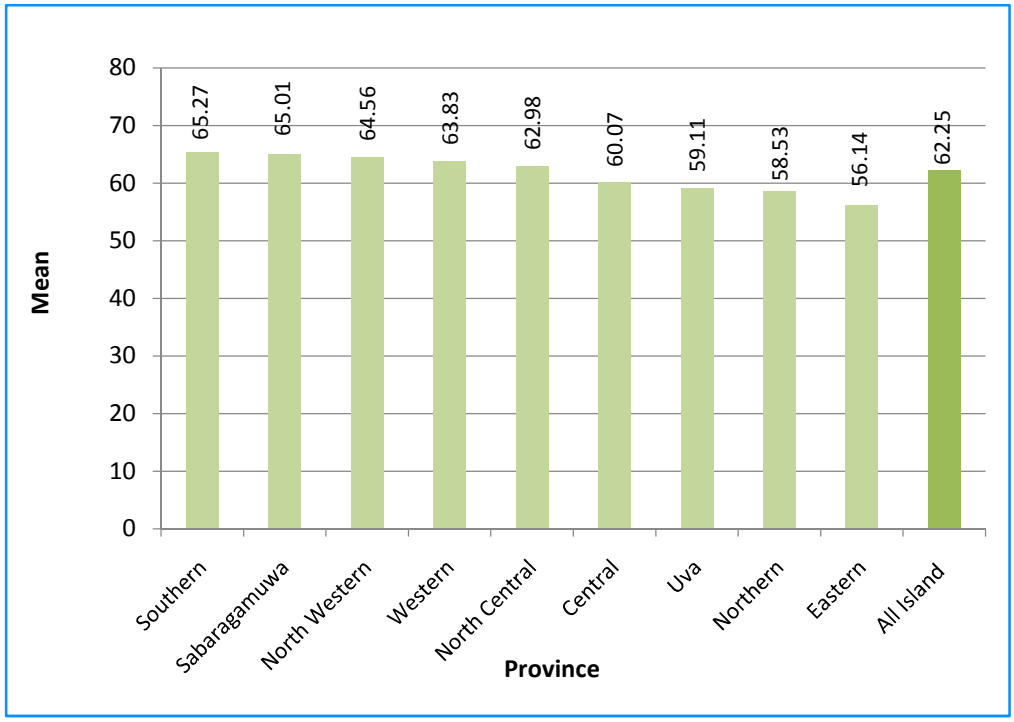

Fig. 6.3: Bar chart to represent mean among the provinces- Mathematics

Disparity in achievement among provinces

According to Table 6.2, Southern Province has the highest mean value but its SD is higher than Sabaragamuwa Province which has the next highest mean value. This means that student performance is more homogeneous in the Sabaragamuwa Province. There are five provinces that have SD values lower than the all island SD. Eastern province has the highest SD value indicating that the variation of students' marks is the highest in this province. The SD values of Western, Uva, Central and Eastern Provinces are higher than the all island SD value indicating that there is variation in achievement in these provinces.

All the provinces have obtained negative skewed values. It is a positive sign that four provinces have achieved higher values (near to the mean or above). Uva, Northern and Eastern Provinces have obtained lower skewed values. This indicates that their performances are not good compared to other provinces.

Patterns of achievement in the different provinces is further elaborated through the box plot chart.

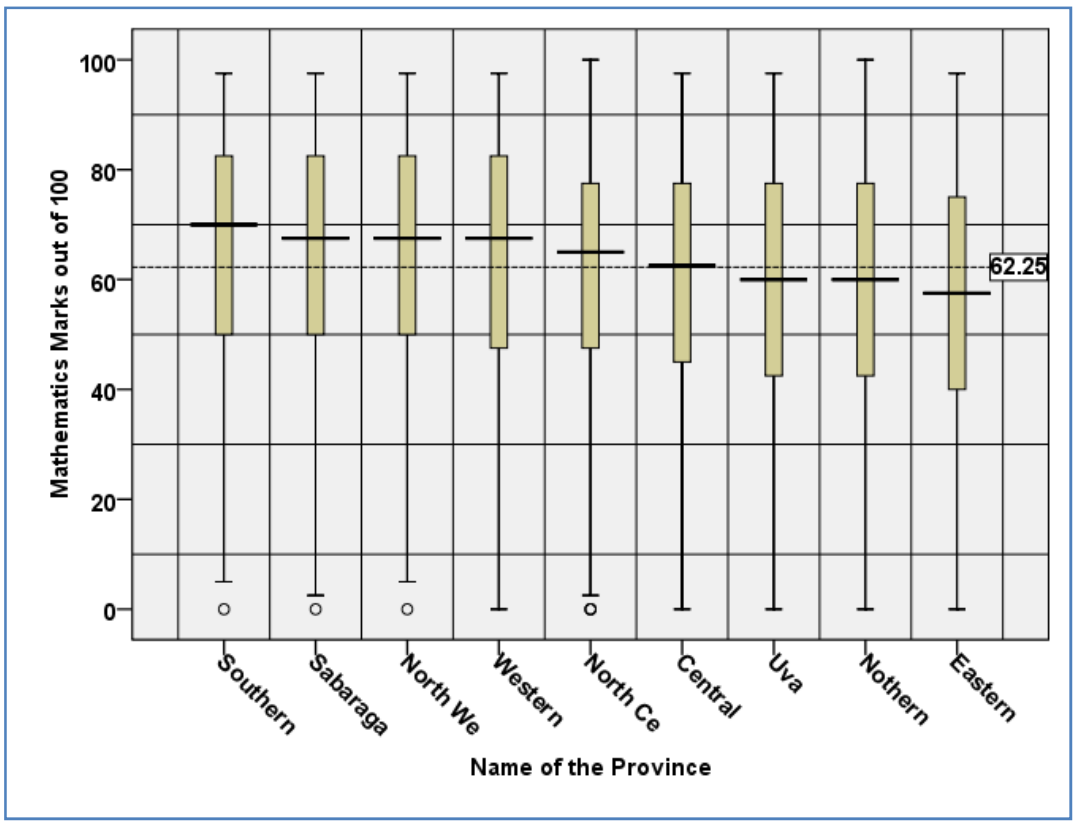

Fig. 6.4: Box plot and whisker chart representing provincial wise mathematics achievement

According to the above chart there are three provinces (Southern, Sabaragamuwa, North Western) which show similar characteristics. In the Western Province even though the 75th percentile is similar, its 25th percentile is lower. Therefore there is greater disparity of marks in the Western Province. While Central, North Central, Northern and Uva Provinces show similarities at the upper limit their performance at the 25th percentile differs slightly. On the other hand, the Eastern Province performance is quite different to other provinces at all levels.

However, there are no outliers in the Eastern Province but there are in Southern, Sabaragamuwa, North Western and North Central Provinces.

Table 6.3: Percentage of students scoring 50 or above, and below 50

Province	Above or equal to 50	Below 50
Southern	78.74%	21.26%
Sabaragamuwa	78.56%	21.44%
North Western	77.93%	22.07%
Western	75.87%	24.13%
North Central	76.70%	23.30%
Central	72.09%	27.91%
Uva	67.99%	32.01%
Northern	67.49%	32.51%
Eastern	61.88%	38.12%
All Island	73.36%	26.64%

Summary of provincial level analysis

- Achievement wise the provinces fall into three categories.
  Category 1 – Southern, Sabaragamuwa, North Western, Western and North Central with mean scores above the national mean (62.25)
  Category 2 –Uva, Central and Northern Provinces cluster in the middle.
  Category 3 –Eastern Province

6.4 Achievement levels by type of school

Table 6.4: Mathematics achievement according to school type

School Type	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
1AB	67.66	0.08	19.31	-0.69	55.0	72.5	82.5
1C	60.04	0.07	20.89	-0.29	45.0	62.5	77.5
Type 2	57.87	0.07	22.00	-0.22	40.0	60.0	77.5
Type 3	64.23	0.06	21.17	-0.54	47.5	67.5	82.5
All Island	62.25	0.04	21.30	-0.43	45.0	65.0	80.0

As Table 6.4 indicates there is a considerable gap between the mean scores of different school types. However, 1AB schools' mean score is above that of the other types and also above the national mean. Type 3 schools mean score is also above the national

mean. On the other hand, the mean scores of Type 2 and 1C schools, are below the national mean. Therefore, the gap between school types exists.

The difference in mean scores is graphically shown in Fig. 6.5.

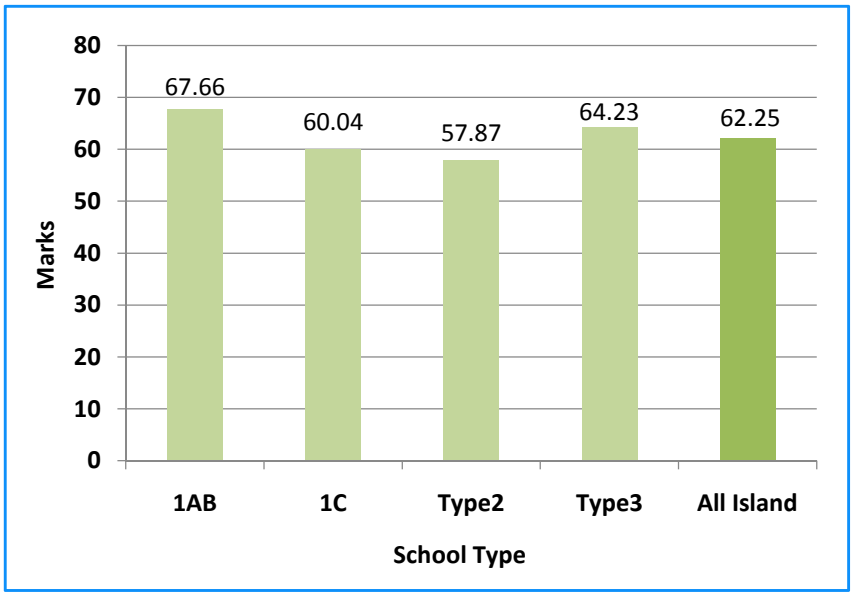

Fig.6.5: Bar chart representing the mean among the school types- Mathematics

The performance of the school types is further highlighted when the median scores are considered in Table 5.4. All school types have achieved a high median value for the mathematics achievement. Fifty percent of students in all school types have obtained scores above the mean value. However, 1AB and Type 3 schools median value is even higher (72.5 and 67.00).

Variation among students

Variation in student achievement in 1AB and 1C school types is low. Lower standard deviation values are shown by 1AB schools and 1C schools. Those values are lower than the all island SD value as well. It reveals that higher number of student achievement lies closer to the mean value. The dispersion from the mean value is very low. Type 2 schools standard deviation value is the highest among the school types. This indicates that student achievement deviation from the mean is very high. Type 1AB and 1C schools have SD values lower than the all island SD value, but Type 2 and Type 3 schools have SD values above the all island value.

Disparity in achievement

All school types have obtained negative skewed values. It reveals that in all school types higher number of students has achieved high marks while lower marks are obtained by a lower number of students. Highest skewed value has been obtained by 1AB schools. Next higher value has been obtained by Type 3 schools. Both values are above the all island skewness value. Type 2 and 1C schools' skewness value is lower than the all island value, indicating that there is greater variation in achievement in these schools.

The variation in student performance in different types of schools is further highlighted through the frequency distribution graphs.

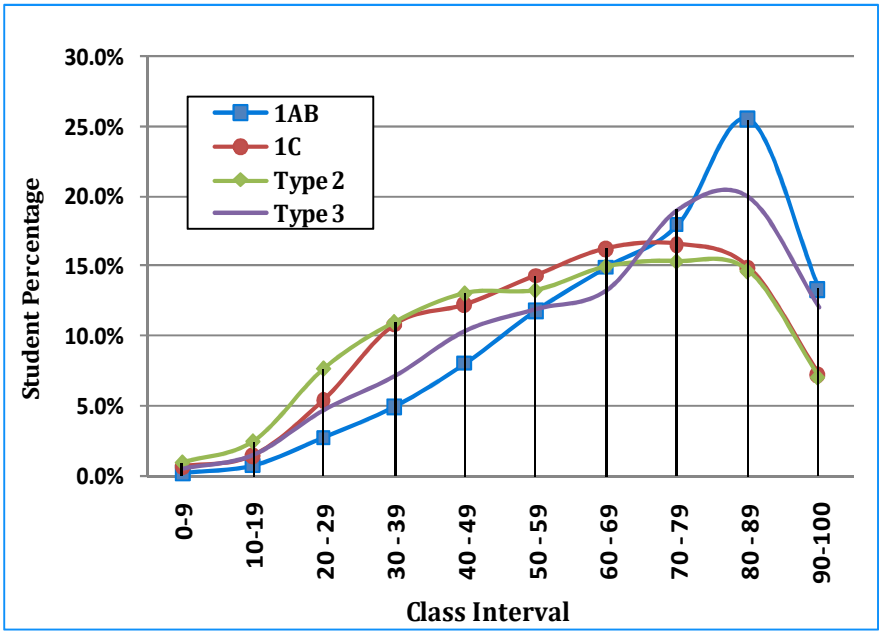

Fig. 6.6: Dispersion of marks by school type – Mathematics

Fig. 6.6 displays that 1AB and Type 3 school curves peaked at the 80-89 class interval. While in Type 2 and 1C schools the peak spreads over three mark intervals.

The spread of marks at different mark intervals is further illustrated in the cumulative percentage Table 6.5.

Table 6.5: Cumulative student percentages according to school type- Mathematics

Class Interval	1AB		1C		Type 2		Type 3	
	Student %	Cumulative %	Student %	Cumulative %	Student %	Cumulative %	Student %	Cumulative %
0 - 9	0.14	0.14	0.64	0.64	0.89	0.89	0.41	0.41
10 - 19	0.69	0.83	1.47	2.11	2.41	3.30	1.40	1.81
20 - 29	2.71	3.54	5.46	7.57	7.63	10.92	4.64	6.45
30 - 39	4.91	8.45	10.82	18.39	10.95	21.88	7.08	13.52
40 - 49	8.02	16.47	12.26	30.65	13.02	34.89	10.33	23.85
50 - 59	11.81	28.28	14.34	44.99	13.25	48.14	11.90	35.75
60 - 69	14.92	43.19	16.27	61.26	14.94	63.07	13.26	49.00
70 - 79	17.95	61.14	16.58	77.84	15.31	78.38	19.03	68.04
80 - 89	**25.53**	**86.67**	**14.92**	**92.77**	**14.62**	**93.00**	**19.95**	**87.98**
90 - 100	13.33	100.00	7.23	100.00	7.00	100.00	12.02	100.00
Total	100.00		100.00		100.00		100.00	

In the 1AB school types high percentage of students has scored between 80-89. In Type 3 schools there is almost equal percent of students in the class intervals 80-89 and 70-79 (19.95 and 19.03). In other school types majority of the students do not belong to these class intervals. When considering student marks below 40 points, 1AB schools cumulative percentage is 10.82, but in other school types this percentage varies from 18.39 in 1C Type to 21.88 in Type 2 schools.

The analysis of data pertaining to the school types indicates disparity in achievement.

This is further illustrated through the box plot.

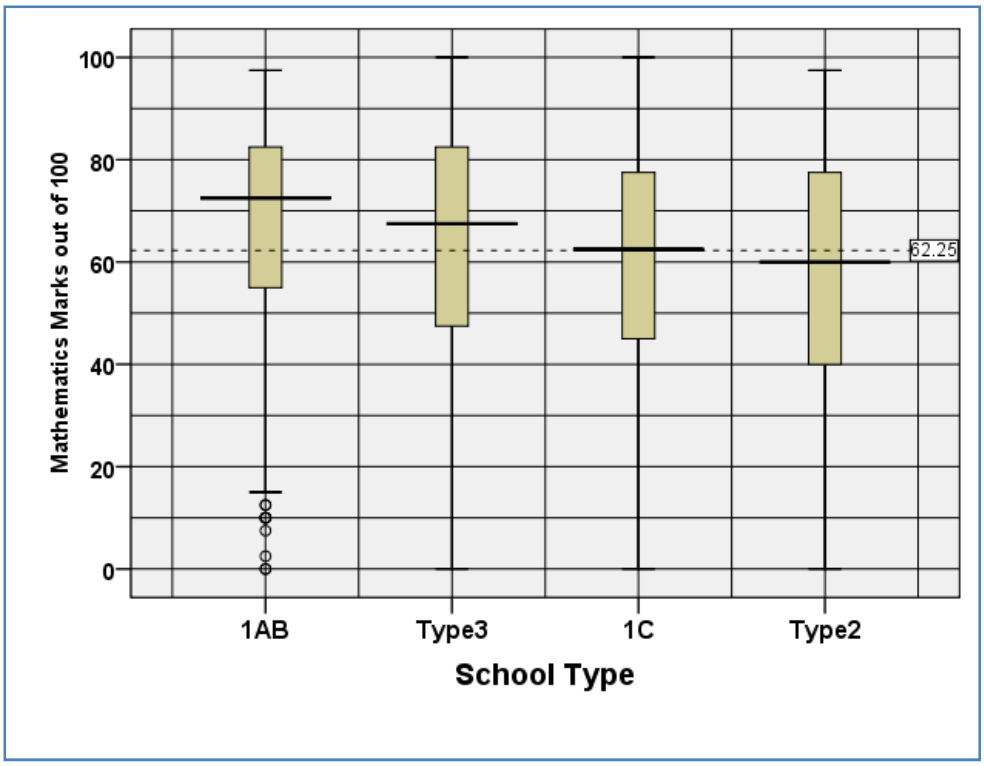

Fig. 6.7: Mathematics marks according to school types using box plot and whisker plot

1AB schools and Type 3 show a similarity at the 75th percentile. However, in Type 3 schools the 25th percentile is lower. On the other hand in the other two school types also the 75th percentile is quite high. However, the 25th percentile is low indicating low achievers. Yet only 1AB schools have outliers.

Summary

- The achievement in mathematics in 1AB and Type 3 schools are relatively similar
- At the same time the performance of Type 2 and 1C schools are also similar
- The gap in achievement between school types appears to be narrowing in 1AB and Type 3 schools but widening between these schools and in Type 2 and 1C schools.

6.5 Achievement levels by gender

Table 6.6: Mathematics achievement according to gender

Student Gender	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
Male	60.35	0.05	21.93	-0.32	42.5	62.5	80.0
Female	64.16	0.05	20.47	-0.53	50.0	67.5	80.0
All Island	62.25	0.04	21.30	-0.43	45.0	65.0	80.0

There is a difference in the achievement of females over males. As Table 6.6 indicates, male performance is also lower than the all island mean score, while female performance is above the all island mean.

These differences could also be seen in Fig. 6.8

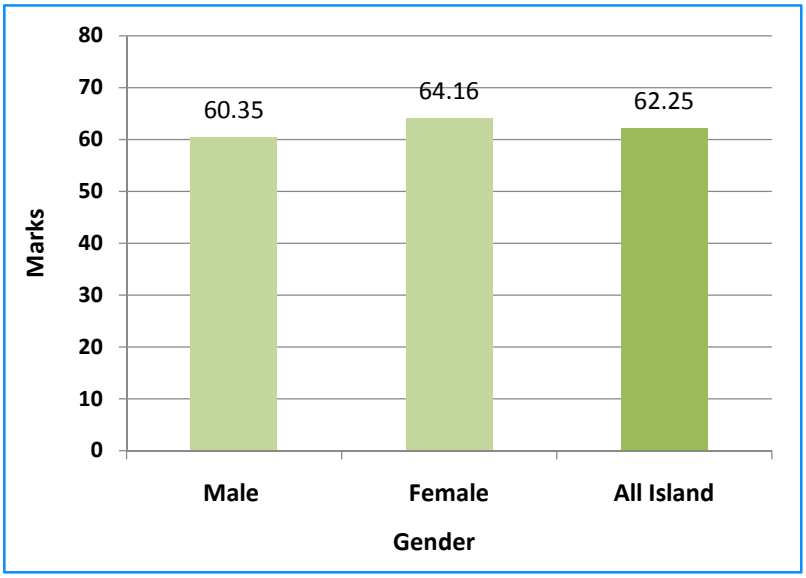

Fig. 6.8: Bar chart representing mean values according to gender –Mathematics

Variation among students

Variation in achievement among males is higher than that of the female students. This is indicated by the male students obtaining a higher SD value than the female students as well as the all island SD (Table 6.6). On the other hand, the female students SD is below the all island SD. Further, the female skewness value is higher than the all island as well as the male value. This indicates that there are more high achievers among the females.

Fig. 6.9 graphically illustrates the dispersion of marks according to gender.

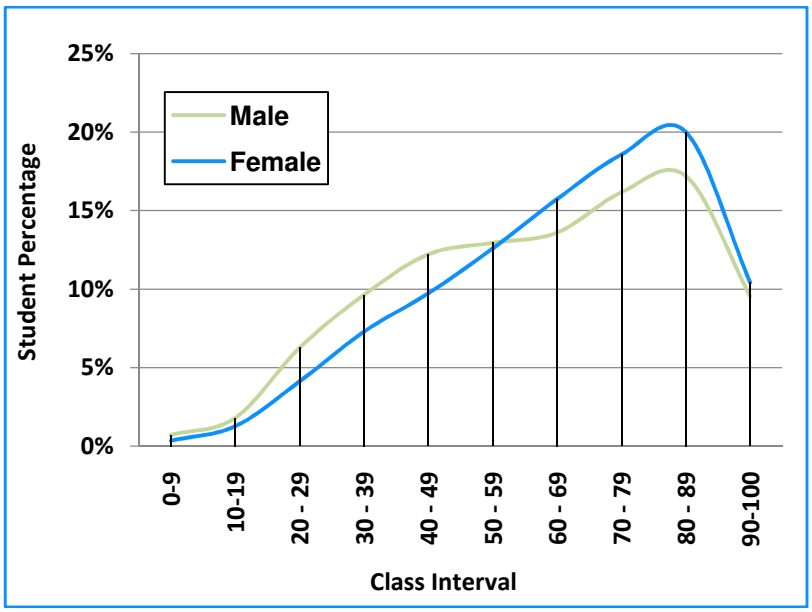

Fig. 6.9: Dispersion of marks by gender – Mathematics

Fig. 6.9 displays two curves which are both negatively skewed. As can be seen there are more high achievers than low achievers among both males and females. However the pattern of the two curves are slightly different. At the beginning the curves are similar, then the curves become different and at the 50-59 class interval they cut across. But the female curve then rises above the male curve and finally, both curves become similar again.

The disparity in the male students' achievement can be elaborated better through the cumulative percentages.

Table 6.7: Cumulative student percentages according to the gender –Mathematics

Class Interval	Male		Female	
	Student %	Cumulative %	Student %	Cumulative %
0 - 9	0.71	0.71	0.35	0.35
10 - 19	1.79	2.49	1.26	1.61
20 - 29	6.24	8.74	4.10	5.71
30 - 39	9.61	18.35	7.28	12.99
40 - 49	12.21	30.56	9.73	22.71
50 - 59	12.95	43.51	12.57	35.28
60 - 69	13.60	57.10	15.73	51.01
70 - 79	16.17	73.28	18.57	69.58
80 - 89	17.20	90.47	20.00	89.58
90 - 100	9.53	100.00	10.42	100.00
Total	100.00		100.00	

According to Table 6.7 and Fig. 6.9 it could be concluded that among both females and males, there are high performing students. The highest percentage (20.00%) of female students' marks fall into the class interval 80-89. The highest percentage of male students' marks, even though, a lesser percentage (17.20%) falls into the same class interval. This indicates that the high performing boys achievement is higher than that of the high performing girls.

At the 50-59 class interval percentage of male and female students is almost similar (12.95% and 12.57%).

Even though there are only 12.99 cumulative percent of female students who has scored below 40 marks, there are 18.35% of male students who has scored less than 40 marks. Therefore, the heterogeneity in achievement in mathematics of the boys is greater than the girls.

Box plot and whisker for gender wise mathematics achievement shows similarities that has been discussed already.

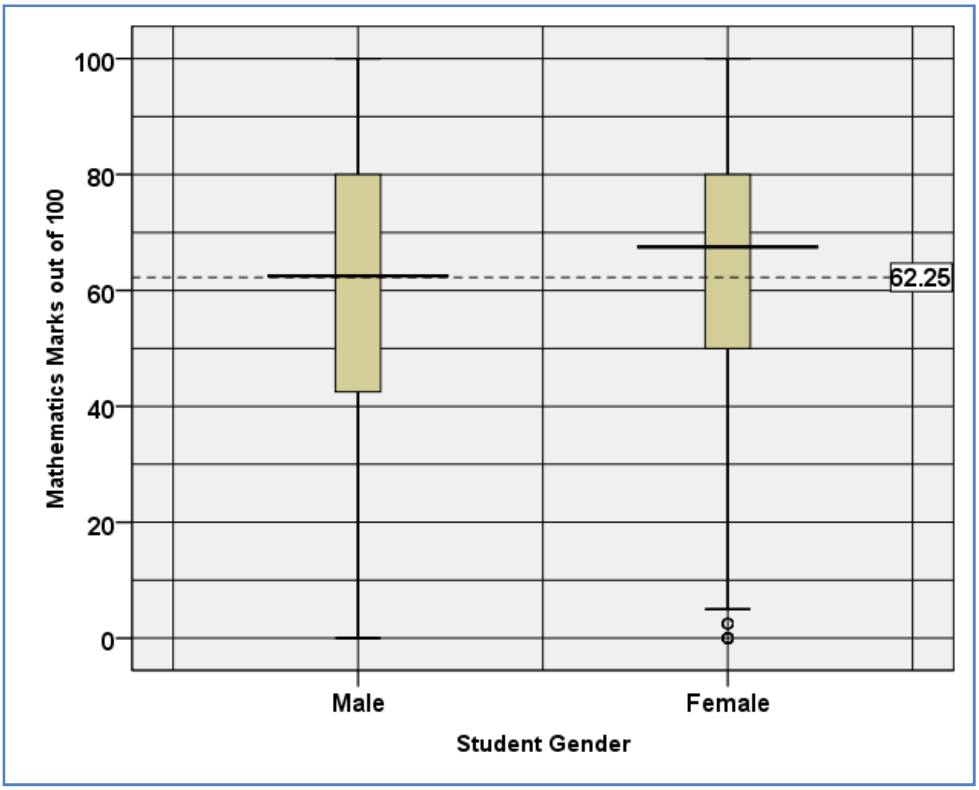

Fig. 6.10: Box plot and whisker plot representing gender wise mathematics marks

Box plot and whisker chart show that male students' 25th and 50th percentile is lower than the female mark range as well as the all island range. Therefore fifty percent of male students' achievement lie below the female students' achievement. This means that while 50% of male students has scored 62.50, fifty percent of female students has scored above 62.50. On the other hand, both male and female as well as all island marks at the 75th percentile are same (80).

Eventhough the female students performance is better than the male students, there are outliers among the females.

Summary

- Female performance is better than all island and male performance.
- While 12.99% of girls has scored below 40, the male percentage is 18.35.
- Highest percentage of females, 20.00% as well as 18.35% of males fall into the mark range 80-89.

6.6 Achievement levels by medium of instruction

Table 6.8: Mathematics achievement according to medium of instruction

Location	Mean	Std. Error of Mean	Standard Deviation	Skewness	Percentile 25	Median 50	Percentile 75
Sinhala	65.34	0.04	20.43	-0.58	50.00	70.00	82.50
Tamil	54.76	0.07	21.49	-0.07	37.50	55.00	72.50
All Island	62.25	0.04	21.30	-0.43	45.00	65.00	80.00

There is disparity between the students belonging to the different medium of instruction. While the Sinhala medium students' mean achievement is above the all island mean value, the Tamil medium students' mean achievement is below the national mean average.

These disparities are further highlighted through the bar chart given in Fig. 6.11.

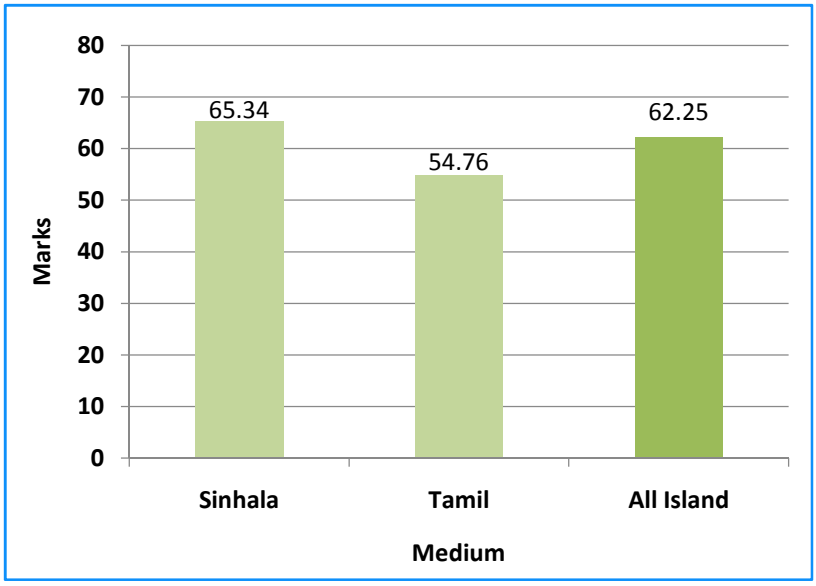

Fig. 6.11: Bar chart representing mean values according to medium of instruction - Mathematics

As Table 5.8 indicates Tamil medium students SD is higher than the Sinhala medium students and is higher than the national SD. Thus there is greater variation in their performance.

Sinhala medium students' achievement curve shows negative skewness value. This means that majority of the students has scored high marks. On the other hand, the Tamil medium students' achievement curve though negative shows that it has skewed more towards the positive direction. This denotes that majority of the students is low achievers. Sinhala medium students' achievement has greatly impacted on the all island achievement.

The diversity in achievement scores among the students taught through the different medium of instruction, is further highlighted through the frequency distribution graphs.

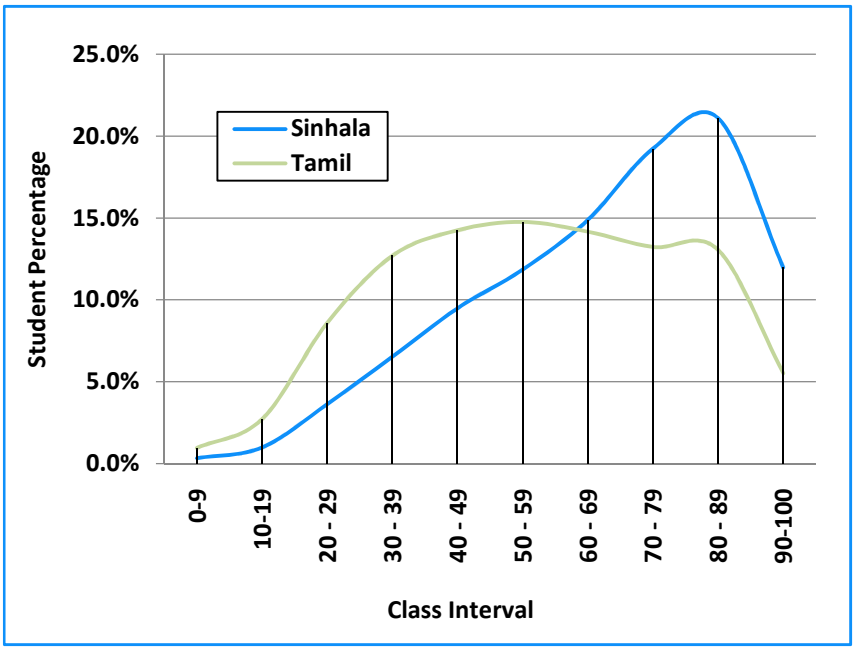

Fig. 6.12: Dispersion of marks by medium of instruction – Mathematics

The two curves on Fig. 6.12 shows two different patterns. While the Sinhala medium curve is negatively skewed with more students scoring high marks the Tamil medium students marks are spread. There are low achievers as well as high achievers. However, the high achievers are slightly more. This pattern can be explained thorugh Table 6.9.

Table 6.9: Cumulative student percentages according to medium of instruction – Mathematics

Class Interval	Sinhala		Tamil	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.33	0.33	0.96	0.96
10-19	0.98	1.32	2.72	3.68
20 - 29	3.63	4.94	8.60	12.28
30 - 39	6.52	11.47	12.70	24.98
40 - 49	9.49	20.95	14.26	39.24
50 - 59	11.85	32.80	14.77	54.01
60 - 69	14.88	47.69	14.17	68.18
70 - 79	19.24	66.92	13.24	81.42
80 - 89	21.10	88.02	13.06	94.47
90-100	11.98	100.00	5.53	100.00
Total	100.00		100.00	

As Table 6.9 indicates the highest percentage of the Sinhala medium students' marks is in the range of 70-100. This amounts to more than 50%. On the other hand, the highest percentage of Tamil medium students marks concentrate between 40-70.

Considering the pass mark as 40, only 11.47% of Sinhala medium students has scored below the pass mark. On the other hand 24.98% of Tamil medium students has scored below the pass mark.

Box plot for medium wise achievement graphically shows the differences that have been discussed already.

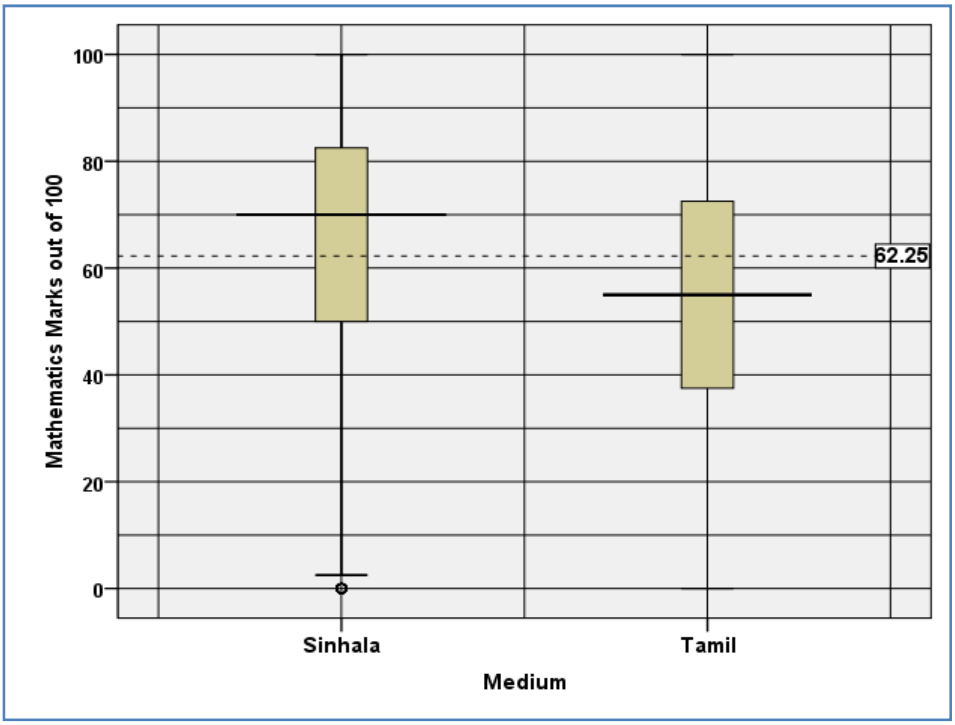

Fig. 6.13: Mathematics marks according to medium of instruction using box plot and whisker plot

Box plot and whisker plot chart shows high differences among both media. However, Sinhala medium dispersion of marks in the box plot is less than the Tamil medium students' dispersion of marks.

Sinhala medium student's 25th, 50thand 75th percentile values are higher than that of the Tamil medium students. Therefore, this confirms that there is disparity between the performance in mathematics of Tamil and Sinhala medium students.

Summary

- There is wide disparity among students belonging to different medium of instruction.
- The Sinhala medium students' mean score is above the national mean while the Tamil medium students' mean is lower.

Students achievement in relation to the location of the school would be discussed next.

6.7 Achievement levels by location

Table 6.10: Mathematics achievement according to location

Location	Mean	Std. Error of Mean	Standard Deviation	Skewness	Percentile 25	Median 50	Percentile 75
Rural	59.56	0.05	21.43	-0.30	42.5	62.5	77.5
Urban	66.97	0.06	20.21	-0.66	52.5	70.0	85.0
All Island	62.25	0.04	21.30	-0.43	45.0	65.0	80.0

As Table 6.10 indicates, there is variation in achievement among the schools in the different localities. The Urban Council area schools have performed better than the rural area schools. Rural area schools have performed below the national mean while the urban schools have performed above the national mean.

The difference in mean values is graphically shown in Fig. 6.14

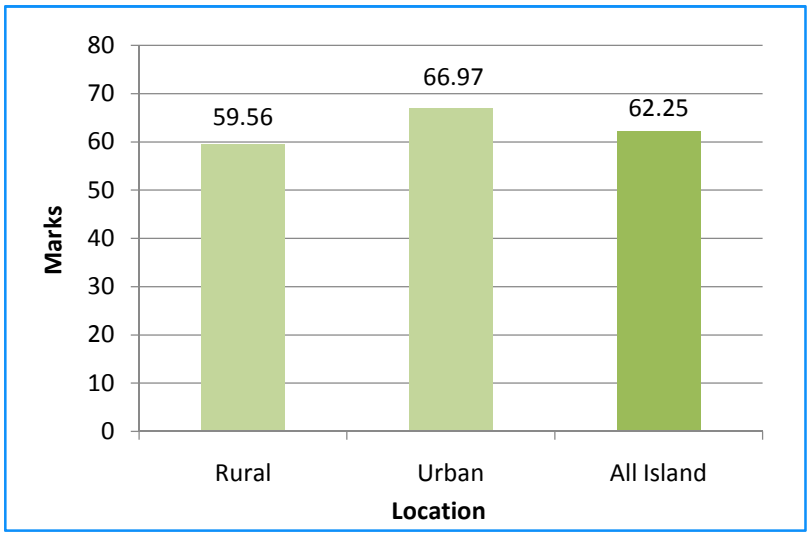

Fig. 6.14: Bar chart representing mean values according to location– Mathematics

As Fig. 6.14 indicates the mean values in the rural area schools are lower than urban council areas.

According to Table 6.10 the SD also differs in the two localities even though not to a great extent. However, while the SD of the rural schools is closer to the all island SD, the urban schools SD is lower than the all island SD denoting less variation.

Students' achievement is further elaborated through the frequency distribution graphs in Fig. 6.15.

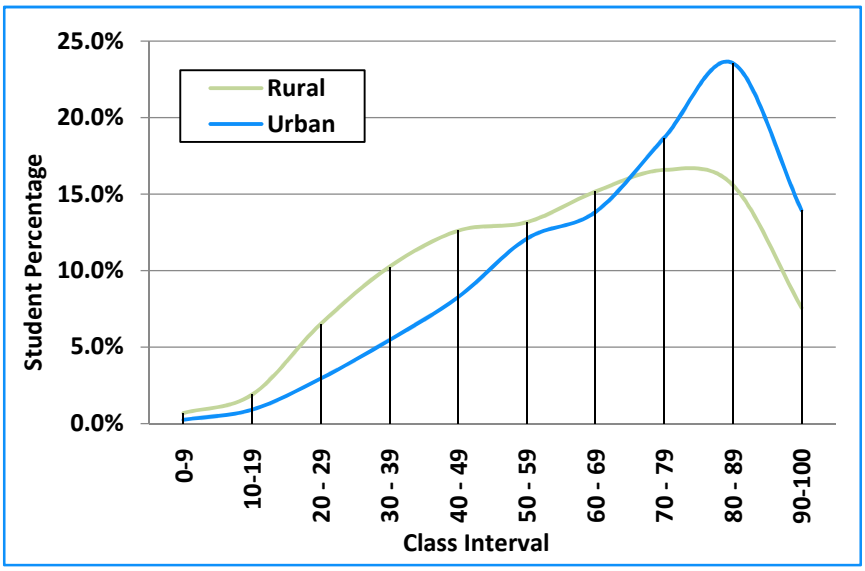

Fig. 6.15: Dispersion of marks by location – Mathematics

Fig. 6.15 displays two negatively skewed graphs. This means that in both localities the high achievers are greater than the low achievers. While the curve representing the rural areas is smooth, the shape of the curve representing the performance of urban schools is different. This difference can be explained using the cumulative percentage Table 6.11.

Table 6.11: Cumulative student percentages according to the location –Mathematics

Class Interval	Rural		Urban	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.69	0.69	0.26	0.26
10-19	1.89	2.58	0.92	1.17
20 - 29	6.52	9.10	2.95	4.13
30 - 39	10.25	19.35	5.47	9.60
40 - 49	12.60	31.95	8.28	17.87
50 - 59	13.16	45.11	12.09	29.97
60 - 69	15.16	60.27	13.84	43.81
70 - 79	16.58	76.85	18.68	62.49
80 - 89	15.59	92.44	23.56	86.05
90-100	7.56	100.00	13.95	100.00
Total	100.00		100.00	

According to Table 6.11 the highest percentage of students in urban area schools (23.56%) fall into the class interval 80-89. This is peak of the urban area school curve. On the other hand, in the rural area schools the highest percentage of students falls in to the class interval 70-79 and the percentage is only 16.58. Further, the number of students who has scored less than 40 marks is only 9.6% in the urban schools while it is 19.35% in the rural areas schools.

The spread of marks is further illustrated through the box plot graph.

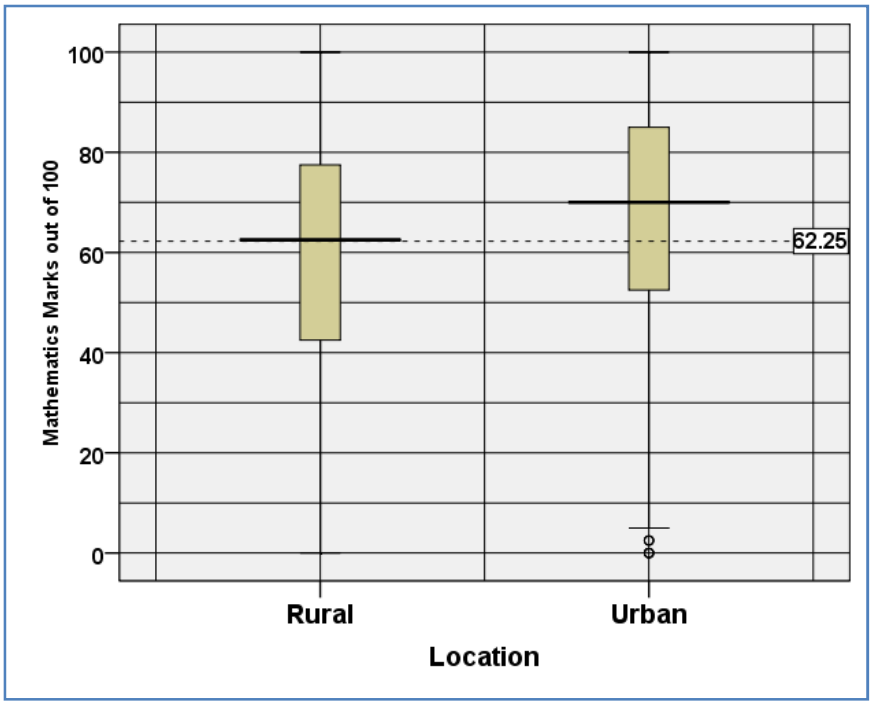

Fig. 6.16: Box plot and whisker plot representing location wise mathematics marks

According to the box plot the urban area schools' performance differ from the rural area schools at the 25th, 50th and 75th percentile. Further their performance is above the all island performance. However, there are some outliers in the urban area schools while there are none in the rural area schools. The box plot confirms the variation that exists between the performance of the two localities.

Summary

- The performance of the students in the urban council areas is better than in the rural areas.
- The deviation of marks is less in the urban area schools.

Achievement patterns observed in relation to the achievement in mathematics, revealed that there were variations among provinces, school type, gender and medium wise.

Students' achievement in relation to subject content will be discussed next.

6.8 Analysis of achievement by sub skills

In constructing the achievement tests, the test items were designed in relation to the sub skills concepts, procedures and problem solving,

Students' performance according to the sub skills is given in Fig. 6.17

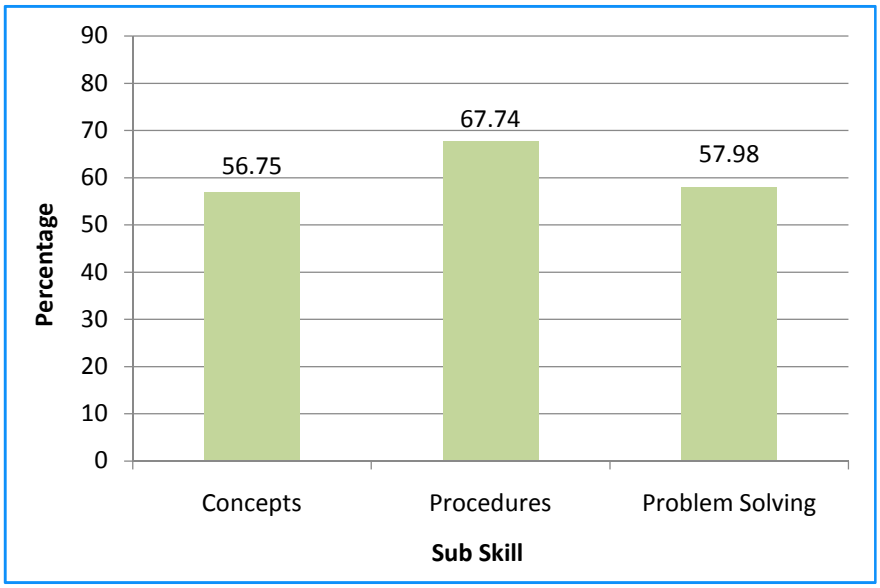

Fig. 6.17: Achievement in sub skills in mathematics

Fig. 6.17 displays the mean values for the different sub skills in mathematics. Accordingly the lowest mean value is for concepts.

Student achievement in relation to Essential Learning Competencies (ELCs)

As discussed in chapter 2, in constructing the paper the Essential Learning Competencies identified for Key Stage 2 were also considered.

Table 6.12 indicates student performance in relation to the ELCs.

Table 6.12: Students performance in relation to ELCs

ELC/ DLC	Description	Q. No	2015 correct response %
ELC 9	Correctly measures a length given using standard units	20	65.00%
10	Calculate the balance of a 100 rupees note after spending to buy a product valued less than that	17	68.90%
		34	**32.50%**
11	Reads a number with three digits	2	84.60%
		4	82.30%
12	Deduct a number from a number with3 digits with one carrying forward	5	76.80%
		14	64.80%
13	Names the shapes of solid objects using its faces	23	76.00%
14	Measures a given quantity of liquids using appropriate units	33	59.00%
15	write the next of a patterns of numbers with common difference of 3	9	76.60%
16	Names objects situated both at left and right sides of one's own position	16	64.60%
		39	**28.60%**
17	Read the information presented in a histogram	40	78.60%
18	Read the time by 5 minutes intervals on 12 hours clock	8	78.00%
19	Multiplies a number with 2 digits by 2 and 3 without carrying forward	10	79.20%
20	Divides a number less than 3 digits by 2 without carrying forward	18	59.50%
21	Adds two numbers with three digits without carrying forward	01	86.60%
22	Solves simple problems with only one mathematical operation	6	76.30%
		7	75.20%
		11	77.70%
		12	32.80%
		13	62.00%
		15	78.40%
		19	75.20%
		21	78.20%
		22	67.50%
		25	60.20%
		26	66.20%
		30	52.10%
		32	40.50%
		36	39.90%
DLC1	Place numbers of not higher than4 digits in descending order	24	43.90%

ELC/ DLC	Description	Q. No	2015 correct response %
4	Identifies 'half' and 'quarter' as a portion of a complete unit	38	**29.80%**
5	Use Roman numbers from -10	3	78.60%
22	Measures a given quantity in Kg	35	**22.30%**
23	Converts Kg into g	28	57.40%
26	Measures area of a given surface using desired units	31	50.40%
34	Create geometrical shapes	29	56.40%
35	Draw rectangular shapes	27	63.10%
38	Separates the symmetrical figures	37	44.30%

As Table 6.12 indicates, student performance in relation to each ELC is 60% or above except in the competency 16. That is "Names objects situated both at left and right sides of one's own position". The percentage of correct responses to the question pertaining to this competency is 28.6%.

Facility index values for the mathematics paper

The mathematics paper consisted of forty supply type questions.
Fig. 6.18 displays the facility values for questions 1-40.

According to this Figure, the most difficult items had been questions 35, 39, and 38. Therefore, it confirms that students' achievement of the competency related to this question, as discussed above is not satisfactory.

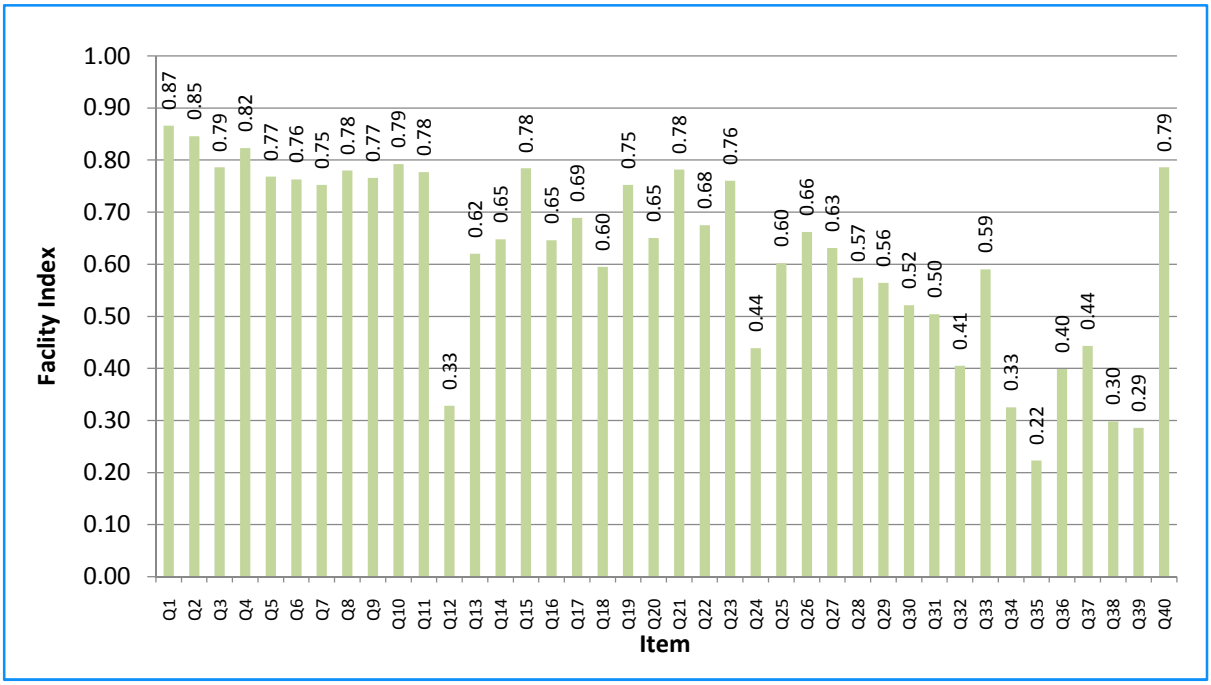

Fig. 6.18: Facility values for the different test items –Mathematics

According to Fig. 6.18 the facility values ranges from 0.22 to 0.87

Part I of this chapter discussed students' performance in mathematics both at national and provincial level, according to school type, gender, medium of instruction and location.

Further, test items used to assess students' performance were analyzed to assess how far they have been successful in achieving the sub skills of mathematics in grade 4 students.

Part II - Comparison of achievement level of students in 2013 with that of 2015

Trends in achievement over the period 2013-2015 will first be discussed at national level.

6.9 Trends in achievement at national level

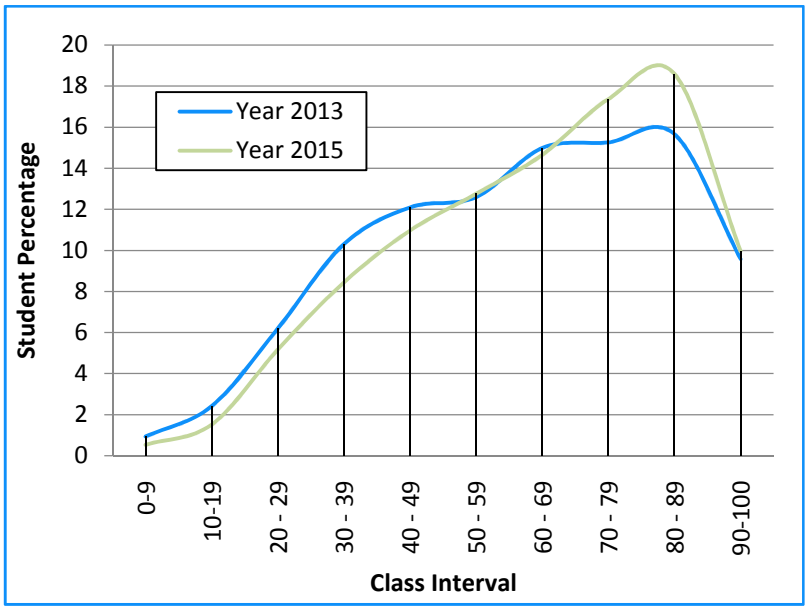

Fig. 6.19: All island achievement in mathematics comparison 2013 -2015 – dispersion of marks

As Fig 6.19 indicates there is an improvement in students' achievement in the year 2015. The line curve for 2015 shows that the percentage of low achievers has decreased and the percentage of high achievers has increased. This has resulted in an increase in the mean value from 60.32 to 62.25.

This change is further elaborated through the cumulative percentage table.

Table 6.13: Comparison of all island achievement in mathematics - cumulative percentages

Class Interval	Year 2013		Year 2015	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.94	0.94	0.53	0.53
10-19	2.42	3.36	1.52	2.05
20 - 29	6.20	9.56	5.17	7.22
30 - 39	10.30	19.86	8.44	15.67
40 - 49	12.09	31.95	10.97	26.64
50 - 59	12.59	44.54	12.76	39.40
60 - 69	14.98	59.52	14.66	54.06
70 - 79	15.25	74.77	17.37	71.43
80 - 89	15.65	90.42	18.60	90.03
90-100	9.58	100.00	9.97	100.00
Total	100.00		100.00	

The percentage of low achievers, those who have scored below 40% has decreased from 19.86 % to 15.67%. On the other hand the percentage of students who has scored between 50-100 has risen from 80.14 to 84.33.

provincial level performance has contributed to the national level achievement. The trend in provincial level achievement will be discussed next.

6.10 Provincial wise comparison of student achievement

As Fig 6.20 displays that all provinces have recorded an improvement in achievement. Therefore, they have all contributed to the increase in the all island mean value. It is significant to note that the increase is more in the low performing provinces than in the high performing provinces. Central, Northern and Eastern Provinces performance has increased by nearly 4 points while in the other provinces the increase is by 1- 3 points.

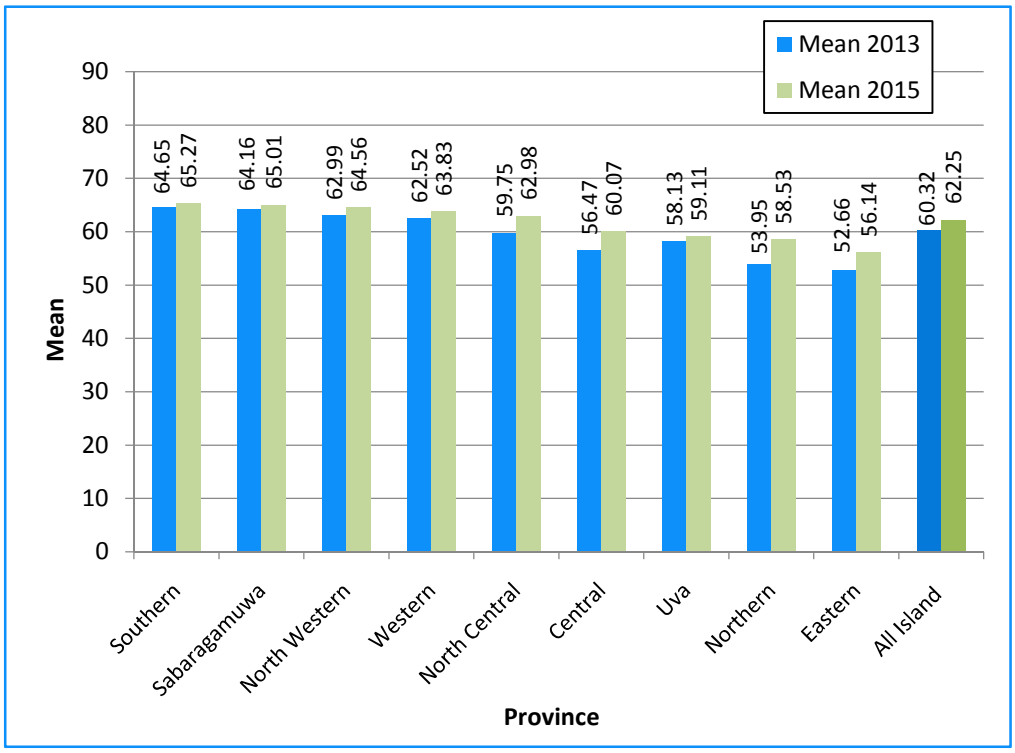

Fig. 6.20: Provincial wise comparison of student achievement - 2013 & 2015

Table 6.14: Provincial wise comparison of student achievement – 2013 & 2015

Province	Year 2013		Year 2015		Z
	Mean	Standard Deviation	Mean	Standard Deviation	
Central	56.47	22.39	60.07	20.79	4.79*
Eastern	52.66	23.30	56.14	22.38	4.02*
North Central	59.75	21.40	62.98	19.71	4.35*
North Western	62.99	22.29	64.56	20.56	2.09*
Northern	53.95	21.76	58.53	21.82	5.33*
Sabaragamuwa	64.16	21.56	65.01	19.97	1.23
Southern	64.65	21.38	65.27	21.25	0.87
Uva	58.13	22.54	59.11	21.61	1.19
Western	62.52	21.47	63.83	21.34	1.80
All Island	60.32	22.31	62.25	21.30	7.47*

* Values are significant at 95%

As the line curve for the Central Province illustrates the percentage of high achievers in the range of 50-90 has increased.

Similarly, the Northern and Eastern Provinces curves also show an increase in high performances. These increase have positively impacted on the mean values of these provinces. As Table 6.14 indicates these changes are significant.

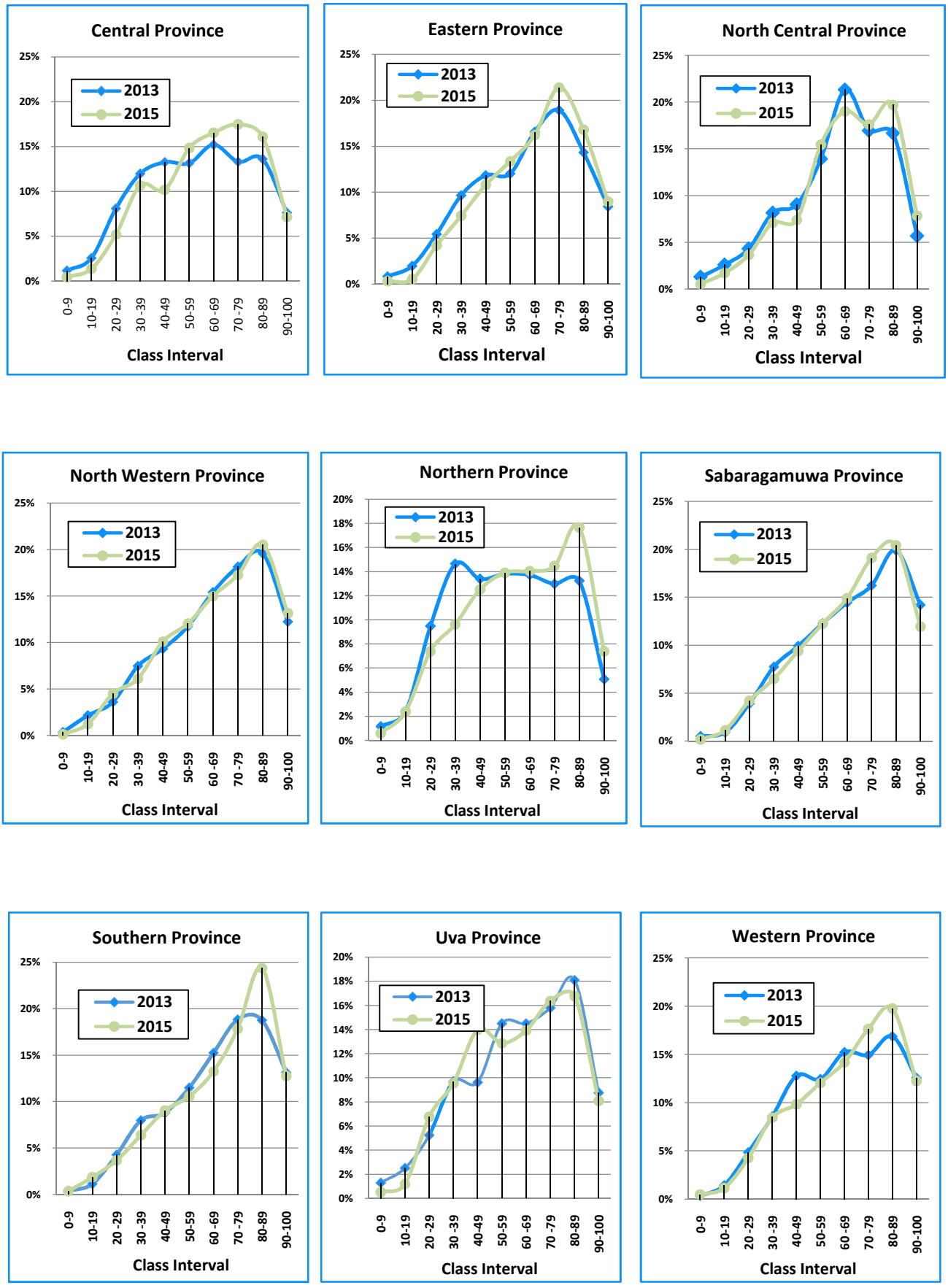

Fig. 6.21: Comparison of provincial wise distribution of marks – Mathematics

6.11 Comparison of marks according to school type

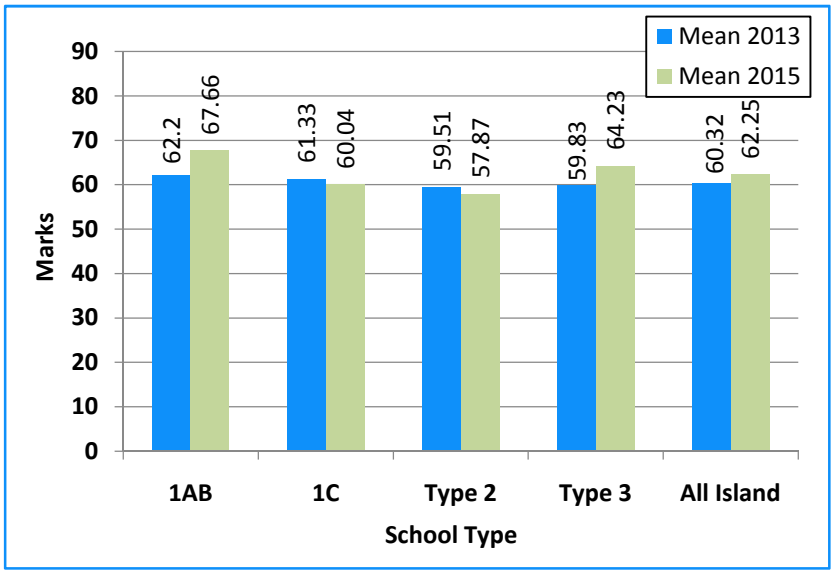

Fig. 6.22: All island comparison of mean values according to school type

As the bar graphs indicate there is an improvement in achievement in 1AB schools as well as in Type 3 schools. This increase is almost similar and the performance of these two school types has contributed to the increase in all island mathematics performance in the year 2015. On the other hand, there is a decrease in performance in 1C and Type 2 schools. The downward trend in these two school types is also identical. Therefore, action needs to be taken to improve the performance of Type 2 and 1C schools as otherwise the gap between the performances in different school types will increase.

Table 6.15: Comparison of achievement of 1AB schools

Class Interval	1AB-Year 2013		1AB-Year 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	0.47	0.47	0.14	0.14
10-19	1.13	1.60	0.69	0.83
20 - 29	5.39	6.99	2.71	3.54
30 - 39	10.98	17.96	4.91	8.45
40 - 49	10.91	28.88	8.02	16.47
50 - 59	12.38	41.25	11.81	28.28
60 - 69	15.83	57.09	14.92	43.19
70 - 79	15.17	72.26	17.95	61.14
80 - 89	18.36	90.62	25.53	86.67
90-100	9.38	100.00	13.33	100.00
Total	100		100	

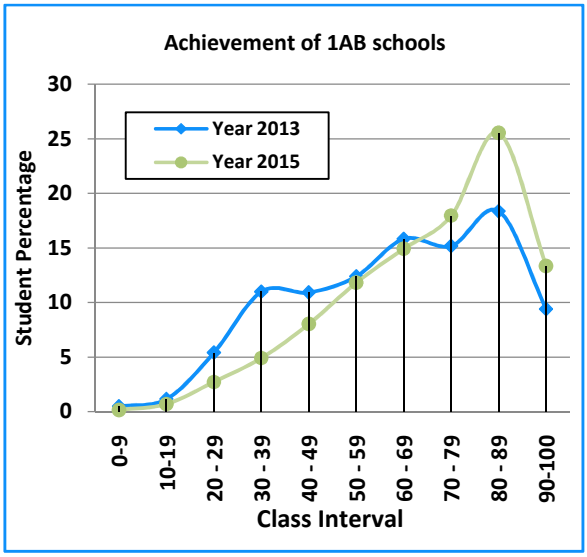

Fig 6.23: Comparison of achievement of 1AB schools – 2013 & 2015

As the Table 6.15 and Fig. 6.23 illustrates the mean value has increased as the percentage of students that fall into the class intervals 70-79, 80-89 and 90-100 has increased.

Table 6.16: Comparison of achievement of Type 3 schools

Class Interval	Type 3 - 2013		Type 3 - 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	0.91	0.91	0.41	0.41
10-19	2.60	3.51	1.40	1.81
20 - 29	5.82	9.33	4.64	6.45
30 - 39	9.79	19.12	7.08	13.52
40 - 49	11.40	30.53	10.33	23.85
50 - 59	12.53	43.06	11.90	35.75
60 - 69	15.54	58.60	13.26	49.00
70 - 79	16.12	74.72	19.03	68.04
80 - 89	15.73	90.45	19.95	87.98
90-100	9.55	100.00	12.02	100.00
Total	100		100	

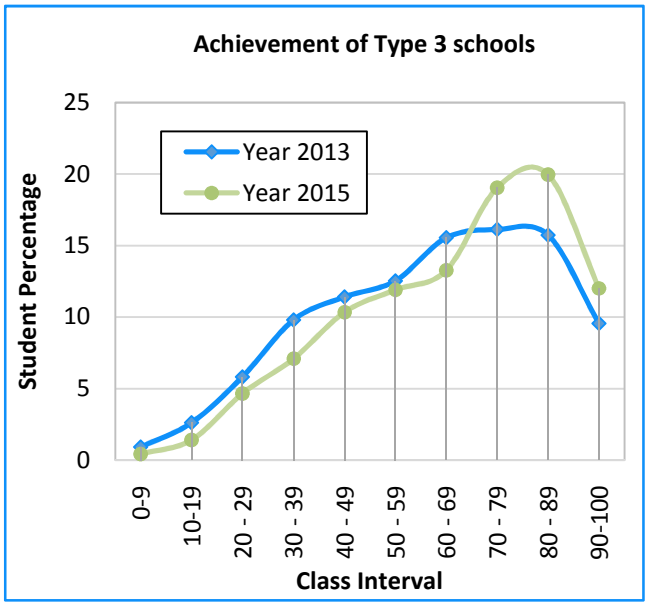

Fig 6.24: Comparison of achievement of Type 3 schools – 2013 & 2015

In Type 3 schools also a similar trend can be observed.

Table 6.17: Comparison of achievement of 1C schools

Class Interval	1C - 2013		1C - 2015	
	Student %	Cumula-tive %	Student %	Cumula-tive %
0-9	0.96	0.96	0.64	0.64
10-19	1.82	2.78	1.47	2.11
20 - 29	5.77	8.54	5.46	7.57
30 - 39	8.51	17.06	10.82	18.39
40 - 49	10.70	27.76	12.26	30.65
50 - 59	12.15	39.91	14.34	44.99
60 - 69	15.67	55.58	16.27	61.26
70 - 79	16.32	71.90	16.58	77.84
80 - 89	17.40	89.30	14.92	92.77
90-100	10.70	100.00	7.23	100.00
Total	100		100	

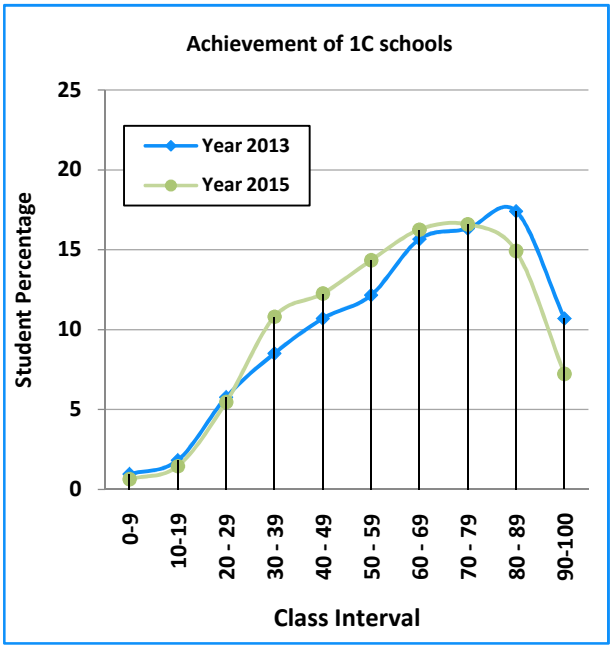

Fig 6.25: Comparison of achievement of 1C schools – 2013 & 2015

On the other hand, in 1C schools the percentage of students who has scored marks between 80-100 had declined.

Table 6.18: Comparison of achievement of Type 2 schools

Class Interval	Type 2 - 2013		Type 2 - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	0.93	0.93	0.89	0.89
10-19	2.12	3.05	2.41	3.30
20 - 29	5.76	8.81	7.63	10.92
30 - 39	10.33	19.13	10.95	21.88
40 - 49	11.63	30.76	13.02	34.89
50 - 59	12.52	43.28	13.25	48.14
60 - 69	14.18	57.46	14.94	63.07
70 - 79	16.05	73.51	15.31	78.38
80 - 89	16.18	89.69	14.62	93.00
90-100	10.31	100.00	7.00	100.00
Total	100		100	

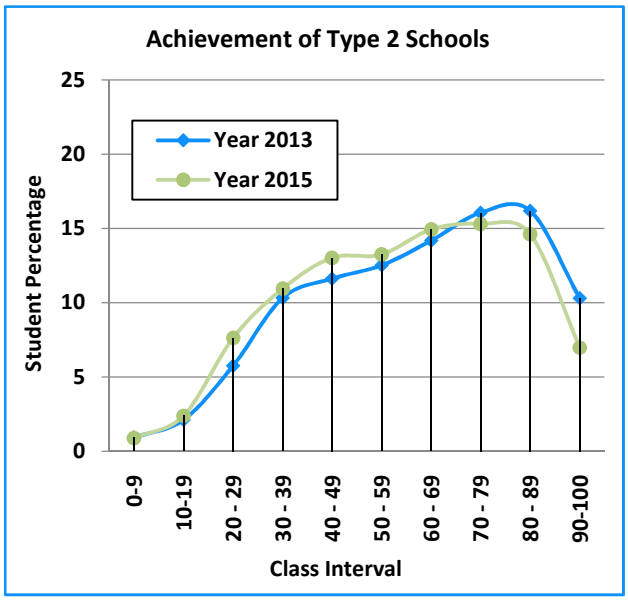

Fig 6.26: Comparison of achievement of Type 2 schools – 2013 & 2015

A similar trend in the percentage of high achievers (70-100) declining can be seen.

The trend in achievement gender wise will be discussed next.

6.12 Comparison of marks according to gender

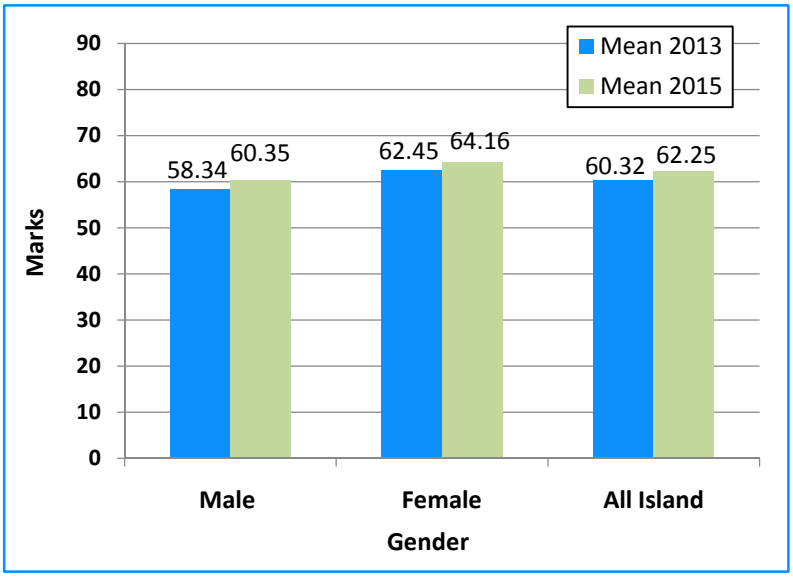

Fig. 6.27: All island comparison of mean values according to gender

There is an increase in both male female performance.

Table 6.19: Comparison of achievement of male students

Class Interval	Male - 2013		Male - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	1.08	1.08	0.71	0.71
10-19	2.59	3.67	1.79	2.49
20 - 29	6.78	10.45	6.24	8.74
30 - 39	11.27	21.72	9.61	18.35
40 - 49	11.63	33.35	12.21	30.56
50 - 59	12.66	46.01	12.95	43.51
60 - 69	14.00	60.01	13.60	57.10
70 - 79	14.27	74.28	16.17	73.28
80 - 89	15.63	89.91	17.20	90.47
90-100	10.09	100.00	9.53	100.00
Total	100		100	

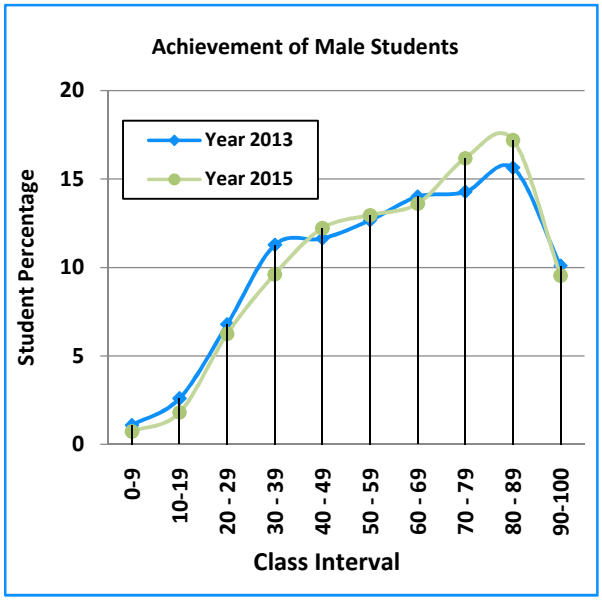

Fig.6.28: Comparison of achievement of male students – 2013 & 2015

As Fig. 6.28 illustrates the percentage of high achievers scoring between 70-100 has increased.

Table 6.20: Comparison of achievement of female students

Marks range	Female - 2013		Female - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	0.67	0.67	0.35	0.35
10-19	1.55	2.22	1.26	1.61
20 - 29	4.63	6.85	4.10	5.71
30 - 39	8.28	15.13	7.28	12.99
40 - 49	10.89	26.02	9.73	22.71
50 - 59	12.18	38.20	12.57	35.28
60 - 69	16.27	54.47	15.73	51.01
70 - 79	17.92	72.39	18.57	69.58
80 - 89	17.55	89.94	20.00	89.58
90-100	10.06	100.00	10.42	100.00
Total	100		100	

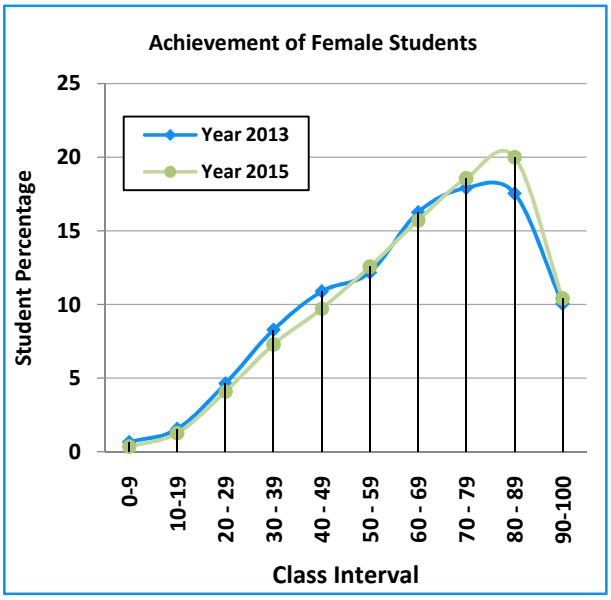

Fig.6.29: Comparison of achievement of female students – 2013 & 2015

A similar trend is observed in female performance as well. The percentage of high achievers scoring between 70-100 has increased.

The trend in performance medium wise will be discussed next.

6.13 Comparison of marks according to medium of instruction

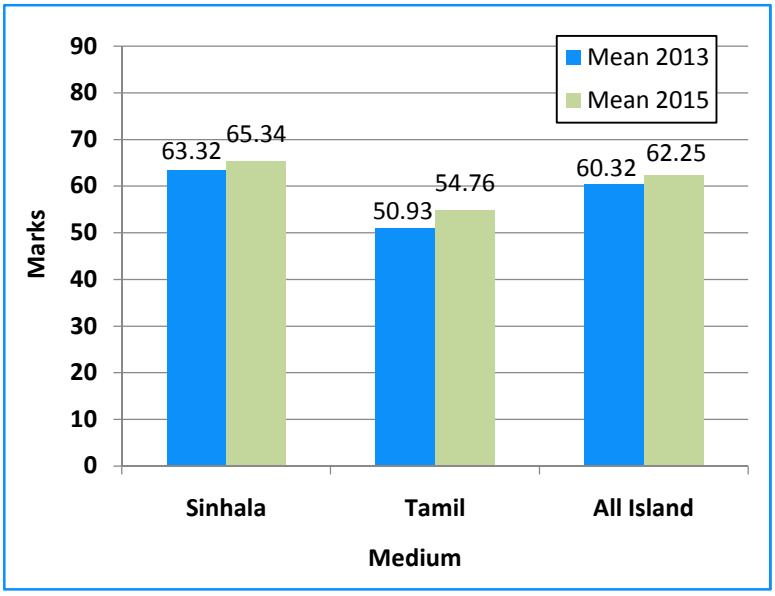

Fig. 6.30: All island comparison of mean values according medium of instruction

There is an improvement in the performance of both Sinhala medium as well as Tamil medium students' performance (Fig. 6.30). However, whereas the Sinhala medium students' performance has been increased by 2 points, the Tamil medium students' performance has increased by nearly 4 points.

Table 6.21: Comparison of achievement of Sinhala medium students

Class Interval	Sinhala - 2013		Sinhala - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	0.55	0.55	0.33	0.33
10-19	1.48	2.03	0.98	1.32
20 - 29	4.09	6.12	3.63	4.94
30 - 39	7.83	13.96	6.52	11.47
40 - 49	10.29	24.24	9.49	20.95
50 - 59	12.54	36.78	11.85	32.80
60 - 69	15.56	52.35	14.88	47.69
70 - 79	17.24	69.59	19.24	66.92
80 - 89	18.31	87.90	21.10	88.02
90-100	12.10	100.00	11.98	100.00
Total	100		100	

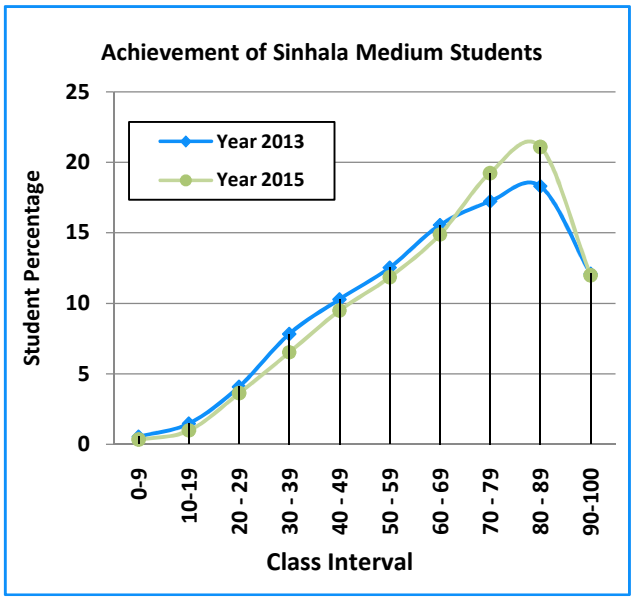

Fig. 6.31: Comparison of achievement of Sinhala medium students – 2013 & 2015

The Sinhala medium students performance has increased between 70-89 class intervals.

Table 6.22: Comparison of achievement of Tamil medium students

Class Interval	Tamil - 2013		Tamil - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	1.85	1.85	0.96	0.96
10-19	3.83	5.67	2.72	3.68
20 - 29	10.52	16.19	8.60	12.28
30 - 39	15.59	31.78	12.70	24.98
40 - 49	14.13	45.91	14.26	39.24
50 - 59	12.09	58.00	14.77	54.01
60 - 69	13.74	71.74	14.17	68.18
70 - 79	12.56	84.30	13.24	81.42
80 - 89	11.48	95.79	13.06	94.47
90-100	4.21	100.00	5.53	100.00
Total	100		100	

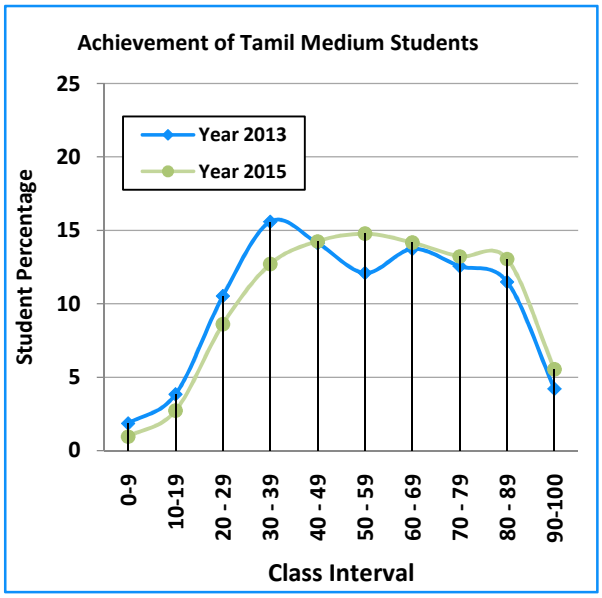

Fig.6.32: Comparison of achievement of Tamil medium students – 2013 & 2015

On the other hand, in the Tamil medium performance the increase can be seen between 70-100. Thus the percentage of high achievers is greater.

6.14 Comparison of marks according to location

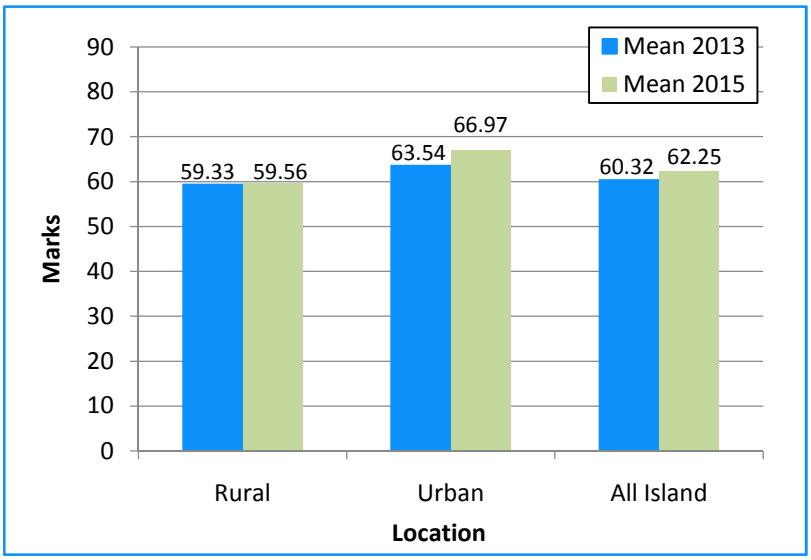

Fig. 6.33: All island comparison of mean values according to location

The urban students' performance has increased by three points. on the other hand, the rural students' performance has increased only by .33. Hence this increase is very minimal. Action needs to be taken to improve the rural students achievement levels as otherwise the gap between the rural and urban achievement widens.

Table 6.23: Comparison of achievement of rural schools

Class Interval	Rural - 2013		Rural - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	0.99	0.99	0.69	0.69
10-19	2.39	3.38	1.89	2.58
20 - 29	6.13	9.52	6.52	9.10
30 - 39	10.52	20.03	10.25	19.35
40 - 49	11.68	31.71	12.60	31.95
50 - 59	12.44	44.16	13.16	45.11
60 - 69	15.23	59.38	15.16	60.27
70 - 79	15.58	74.96	16.58	76.85
80 - 89	15.86	90.82	15.59	92.44
90-100	9.18	100.00	7.56	100.00
Total				

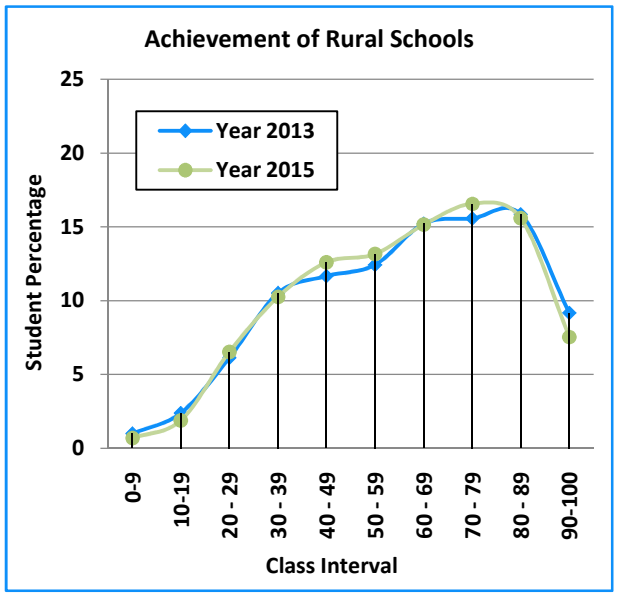

Fig.6.34: Comparison of achievement of rural schools – 2013 & 2015

The increase in performance related to those who scored between 70-79 only.

Table 6.24: Comparison of achievement of urban schools

Class Interval	Urban - 2013		Urban - 2015	
	Student %	Cumula - tive %	Student %	Cumula- tive %
0-9	0.52	0.52	0.26	0.26
10-19	1.05	1.57	0.92	1.17
20 - 29	4.41	5.98	2.95	4.13
30 - 39	7.50	13.48	5.47	9.60
40 - 49	9.90	23.38	8.28	17.87
50 - 59	12.37	35.75	12.09	29.97
60 - 69	14.65	50.40	13.84	43.81
70 - 79	17.58	67.98	18.68	62.49
80 - 89	18.91	86.89	23.56	86.05
90-100	13.11	100.00	13.95	100.00
Total	100		100	

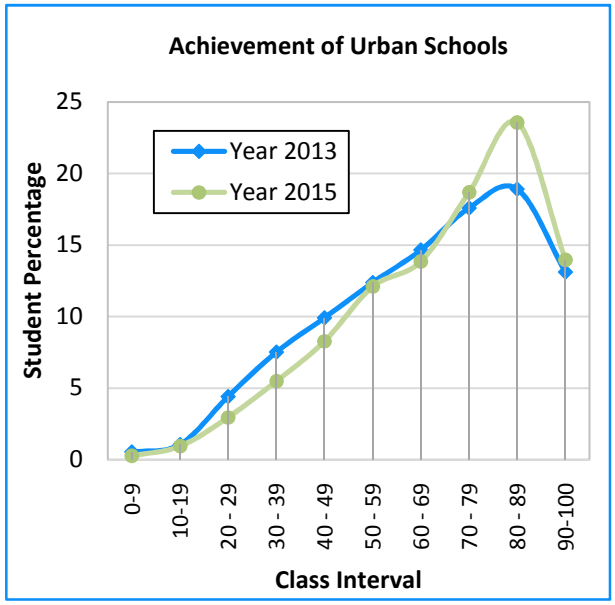

Fig.6.35: Comparison of achievement of urban schools – 2013 & 2015

In comparison in urban schools the increase in achievement relates to those who scored between 70-100.

Trends in performance according to the sub skills in mathematics will be discussed next.

6.15 Skill analysis comparison

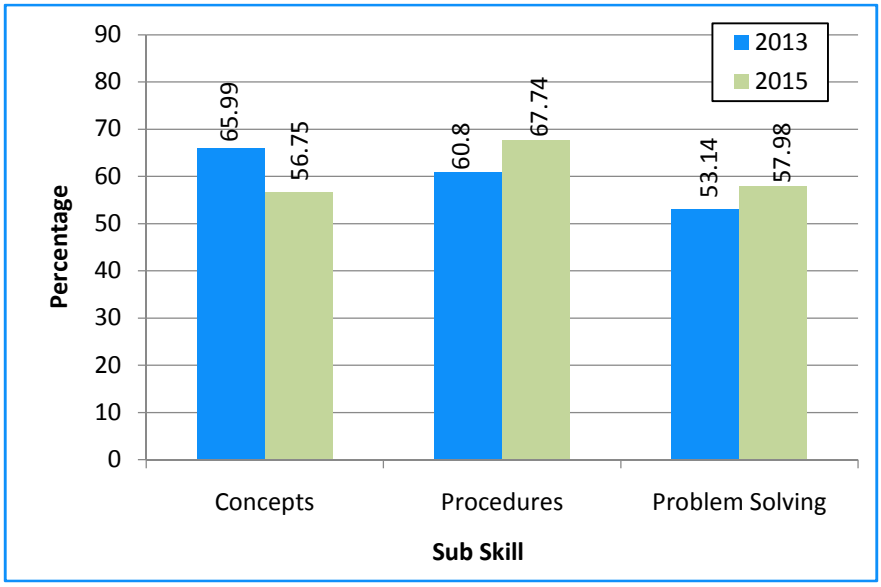

Fig. 6.36: Comparison of achievement of sub skills in mathematics

According to Fig. 6.36 students performance in relation to the sub skills of procedures and problem solving has increased. This is a positive trend. On the other hand the knowledge of concepts has declined. This is a trend that needs to be paid attention to as lack of conceptual knowledge will affect the other skills if this trend continues.

Table 6.25: Comparison of students' achievement in relation to ELCs

ELC/ DLC	Description	Q. No	2013 correct responses %	2015 correct response %	Change
ELC 9	Correctly measures a length given using standard units	20	60.70%	65.00%	+
10	Calculate the balance of a 100 rupees note after spending to buy a product valued less than that	17	66.50%	68.90%	+
		34	**29.50%**	**32.50%**	+
11	Reads a number with three digits	2	84.10%	84.60%	+
		4	82.00%	82.30%	+
12	Deduct a number from a number with3 digits with one carrying forward	5	74.50%	76.80%	+
		14	62.80%	64.80%	+
13	Names the shapes of solid objects using its faces	23	75.00%	76.00%	+
14	Measures a given quantity of liquids using appropriate units	33	56.70%	59.00%	+
15	write the next of a patterns of numbers with common difference of 3	9	73.20%	76.60%	+
16	Names objects situated both at left and right sides of one's own position	16	61.30%	64.60%	+
		39	**33.00%**	**28.60%**	-
17	Read the information presented in a histogram	40	73.30%	78.60%	+
18	Read the time by 5 minutes intervals on 12 hours clock	8	73.60%	78.00%	+
19	Multiplies a number with 2 digits by 2 and 3 without carrying forward	10	78.80%	79.20%	+
20	Divides a number less than 3 digits by 2 without carrying forward	18	56.90%	59.50%	+
21	Adds two numbers with three digits without carrying forward	01	84.90%	86.60%	+
22	Solves simple problems with only one mathematical operation	6	72.60%	76.30%	+
		7	75.20%	75.20%	Not
		11	23.30%	77.70%	+
		12	28.40%	32.80%	+
		13	59.60%	62.00%	+
		15	76.10%	78.40%	+
		19	73.10%	75.20%	+
		21	76.00%	78.20%	+
		22	68.00%	67.50%	-
		25	57.90%	60.20%	+
		26	66.10%	66.20%	+
		30	50.30%	52.10%	+
		32	37.50%	40.50%	+

ELC/ DLC	Description	Q. No	2013 correct responses %	2015 correct response %	Change
		36	37.60%	39.90%	+
DLC1	Place numbers of not higher than4 digits in descending order	24	40.80%	43.90%	+
4	Identifies 'half' and 'quarter' as a portion of a complete unit	38	**23.50%**	**29.80%**	+
5	Use Roman numbers from -10	3	84.90%	78.60%	-
22	Measures a given quantity in Kg	35	**43.10%**	**22.30%**	-
23	Converts Kg into g	28	54.80%	57.40%	+
26	Measures area of a given surface using desired units	31	41.20%	50.40%	+
34	Create geometrical shapes	29	53.30%	56.40%	+
35	Draw rectangular shapes	27	60.20%	63.10%	+
38	Separates the symmetrical figures	37	38.90%	44.30%	+

6.16 Summary

Part I of this chapter described student performance in relation to the achievement of learning outcomes in the mathematics. The discussion pertained to both national and provincial level. Further, achievement was analyzed according to school type, gender, medium of instruction and location.

Test items used to assess students' performance were analyzed to assess how far they have been successful in achieving sub skills of the language expected to be achieved by grade 4 pupils.

Part II described the trends in achievement between 2013-2015.

It could be concluded that even though overall the achievement of learning outcomes in the mathematics is satisfactory there is still disparity in achievement provincial wise as well as location and gender wise.

Chapter Seven

Conclusion and the Way Forward

7.1 Introduction

The purpose of this chapter is to discuss the main patterns in learning outcomes identified through the National Assessment 2015. This chapter has three main objectives.

1. Summarize the findings in relation to the patterns and trends observed.
2. Analyze the main patterns observed, in the light of the main objectives of a national assessment.
3. Identify further measures to provide opportunities to achieve 'education for all'.

7.2 Patterns and trends identified in the achievement of learning outcomes -2015

7.2.1 All island performance

Patterns in performance in Sinhala

The overall performance in First Language differs according to the two languages. The all island mean value for the Sinhala language is 64.47. Disparity in achievement prevails with approximately 13.99% of students scoring below 40% and 19.52% of students scoring between 80-89 marks. However, there are also a few outliers- those whose marks are very low compared to others.

Trends in achievement - Sinhala

When the performance in the Sinhala language in 2013 is compared with that of 2015 the mean value has decreased from 64.56 - 64.47. This minor drop as shown in chapter 3 is not significant. However, it is important to identify the possible reasons for this decline.

In 2015 the percentage of students who has scored below 40 marks has dropped from 15.30 to 13.99. On the other hand, the percentage of students who has scored between 80–100 has also dropped from 29.40 to 27.24. This drop in the high performers has impacted on the mean value.

Patterns in performance - Tamil language

The all island mean value for the Tamil language at National level is 61.57. Disparity in achievement prevails with approximately 22.62% of students scoring below 40% and 19.65% of students scoring between 80-89 marks and another 13.72% scoring between 90-100 marks. Therefore, student heterogeneity is greater in the Tamil as a first language performance.

Trends in Tamil language performance

There is an increase in student performance in the year 2015. This increase is due to the percentage of high achievers being increased and the percentage of low achievers being decreased. The percentage of high achievers belonging to the class intervals 50-59 to 90-100 has increased. On the other hand, the percentage of students belonging to the class intervals 0-9 up to 30-39 has decreased. This trend has resulted in an increase in the all island mean value from 58.28 to 61.57.

Patterns in performance - English language

For the second language English the national level mean is 53.53. Even though the overall achievement in English language is satisfactory, there is wide disparity in achievement resulting in a SD of 25.13 There is a high percentage of students with low marks. At the same time those who have scored high marks are also relatively high. Thirty six percent of the students has scored less than the pass mark of 40.

On the other hand, 13.93% has scored between 70-79 percent.

Trends in English language performance

Comparison of performance of students in 2013 and 2015 indicates an improvement. In the year 2015 the number of students who has scored high marks has increased. Even

though still there are two groups of high and low achievers those who have obtained low marks have decreased.

Patterns in performance - mathematics

When the achievement in mathematics is considered the national level mean is 62.25 Disparity in achievement prevails with approximately 15.67% of students scoring below 40% and 46% of students scoring above 70%. However, the highest number of students falls within the mark range of 80-89.

Therefore, it could be concluded that even though the overall performance in all subjects is satisfactory, there is disparity in all island achievement in all subjects.

Trends in achievement

There is an improvement in students' achievement in the year 2015. As discussed in chapter 6, the percentage of low achievers has decreased and the percentage of high achievers has increased. This has resulted in an increase in the mean value from 60.32 to 62.25

7.2.2 Provincial wise performance and trends

The findings of the present study indicate that there are variations in provincial wise achievement in all three subjects.

Patterns in achievement in First Language - Sinhala

Achievement wise the provinces can be clustered into three categories in relation to the performance in the Sinhala language. North Western, Sabaragamuwa and Southern, with mean scores above the national mean. Northern, and North Central cluster in the middle slightly below the national mean.

Western, Uva, Central and Eastern are the lowest performing provinces and are below the national mean. Disparity of marks within a province is highest in the Western Province. In the Northern Province the disparity of marks is less. Therefore, achievement is more homogeneous within the province.

Trends in achievement

The performance in the different provinces have fluctuated. While in four provinces the achievements have declined slightly in North Central and Uva there is a slight increase in achievement. On the other hand, in the Northern and Eastern Provinces there is a marked increase in achievement and these changes are significant. The reason for this trend as explained in chapter 3 could be due to the increase in high achievers. In the Northern Province those who scored above 50% has increased more than 100% (36%-78.90%). On the other hand, in the Eastern Province also there is a 10% increase (62.70–72.08%). However, in the other provinces the increase has been by 2 or less percentage.

Patterns in achievement in First Language - Tamil

According to the achievement in Tamil language also the provinces fall into three categories North Central, Sabaragamuwa, Central, Northern and Western with mean scores above the national mean (61.57) fall into category one. Eastern, North Western and Uva Provinces with mean scores above 58 cluster in the middle. Southern Province with a mean score below 50 fall into category three. Disparity of marks within a province is the highest in the Southern Province. Disparity is also high in Sabaragamuwa and Uva Provinces. On the other hand, in Western and Central Provinces the disparity of marks is less. Therefore, in these provinces achievement is more homogeneous within the province.

Trends in achievement

In all provinces except in the Eastern Province student achievement in 2015 has increased. While the decrease in the Eastern Province (.91) is very slight the increase in the North Central and Southern is quite high and significant. While the increase in the Southern Province is 24.20% in the North Central Province it is 13.43%. These increases have contributed positively to increase the all island mean value. In the Southern Province the percentage of students that scored 50% or above has increased from 8.30% to 46.15%

Patterns in achievement in Second Language - English

Unlike in the performance of the other two subjects in the achievement of English language the provinces fall into two categories.

Western, Southern, Sabaragamuwa and North Western with mean scores above the national mean, fall into the higher category. Central, North Central, Northern, Eastern and Uva Provinces which are below the national mean fall into the lower category. There is variation among as well as within the provinces with respect to achievement in English. However, among the lower category there is much variation in achievement than in the higher category**.** Yet, all provinces have obtained mean values above 40.

Trends in achievement

There is an increase in student achievement in most of the provinces. This has resulted in an increase in the national performance in the English language with an increase in the mean value from 51.68 to 53.53. However, there is a slight decrease in student achievement in the Southern and Sabaragamuwa Provinces, which is not significant.

Patterns of achievement in mathematics

Achievement wise the provinces fall into three categories. Southern, Sabaragamuwa, North Western, Western and Central with mean scores above the national mean (62.25) fall into category one. Central, Uva and Northern Provinces cluster in the middle and Eastern falls into category three with a mean value of 56.14 While the disparity of marks within a province is highest in the Eastern Province, in North Central and Sabaragamuwa Provinces the disparity of marks is less.

Trends in achievement

All provinces have recorded an improvement in achievement. Therefore, they have all contributed to the increase in the all island mean value. It is significant to note that the increase is more in the low performing provinces than in the high performing provinces. Central, Northern and Eastern Provinces performances have increased by nearly 4 points while in the other provinces the increase is by 1- 3 points.

7.2.3 Achievement according to school types

Different patterns could be observed in the achievement of students in all three subjects in all school types.

Patterns in achievement in Sinhala language

The achievement of the Sinhala language indicates that there is not a considerable gap between the mean scores of 1AB and Type 3 schools. On the other hand, Type 2 and 1C school types' mean values are quite similar and below the national mean. Therefore, while the gap between 1AB and Type 3 schools' achievement is narrowing the gap between these schools and Type 2 and 1C seems to widen.

The highest percentage of students' marks (24.83%) in 1AB schools and Type 3 (23.51%) fall within the class interval 80-89. On the other hand, in 1C schools the highest percentage of marks falls within the class interval 70-79. However, almost equal percentage of student marks is also spread between the class intervals of 50-59 and 80-89. In Type 2 schools the highest percentage of marks falls within 60-69. However, the high marks are spread from 60-69 up to 80-89.

Trends in achievement

Compared to 2013 there is an increase in student achievement in 1AB and Type 3 schools. The achievement levels of these two school types have been approximately similar in the year 2013 and they have maintained this trend in the year 2015. On the other hand, the Type 2 schools performance had been above 1AB and Type 3 in 2013. However, in 2015 their performance has declined almost by 5 points. Similarly, 1C schools' achievement also has declined further. Therefore, the gap in achievement between 1AB and Type 3 schools and that of Type 2 and 1C has increased and impacted on the all island achievement negatively. This negative trend needs to be arrested.

Patterns in achievement in Tamil language

Similar to the performance in Sinhala, the performance in Tamil is lowest in the Type 2 schools. On the other hand, the performance is highest in the 1AB schools. The 1C and Type 3 schools performance is in between these two extremes and the mean values are

quite similar. Except for Type 2 schools, all the other school types have achieved median values above the national mean for the Tamil language.

In all school types the highest percentage of students belongs to the class interval 80 - 89. However, the percentage is greater in 1AB and Type 3 schools. Further, in the 1AB schools there is also a large percentage (23.14) that falls into the higher class interval 90-100. The percentage of students who has scored less than the pass mark (40%) is considered, the 1AB schools have the lowest percentage. On the other hand, the highest percentage is in Type 2 schools. Standard deviation is also highest in Type 2 schools and it is above the all island mean. This suggests that within the school type there is variation in marks.

Therefore, it could be concluded that the overall performance in the Tamil language in the Type 2 schools needs to be improved.

Patterns in achievement in English language

When English language performance is considered, 1AB and 1C Type schools' mean values are above the all island mean, while the mean values of other two school types are below the all island mean.

Except in 1AB schools in other school types more than 30% of students' scores are below 40%. In 1AB schools this percentage is only 19.21%. However, the highest percentage (47.35%) of those who have scored less than 40% is in Type 2 schools. This shows the diversity in achievement within the school types.

There are two clear groups of high as well as low achievers. However, in the 1AB and Type 3 schools the percentage of high achievers is greater than the percentage of low achievers. On the other hand, in the case of Type 2 and 1C schools the percentage of low achievers is greater than the percentage of high achievers.

Trends in achievement

In 2015 student achievement in 1AB and Type 3 schools have increased by more than 6 points. On the other hand, in Type 1C and Type 2 schools student achievement has decreased by 2 to 4 points. In 2015 the high scoring group in 1AB and Type 3 schools has increased and the low scoring group has decreased.

Patterns in achievement - mathematics

There is differences in the overall achievement in mathematics in the different school types. The mean values range from 57.87–67.66 While the performance in 1AB and Type 3schools are relatively similar, the performance of Type 2 and 1C schools are similar.

However, in Type 2 and Type 3 schools student achievement deviation from the mean is high. Type 1AB and 1C schools have SD values less than the all island SD value, but Type 2 and Type 3 schools have SD values above the all island SD.

Trends in achievement

There is an improvement in achievement in Type 1AB schools as well as in Type 3 schools. This increase is almost similar and the performance of these two school types has contributed to the increase in all island mathematics performance in the year 2015. On the other hand, there is a decrease in performance in Type 1C and Type 2 schools. The downward trend in these two school types is also identical. Therefore, action needs to be taken to improve the performance of Type 2 and 1C schools as otherwise the gap between the performances in different school types will increase.

7.2.4 Achievement according to gender

In all subjects females have performed better than their male counterparts.

Patterns in achievement in Sinhala language

In the performance of the Sinhala language, the overall performance of girls is higher than the males. There are more high performing female students than male students. The highest percentage (24.01%) of female students' fall into the class interval 80-89.

On the other hand, the highest percentage of male students, (18.27%) falls into the class interval 60-69.

Even though there are only 8.26 cumulative percent of female students who has scored below 40 marks, there are 16.58% of male students who has scored less than 40 marks. Therefore, the overall achievement in Sinhala of the boys is lower than the girls.

However, there are some female students who compared with the majority are very low performing.On the other hand, there are no outliers among the males.

Trends in achievement

In 2015 male students' achievement has increased slightly. On the other hand, the female performance has decreased slightly. The increase in male performance is a positive sign. However, the gap in achievement between males and females continue and measures need to be taken to arrest this trend

Patterns in achievement in Tamil language

There is considerable difference (almost ten points) between males and females in relation to the achievement in the Tamil language. Female students' achievement is higher than male students' achievement. There is also less variation in achievement among females. Therefore, boys performance needs to be improved.

Trends in achievement

Except in Type 2 schools there is an improvement in performance in 2015. However, there is a significant improvement only in 1AB schools. In Type 2 schools there is a slight decline. Therefore, 1AB schools' performance has greatly contributed to the improvement in the all island performance.

Patterns in achievement in English language

Female performance in the English language is higher than all island and male performance. Female students' English achievement has contributed greatly for the all island mean to rise.

Among both males and females there is a larger percentage of low achievers. However, the percentage of low achievers are high among the males than among the females. On the other hand, the number of high achievers among the males is less than among the females. Therefore, the disparity in achievement in the English language is very high.

Trends in achievement

There is an increase in both male and female students' achievement in the year 2015. While the male performance has increased corresponding to the class interval 70-79 among the females the increase is in the class interval 80-89.

Patterns in achievement in mathematics

In mathematics female performance is better than all island and male performance. The percentage of low achievers (below 40 marks) is lower than among the boys.

There are high performers among both males and females. Highest percentage of females, 20.00% as well as 18.35% of males fall into the mark range 80 -89.

Trends in achievement

There is an increase in both male and female performance. The increase in performance has contributed to the increase in all island performance.

7.2.5 Achievement according to medium of instruction

There is wide disparity in achievement among students belonging to different medium of instruction in the English language and mathematics.

Patterns in achievement in the English language

Sinhala medium students' mean achievement in the English language is better than the achievement of the Tamil medium students' achievement. While the Sinhala medium students mean value is above the all island mean value, the Tamil medium students' mean achievement is very much below the national mean.

There is a large group of low achievers among the Tamil medium students. On the other hand, among the Sinhala medium students there are two groups- a group of high achievers as well as a group of low achievers.

Variation of marks from the mean is higher among the Tamil medium students than among the Sinhala medium students.

Therefore, it could be concluded that even though there is disparity in achievement between both Sinhala and Tamil medium students it is greater among the Tamil medium students.

Trends in achievement

Achievement of both Sinhala and Tamil medium students has increased, However, the increase in the Tamil medium students is 5 points which is greater than the Sinhala medium students increase which is only 2 points.

Patterns in achievement in mathematics

In mathematics performance there is wide disparity among students belonging to different medium of instruction. However, the Sinhala medium students' mean score is above the national mean while the Tamil medium students' mean is lower. On the other hand, while the percentage of Tamil medium students are in the lower marks range a higher number of Sinhala medium students are in the higher mark range.

The highest percentage of the Sinhala medium students' marks is in the range of 70-100. On the other hand, the highest percentage of Tamil medium students marks concentrate between 40 -70. While only11.4% of Sinhala medium students has scored below the pass mark 24.98% of Tamil medium students has scored below the pass mark.

Trends in achievement

There is an improvement in both Sinhala medium as well as Tamil medium students' performance However, whereas the Sinhala medium students' performance has been increased by 2 points, the Tamil medium students' performance has increased by nearly

4 points. This increase is a positive trend that indicates that the gap in achievement between the medium of instruction is decreasing

7.2.6 Achievement according to location

Patterns in achievement in Sinhala language

There is variation in achievement in the Sinhala language among the schools in the different localities. The Urban Council area schools have performed better than the rural schools.

There are more high performing students in the urban area schools. The highest percentage (24.30%) of students falls into the class interval 80-89 in the urban area schools. Even though, a high percentage of students (17.94%) in the rural area schools also falls into the class interval 80-89, there is also a higher percentage of students (18.20%) who falls into the 60-69 class interval.

On the other hand, while there are only 7.72 cumulative percent of students in the urban area schools who has scored below 40 marks, there is 15.88% of students in the rural area schools who has scored less than 40 marks. Therefore, the overall achievement in Sinhala language of the students in the urban area schools is higher than the students in the rural area schools.

However, there are outliers in both localities and more outliers in the urban area schools.

Trends in achievement

In 2015, there is a decline in achievement in rural area schools while there is an increase in the achievement in the urban area schools. This trend while having an impact on the all island performance has also increased the gap in achievement of students in the rural area schools and urban areas schools.

Patterns in achievement in the Tamil language

In considering the achievement in Tamil, Urban Council area schools have performed the best and their mean value is also above the all island mean. On the other hand, the rural area schools performance is below the national mean. There is approximately 10 point difference between the performance of the two localities.

The deviation of the marks from the mean in Tamil schools, all island as well as in rural schools is high. Therefore, there is a need to improve the performance in the Tamil language of the rural schools in order to improve the all island performance.

Trends in achievement

There is an improvement in the achievement of Tamil language both in the urban and rural area schools. Although the gap between the rural schools and the urban schools still exists, it is a positive sign that the increase in student achievement in the rural areas is greater than the increase in the urban areas. Therefore, the improvement in the rural schools' performance has contributed positively to the all island performance.

Patterns in achievement in the English Language

In considering the English language performance, the urban council area schools have performed better than the rural area schools. The percentage of high achievers is greater among the urban council area schools, while the percentage of low achievers is greater among rural schools.

Even though there is disparity in achievement the deviation of the marks from the mean is quite similar in all localities. The highest percentage of students fall between 80-89 class interval in urban area schools. On the other hand, in the rural schools the percentage is highest in the 20-29 class interval.

Trends in achievement

The rural students' performance has decreased slightly while the Urban students performance has incresed slightly. As a result the gap between the urban and rural students' performance still remains.

Patterns in achievement in mathematics

In mathematics performance there is variation in achievement among the schools in the different localities. The Urban Council area schools have performed better than the rural area schools. Rural area schools have performed below the national mean while the urban schools have performed above the national mean.

There is less variation in achievement in the urban area schools. While the SD of the rural schools is closer to the all island SD, the urban schools SD is less than the all island SD denoting less variation.

Trends in achievement

The urban students' performance has increased by three points. On the other hand, the rural area students' performance has increased only by .23. Hence this increase is very minimal. Action needs to be taken to improve the rural students achievement levels as otherwise the gap between the rural and urban achievement widens.

7.2.7 Achievement of skills and Essential Learning Competencies

The analysis of the facility indices for the three subjects indicates that there is great variation in the achievement. The ranges for the facility indices for each subject is given below.

First Language	
Sinhala	0.29 to 0.96
Tamil	0.24 to 0.86
English	0.26 to 0.82
Mathematics	0.22 to 0.87

The facility indices given above indicate that there is wide disparity in achievement among students.

when the achievement of sub skills of languages were considered similar patterns could be observed.

In the first language Sinhala the mean values of all four sub skills were above 50. The lowest achievement could be seen in writing. The percentage of incorrect sentences was rather high in the writing task. Further, some students had not even attempted to write even the first sentence.

When the achievement of ELCs is considered the lower competencies are 6 and 8. These competencies relate to spellings and subject verb agreement. Therefore, even though students overall competency in grammar is satisfactory their application of these skills in writing is weak.

Trends in Achievement

When comparing the achievement in the sub skills of the Sinhala language it was found that there is improvement in comprehension and syntax. However, writing still remains the weakest skill. Further, even though there is improvement in syntax there is no improvement in certain ELCs such as spellings and subject verb agreement. These skills impact on the writing skill which was highlighted in the 2013 report as well. This is an area that needs immediate attention.

Patterns in achievement in the Tamil language

The same structure was followed in the two first language papers. When the achievement of sub skills in the Tamil language is considered the same pattern could be observed. Mean values of all four skills were above 50 with vocabulary achievement being the highest and the weakest is writing.

When the achievement of ELCs is considered the lower competencies are 6 and 8 which relates to spellings and subject verb agreement. The analysis of the writing task revealed that more than 50% of the students could not write a grammatically correct sentence.

Trends in achievement

When student performance in the language skills is considered there is a decrease in the performance in vocabulary and comprehension. On the other hand, achievement in syntax and writing has increased. However, as discussed before this increase has not

resulted in the overall improvement of the writing skill. Therefore, as 50% of the students could not write a grammatically correct sentence immediate attention needs to be paid to revise the ELCs and the curriculum.

Patterns in achievement in the English language

It is interesting that when the second language English achievement is considered still the same pattern could be observed as in the first language. Even though the first language and second language papers differed in content the structure of the paper as discussed in chapter 2, was the same.

When the achievement of sub skills is considered except for syntax, the mean values for the other three skills are above 50. The weakest skills appear to be syntax and writing. For English the only ELC related to writing is to "write the students name". Only 32.85% of students has been able to write their names in a grammatically correct sentence. The analysis of the writing task revealed that the lack of knowledge in syntax appears to affect the writing skills similar to the first language performance

Trends in achievement

The comparison of the performance in syntax revelaed that students' correct esponses to question number 23, which relates to personal pronouns has been reduced considerably. This could have contributed much to the drop in achievemnt in syntax.

On the other hand students' performance in question number 30 which relates to the third person singular present tense has been the lowest in both years. Therefore, it could be concluded that students' knowledge of grammer is weak.

Accordingly the percentage of grammatically correct and one word answers has increased for each response in the year 2015. This has contributed positively to the over all performance in writing.

Patterns in achievement in mathematics

A pattern can be observed in students' achievement of sub skills in mathematics as well. For all three sub skills the mean value is above 50. However, of the three sub skills the weakest is the concepts.

When achievement of ELCs are considered except for competency 16 which is "Names objects situated both at left and right sides of one's own position" responses to questions related to other ELCs seems satisfactory. The correct responses for the questions related to these ELCs are above 50%.

Trends in achievement

According to 2015 data students' performance in relation to the sub skills of procedures and problem solving has increased. This is a positive trend. On the other hand, the knowledge of concepts has declined. This is a trend that needs to be paid attention to as lack of conceptual knowledge will affect the other skills if this trend continues. Further, students appear to have improved the procedural skill without having the conceptual understanding. Such a situation could be the result of mechanical practice of doing mathematical operations. Therefore, such a situation should be arrested.

As discussed above the achievement of competency 16 which has been identified as unsatisfactory had been identified in 2013 also as needing improvement. Therefore, it is necessary to find out the reason for students not been able to understand and apply this concept.

7.3 What the findings reveal

7.3.1 Opportunities for equitable quality education

A new education agenda and the Framework for Action, Incheon Declaration, 2030 has been proposed. This declaration having examined the remaining challenges has identified on future priorities and strategies for its achievement hoping to "leave no one behind". As discussed in Chapter 1, this new vision is also in keeping with the proposed

Sustainable Development Goal 4 (SDG 4) "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"

Promoting "Equity" and "excellence" and reducing disparities in the education system is also one of the main focuses of the Government of Sri Lanka and this is highlighted in the Education Sector Development Framework and Programme (ESDFP) from 2013-2017.

One of the main objectives of a national assessment is to provide country-wide information about an array of learning outcomes according to nationally defined standards and identify areas for government attention and policy intervention and to assess curricular knowledge and skills.

One of the major areas identified in the ESDFP is "improving the quality of basic and secondary education" (p.2). Under the Primary Education Development programmes one of the objectives is "to ensure quality and accessible education for all as to reduce disparities in the quality and access to primary education"(p.33). Therefore, it is necessary to find out whether any particular subgroups in the population perform poorly. For example, whether disparities exist, between the achievements of boys and girls, students from different language or ethnic groups, or students in different regions of the country.

As discussed in section 7.2 in comparing the students' performance between 2013 and 2015 some positive trends can be observed. Increase in achievement of learning outcomes in the Tamil language, English language and mathematics is a positive sign. There is a slight decline in the achievement of learning outcomes in the Sinhala language which is insignificant. However, this trend needs to be arrested.

Considering the provincial wise achievement there was a marked improvement in 2015 in some of the provinces which had not performed well in 2013. This is a positive trend which should be sustained. Similarly, the improvement in achievement in Type 3 schools and even though slight the increase performance in Tamil medium schools in 2015 are trends that need to be sustained as well as further studied to find the causes.

On the other hand, there is disparity in achievement between provinces, between boys and girls, between different language or ethnic groups, among school types, different medium of instruction and according to the location of the school. There is not only inter provincial disparities but also intra provincial disparities. Some of these patterns that emerged in 2013 has continued up to 2015. Therefore, it could be concluded that students' performance at the end of the fourth year of schooling indicates that equal opportunities to achieve the goal of 'education for all' had not been successful.

7.3.2 Impact on the curriculum reforms

As discussed in chapter 1, there are several objectives of a National assessment. One such objective is to find out whether the findings indicate particular strengths and weaknesses in students' knowledge and skills so that it would provide input for curriculum reforms.

As discussed in section 7.2, when considering the achievement of the first language it was revealed that in 2013 that both Sinhala and Tamil students writing skills were weak. It was further revealed that achievement of the ELCs related to spellings and sentence construction is weak. This trend had continued to 2015. These are two areas that need to be strengthened in a new curriculum revision.

It was also revealed that there is a lack of balance in the identification of ELCs. There were only six ELCs relevant to reading and writing. Further, they do not adequately represent competencies relating to all four sub skills of language. Even though, the ELCs do not correspond to all sub skills the syllabus and the textbooks are skill based.

The deficiencies identified in the first language curriculum also applies to the second language curriculum. Imbalance in the ELCs is even worse in the English Language curriculum as there is only one ELC pertaining to writing, Even that is not very clear. When considering the ELCs for mathematics, there are only 8 competencies. They also do not adequately represent all sub skills of mathematics. Therefore, this mismatch needs to be rectified in a future curriculum revision.

It could be concluded that the findings of 2013 are valid for 2015 as well and it has to be reiterated that a curriculum revision should take into consideration these suggestions.

The ELCs are not given in the Teacher Guides or Pupil's books. Therefore, whether the teachers consider the ELCs in their lesson planning is also questionable. As it is expected that "100 percent of the children complete primary education achieving ELCs" (ESDFP, 2013-2017, p.33) teacher awareness is vital.

7.3.3 Impact on pedagogy

As discussed in 7.2.7 a trend appears to be developing where students are learning mechanically. As the skill analysis in relation to mathematics revealed students' knowledge of procedures is better than their conceptual understanding. In languages the knowledge of vocabulary and grammar is better than writing. Although they are able to use the knowledge in completing a discrete exercise they are unable to use this knowledge in process writing. Such a situation could be the result of teachers coaching students for examination by mechanically practicing exercises in past papers.

7.4 The way forward

It has been stressed that the national assessment of learning outcomes should be better utilized for policy purposes (World Bank, 2012). The Ministry of Education (MoE) in collaboration with the Provincial Education Authorities(PEAs) and national level education institutions has developed Education Sector Development Framework and Programme (ESDFP) from 2012-2016. As a rolling plan of this strategic plan, the ESDFP plan for 2013 -2017 has been formulated (Ministry of Education, 2013)

Section 7.4 of this chapter examines how the findings of the national assessment 2015 can further strengthened the proposals of the ESDFP.

Equity in learning opportunities

Increase equitable access in primary and secondary education and strengthening divisional level planning and enhancing resources to promote student learning at all levels are some of the strategies identified by the ESDFP. However, the national

assessment results indicate that there are inter and intra disparities among provinces, school types, ethnic groups and to a certain extent between genders. Multiple variables may influence these disparities and special attention of the policy planners and more public resources should be targeted to these provinces and low performing sub groups.

In this regard, as discussed in section 7.4 certain positive trends were observed in 2015 such as provinces that were not performing well in 2013 improving considerably in 2015. It is necessary to find out whether the reason for the improvement was more funding been channeled to these provinces as a result of the 2013 findings. Further, studies are needed to identify the good practices of these provinces and disseminate them to other provinces.

Impact on policy

Findings of the 2015 study revealed that 1AB and Type 3 schools have performed better than Type 2 and 1C. Further, there is decline in achievement of some subjects in these schools. Therefore, it is pertinent to consider whether Type 3 schools having only primary classes and 1AB schools having separate primary sections have an impact on their performance. On the other hand, the other two school types having both secondary and primary sections together leads to less focus on the primary grades needs to be considered. If so there will be support for a proposal to separate primary schools.

Curriculum revision

According to the ESDFP (2013-2017), one of the strategies identified for the development of primary education is curriculum revision and upgrading of primary education curriculum. Accordingly, it is claimed that "curriculum upgrading will include the identification of the curricular areas that need improvement" (p.34). Among the activities identified to achieve these strategies are

(a) Develop standards for each key stage

(c) Upgrade ELC

As the discussion in section 7.3.2 revealed upgrading of ELC's is necessary. In order to do so there must be coordination between the different stakeholders such as the

primary education branch and the subject directors of the MoE and the NIE. The findings of the national assessments should be considered in curriculum revision.

Section 7.3.1 discussed the provision of equity. The findings revealed that there are disparities in achievement at all levels – provincial, school wise, gender, medium wise and location wise. As a result students are at different levels. Developing standards for each key stage and linking them with the ELCs was proposed in the 2013 study as a solution to this issue. The findings of the 2015 study confirm this need.

Diversify the curricula

The trend identified confirms that there are high achieving as well as very low achieving students who are not catered to by the present curriculum. This was especially evident in the performance of English language. Use of common teaching methodologies to teach students who are in different performance levels in the same classroom has been repeatedly identified as an issue in teaching any subject and especially the English language and mathematics. Therefore, as suggested in 2013 there is a need to adopt the practice of countries such as Singapore and UK and introduce multiple textbooks or at least multiple activities to suit at least three different levels.

Diversified curricula could be linked to the identified standards. This would enable to develop activities and assessments to suit the different levels

Teacher development

The analysis of data clearly showed that there are high achievers in all subjects. Similarly there were group of low achievers as well. Teachers need to identify these students with exceptional abilities as well as learners needing special attention. Further, they should be able to adapt the learning material to provide fast track programmes for the best students and remedial programmes for the low achievers. Thus teacher development programmes should include these skills as well as to train teachers in the use of strategies such as mixed ability and same ability groupings.

As discussed in 7.3 teachers should be made to reflect on their teaching pedagogy and to move away from mechanical coaching for examinations.

Further, findings of the national assessment should feed into teacher development programmes. Provincial and zonal level teacher development programmes should use the NEREC findings to plan the School Based Teacher Development programmes where teachers can be involved in action research to develop their practice.

Research and Monitoring

There are certain trends that have emerged over the period 2013–2015. Further, studies are need to confirm these trends. The purpose of a national assessment is to identify patterns and trends. It is the responsibility of the stakeholders to find out the causes which can be context specific. Therefore, research and monitoring is essential at provincial, zonal and school level.

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