

National Report

**National Assessment of Learning Outcomes of the Subjects of
Mathematics and English of Students Completing Grade 04
in the Year 2022/2023**

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

*Financed by
World Bank-funded General Education Modernization (GEM) Project*

September 2023

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Grade 04 in the Year 2022/2023

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Professor Lakshman Wedikkarage

Director

National Education Research and Evaluation Centre (NEREC)

Message from the Secretary, Ministry of Education

Sri Lanka has experienced one of the longest school closures due to COVID-19 pandemic and subsequently economic crises challenging achieving SDG goals. In order to achieve SDGs by 2030, it is necessary to provide for all children and ensure equitable access to school education. Therefore, for the formulation of policies and programmes to achieve these goals, reliable evidence are crucial than ever before.

This is an important national action that is exercised to reveal the achievement levels of students in various grades and various subjects. The findings of these assessments help policy-makers and technocrats to determine the performance of the education system through learning outcomes, to what extent the educational development programmes and investments have been successful in supporting to provision of quality education, and further improvements to be made in the education system.

In this context, the Ministry of Education with the financial assistance of the World Bank has commissioned the National Education Research and Evaluation Centre (NEREC) of the Faculty of Education of the University of Colombo with the task of conducting national assessments to determine the levels of achievements of students in grade 4. The latest reports revealed that there is a noticeable improvement in the learning acquisition of students throughout the years and there are certain factors that are particularly significant in enhancing teaching and learning, analyzed by various aspects such as type of schools, gender, medium of instruction, location, and competency levels of students, and have compared the results with the results of the last national assessment.

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Wasantha Perera
Secretary
Ministry of Education

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Abbreviations

EFA	Education for All
ESS	Effective Sample Size
ESDFP	Education Sector Development Framework and Programme
GEMP	General Education Modernization Project
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, 2013 and 2015. This report presents the findings of the national assessment conducted in grade 4 for the second language – English and mathematics in the year 2022.

The national assessment of learning outcomes of 2022 used instruments that were designed and used in the 2015 study with a very few replacements in par with revised competency levels in 2019 curriculum revision to test cognitive skills in the two subjects. Hence, this report presents the patterns of achievement of learning outcomes of students completing grade 4 in 2022 as well as compare the achievement with that of 2015 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 11667 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 both subjects in relation to provincial performance, school type, gender and medium of instruction. Provincial wise some provinces such as Uva, Sabaragamuwa and North Western performed well in both 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 all the provinces' performance in the mathematics had improved while some of the provinces, for example, the Northern, Eastern and Uva that were not performing well in 2015 in mathematics had improved notably in 2022. On the other hand, the English language performance in the Uva province shows a noticeable improvement. 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 both subjects. Medium wise Sinhala medium students' performance was better than the Tamil medium students. Location wise Municipal and urban schools' performance was higher than the Pradeshiya Saba 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 the English language. On the other hand, in mathematics achievement all the three skills had improved, while the performance in problem solving had improved considerably in 2022. 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 plan remedial teaching in relation to the ELCs where students exhibit low performance. National assessment findings should feed into teacher development programmes and for further research at provincial, zonal as well as school level.

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” (UNESCO, 2016, p.7).

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” (UNESCO, 2016, p.7).

Furthermore, UNESCO points out the need of “commitment to quality education and to improving learning outcomes, which requires strengthening inputs, processes and evaluation of outcomes and mechanisms to measure progress” (2016, p.8). This need is further supported with the fact that “simply increasing the number of years spent in education, or the qualification level of the workforce, will not automatically improve the basic skills of the workforce. Instead, investment in programs to improve individuals’ basic skills should be accompanied by rigorous evaluation, as the content of the

curriculum and the standards achieved matter a great deal” (Cherry & Vignoles, 2020, p.1).

A worldwide emphasizes 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).

This is evident in Sri Lanka as well. Sri Lanka in its constitution (1978) which has been conformed to the Article No,26 of the Universal Declaration of Human Rights (1948) proclaims that every citizen has a right to education. Hence, it strives to enhance the quality of education to eradicate illiteracy and assure the citizens the right to universal and equal access to education at all levels (Education for All Assessment, Sri Lanka, The Country Status Report, 1999). This report indicates how Sri Lanka has made significant endeavors towards universalizing primary education and providing extended opportunities for learning to its citizens (p.vi). Among such endeavors, it is evident the implementation of procedures that will provide information on students’ learning in primary grades.

1.2 What is a national assessment?

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 (Kellaghan, Bethell, & Ross, 2011). It is an investigation of schools and students (and sometimes teachers) that is designed to provide evidence about students’ achievements at a particular stage of education in identified curriculum areas such as, reading or writing, English language, mathematics or science (Kellaghan, Bethell, & Ross, 2011, p.1). 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 & Kellaghan,

2008, p.10). According to Kellaghan, Greaney and Murray (2009), in addition to determining the realization of objectives of learning and how far learning outcomes have been achieved, the aim of a national assessment is to convey such information to relevant authorities so that it could lead to improvement in future student achievement thereby contributing to the decision-making process. In other words, the ultimate objective of a national assessment while determining the achievement levels is to contribute to the expansion of the quality of students' learning.

When it considers the key design elements of a national assessment as pointed out by Kellaghan, Bethell and Ross (2011, p.2), It is evident how this contribution would be.

- What curriculum area (eg, mathematics) or construct (eg, numeracy) to assess?
- At which grade(s) or stage(s) of education to assess?
- Whether to assess the whole school population at the chosen grade(s) or a probability sample of schools and students chosen to represent that population?
- How often to assess: annually or every three to four years?
- Whether policy/decision makers expect achievement to be described using raw scores, percentages, by curriculum domains/units, the proportion of students achieving curriculum attainment targets, or attaining specific proficiency levels?
- How, and to whom, should the findings of an assessment be communicated?

1.3 Equity and excellence

Every nation, generally committed to equity and excellence in education – that all children and young people are confident, creative lifelong learners active in their community (The Alice Springs (Mparntwe) Education Declaration, 2019). The new Sustainable Development Goal (SDG) 4, presents huge opportunities to meet this challenge through a strategic shift towards equitable quality education for all. This shift is essential. Emerging evidence shows that large numbers of children are in school, but are not learning (UNESCO, 2015).

Achieving this vision requires a collective understanding of what we all stand for and how we will make it a reality. In this attempt, findings of national assessments play an important role in informing policy planners of the quality of education received by students at a given time so that necessary changes to certain educational practices could be adjusted.

Over the years, various steps have been taken to enhance the provision of equity in order to achieve excellence in Sri Lanka as well. One example is the widening of access to education through Kannangara reforms which were introduced as far back as 1944 with a view to providing equity in education irrespective of race, caste or ethnicity (Sumathipala, 1968). Therefore, it is evident that Sri Lanka has placed due recognition on promoting “equity” and “excellence” and reducing disparities in the education system. In this regard, a comprehensive medium term Education Sector Development Framework and Programme (ESDFP) from 2006–2010 was developed (Ministry of Education, 2011). One of the major areas identified in this framework is “improving the quality of basic and secondary education” and “increasing equitable access to basic and secondary education” (p.2) This framework further emphasizes, the meaning of equitable access as “each child can access an education appropriate to his /her individual learning potential and needs” (p.4). The plan for the second stage of the ESDFP for the period 2012 -2017 is an extension of the policy framework which comprises three policy themes as given below (Ministry of Education, 2013).

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.

Moreover, it provides a foundation theme and a crosscutting activity to ensure the achievement of policy themes-related results and outcomes as well as results-based monitoring and evaluation. The ESDFP was a thorough education sector development framework which was aimed at modifying schools to be the ‘foundations of the future knowledge economies’ (Ministry of Education, 2013, p.xxv).

The education sector development strategic plan for the general education sector in Sri

Lanka (2020 - 2025), which was introduced after the ESDFP, is based on four main policy thrust areas which are also related to the central themes of the latter. It is to be observed as, by and large, an enhanced continuation of the achievement of key objectives of the ESDFP.

Thrust Area 1: Strengthen equity in education: equitable learning opportunities for all children.

Thrust Area 2: Improve quality of general education.

Thrust Area 3: Strengthen stewardship and service delivery of general education.

Thrust Area 4: Enhance evidence-based education policy making and planning.

Examining the key thrusts, it becomes clear that improving equity, quality, service delivery, and enhancing evidence-based education policy planning mechanisms are central to the education sector development strategic plan for the general education sector in Sri Lanka (2020 - 2025). General education in Sri Lanka comprises both primary and secondary education, therefore, improving general education entails the improvement of primary and secondary cycle of the Sri Lankan education system. Thus, for improving the quality of education at any level, findings of national assessments of learning outcomes are expected to be utilized as key indicators.

Therefore, national assessments of learning outcomes have become an integral part of education policy analysis and program monitoring at the Ministry of Education (MoE). The key objectives of national assessments are not only to provide important information on the current state of education in a given context but also to use such information for better policy decisions which will eventually lead to enhanced student achievement.

1.4 National Assessments 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. The NEREC has conducted national assessments of learning outcomes both at the primary as well as at the secondary level. At the primary level, assessments were conducted for Grade 4 in 2003, 2007, 2009, 2013, and 2015 respectively. At the secondary level,

National Assessment of Learning Outcomes were conducted for 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).

1.5 Rationale for the present study

This report presents the findings of a national assessment conducted for students completing grade 4 in the year 2022. Students’ achievement in the English language and mathematics was assessed.

The national assessments conducted in grade 4 in 2003, 2007, 2009, 2013 reveal that on average there is an improvement in achievement levels of Grade 4 students in English language and mathematics. While there was an improvement in the achievement of learning outcomes, it was also revealed that there are inequalities in the provision of education in relation to province, gender, medium of instruction and locality (NEREC, 2016).

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, usage of the same test items over a decade, may have resulted in teachers being familiar with the items and leading to a washback effect. Therefore, there was a need to construct new test items for the 2013 national assessment.

1.6 National Assessment of Learning Outcomes- 2022

The National Assessment of Learning Outcomes of 2013 used new instruments to test cognitive skills in the First language, the second language (English language) 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 the second language (English language) and mathematics. In line with the new curriculum revision in 2019, few revisions have been proposed for Grade 4 English language and mathematics. Therefore, it was suggested to replace few existing items in the instruments used in the 2015 with the proposed new competency levels in 2019 for the current study. Therefore, the results of this study will be compared with the baseline data of the 2015 study to identify trends in learning outcomes over the period 2015 to 2022.

A national assessment has multiple purposes. According to Kellaghan and Greaney (2008), 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 & 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.

1.7 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 five national assessments of achievement of learning outcomes of students completing grade 4 with the aim of monitoring and evaluating the quality of its education. Results of these studies show substantial improvement in achievement, while there are still disparities in achievement within and among provinces. 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 amended instruments will enable the comparison of achievement of learning outcomes of grade 4 students over the period 2015 - 2022. Chapter 2 of this report will discuss the methodology of the study. Chapters three and four will present the findings pertaining to the achievement of cognitive skills in mathematics and English language respectively. These chapters will present the patterns of achievement of the two subjects and indicate the trends in achievement over the period 2015 - 2022. The final chapter will discuss the lessons to be learnt and the way forward.

Chapter 2 | Methodology

2.1 Introduction

As mentioned in chapter 1, the National Assessment of Achievement of Grade 04 Pupils in Sri Lanka was conducted in 2022. This chapter elaborates the methodology adopted in the 2022 study which used the instruments constructed in 2013 with few replacements on par with the revised competency levels in the 2019 curriculum revision.

2.2 Objectives of the study

In accordance with the General Education Modernization (GEM) project (2018/19-2023) which was based on the Transforming School Education Project (TSEP), the main objective of the study was to:

determine the achievement of learning outcomes of students completing grade 04 in the year 2022 and to compare such achievement with that of 2015.

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 2022
- 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 2015 with that of 2022.

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 2022 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 2021 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. However, most of them also follow the local curriculum set up by the Ministry of Education using the local language mediums (Sinhala or Tamil) and 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 2021. Therefore, the desired target population is approximately 329172 students who will complete Grade 4 in 2022 in state schools.

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

2.3.3 School level exclusions

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 have been excluded from the sample in the previous studies as well.

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 2.1: Defined target population by provinces

Province	Defined Target School Population	Defined Target Student Population
1. Western	1214	71457
2. Central	1336	44568
3. Southern	964	42260
4. Northern	889	17612
5. Eastern	997	30200
6. North Western	1136	41767
7. North Central	724	25430
8. Uva	798	23966
9. Sabaragamuwa	990	31912
Total	9048	329172

2.3.5 Sample design – procedure

The sample procedure has a multi stage approach. 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, 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 2.2 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 2.2: Calculated student sample and school sample per province

Province	No of schools	Number of classes	Total number of Students	Average class size	Roh Value	Design effect	Student sample (ESS=178)	School Sample	School Sample (Approx)
Western	1214	2338	71457	30.56	0.25	8.39	1493.57	48.87	49
Central	1336	1814	44568	24.57	0.25	6.89	1226.82	49.93	50
Southern	964	1519	42260	27.82	0.25	7.71	1371.53	49.30	49
Northern	889	1052	17612	16.74	0.25	4.94	878.49	52.47	52
Eastern	997	1346	30200	22.44	0.25	6.36	1131.94	50.45	50
North Western	1136	1607	41767	25.99	0.25	7.25	1290.08	49.64	50
North Central	724	1015	25430	25.05	0.25	7.01	1248.41	49.83	50
Uva	798	1048	23966	22.87	0.25	6.47	1151.14	50.34	50
Sabaragamuwa	990	1372	31912	23.26	0.25	6.56	1168.55	50.24	50
Total	9048	13111	329172	25.11					450

Table 2.3 illustrates calculated student sample, allocated student sample and achieved student sample by provinces. Moreover, sample by school type, location, medium of instruction are attached as Annexure 1.

Table 2.3: Calculated, allocated and achieved student sample per each province

Province	Calculated Student Sample	Allocated Student Sample as MOE Student Database	Achieved Student Sample	
			English	Mathematics
Western	1494	1593	1440	1446
Central	1227	1505	1427	1426
Southern	1372	1653	1377	1377
Northern	879	1289	1249	1249
Eastern	1132	1478	1411	1411
North Western	1290	1588	1482	1500
North Central	1248	1521	1463	1462
Uva	1151	1485	1404	1404
Sabaragamuwa	1169	1551	1435	1433
Total	10962	13663	12688	12708

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, (ρ_h) 0.25 was calculated from the previous grade 4 assessment study data. Maximum value of ρ_h 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 the English language and mathematics, were designed in 2013 based on the framework for each subject.

The test papers for the current study were based on the instruments prepared for 2013 as mentioned elsewhere in the first chapter, the test items were slightly modified accommodating the curriculum changes which have introduced in 2019.

The modification and validation of present test paper were done in collaboration with the MoE and the subject directors of the NIE on par with the Teacher Instruction Manuals for English language and mathematics (National Institute of Education, 2018a, 2018b, 2018c).

2.5 Framework for the National Assessment

Content of the achievement tests and their distribution in the papers is given in Table 2.4.

Table 2.4: Content of the achievement tests and their distribution in the papers

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

2.6 Procedures in administration of the National Assessment 2022

National Assessment of Grade 04 students were administered island wide on the 20th of March, 2022.

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 lecturers from the colleagues of Education. In addition to the above, MPhil, MEd and PGDE students were also appointed as coordinators. To assist them, experienced teachers from the same schools were appointed with the consent of their principals.

Training workshops for coordinators

Training workshops for coordinators were organized in three phases. A team representing the NEREC visited the North, North Central and Eastern provinces from the 14th to the 17th of March 2023 and conducted training sessions in Anuradhapura, Vavuniya, Kilinochchi, Jaffna, Trincomalee, Batticaloa and Polonnaruwa. Test papers and other relevant documents were handed over to all the coordinators with necessary instructions.

The team who visited the Uva, Southern and Eastern Provinces from the 15th to the 17th of March 2023, conducted the training sessions in Bandarawela, Monaragala, Hambantota, Galle and Ampara.

Training sessions were held at the NEREC premises for Western, Central, North Western and Sabaragamuwa provinces on the 16th to the 17th of March 2023.

The following measures were adopted in this study to increase the reliability of the assessment.

- In order to assess the achievement of learning outcomes of students completing grade 4 in 2022, tests were held at the beginning of the academic year 2023.
- The tests were administered on two separate week- days.
- In order to better monitor the administering of the tests, in the 2022 study 450 independent coordinators were appointed to the 450 examination centers.
- The coordinators were instructed to complete a journal in which they were supposed 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 the 20th of March 2023, as per the timetable prepared by the NEREC.

Collection of answer scripts and other documents

Coordinators from Central, Western, North Western and Sabaragamuwa Provinces handed over the answer scripts and other documents to the NEREC from the 25th to the 27th of March 2023. A team from the NEREC visited the North Central, Northern, Eastern, Southern and Uva provinces to collect answer scripts and other documents from the 30th of March to the 01st of April 2023.

2.7 Analysis of data

The data gathered through the achievement tests were analyzed on a national and provincial bases. In order to minimize the effect of the discrepancy between the expected and the achieved sample, the gathered data were 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 learning outcomes of students completing grade 04 in the year 2022 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 framework of the assessment. The next chapter will present the data pertaining to student achievement in relation to mathematics.

Chapter 3

Patterns and Trends in Achievement: Mathematics - 2022

3.1 Introduction

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

The patterns of achievement in 2022 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.

3.2 Patterns of achievement at national level

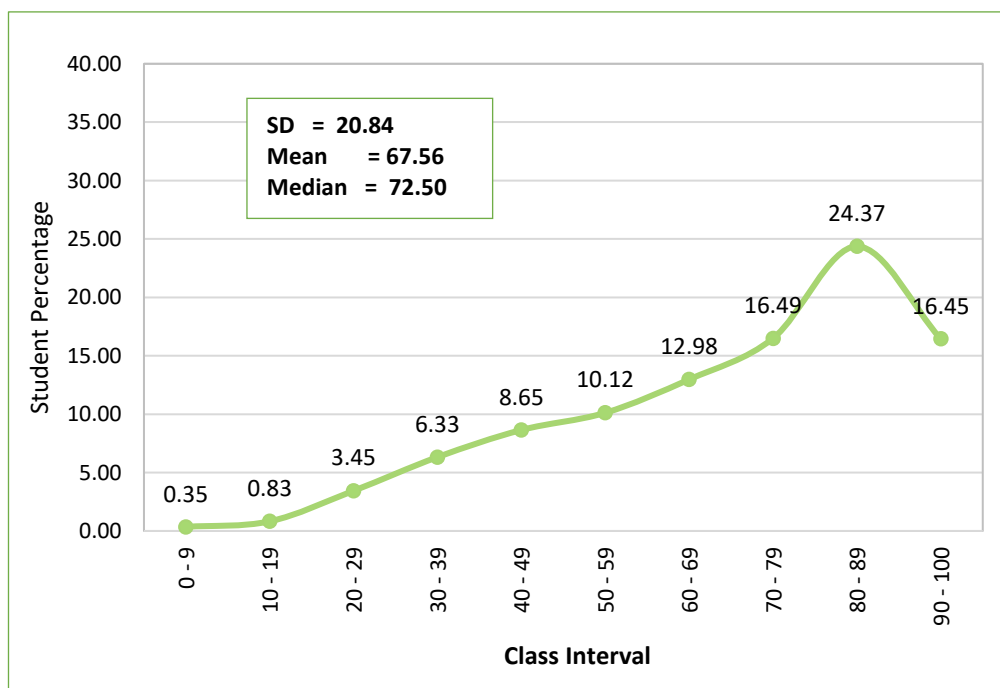


Fig. 3.1: All island achievement in mathematics 2022 – dispersion of marks

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

Fig. 3.1 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 3.1.

Table 3.1: All island achievement in mathematics 2022– cumulative percentages

Class Interval	Student %	Cumulative %
0 –9	0.35	0.35
10 - 19	0.83	1.18
20 - 29	3.45	4.63
30 - 39	6.33	10.95
40 - 49	8.65	19.60
50 - 59	10.12	29.72
60 - 69	12.98	42.69
70 - 79	16.49	59.19
80 - 89	24.37	83.55
90 - 100	16.45	100.00
Total	100.00	

According to this table the highest percent of students (24%) has scored between 80-89 marks and another 16% has scored between 90-100. On the other hand, 10.95% 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. 3.1.

Fig. 3.2 illustrates student achievement patterns further.

As Fig. 3.2, the box plot displays more than 50% of students has scored 72.50 or above. Further, 75th percentile of students is quite high (82.50) for the mathematics achievement. It also reveals that 50% of the marks lie between 52.50 and 82.50. The presence of outliers indicates that there are students who have scored exceptionally low

marks, indicating the disparity in achievement in mathematics among students completing Grade 4.

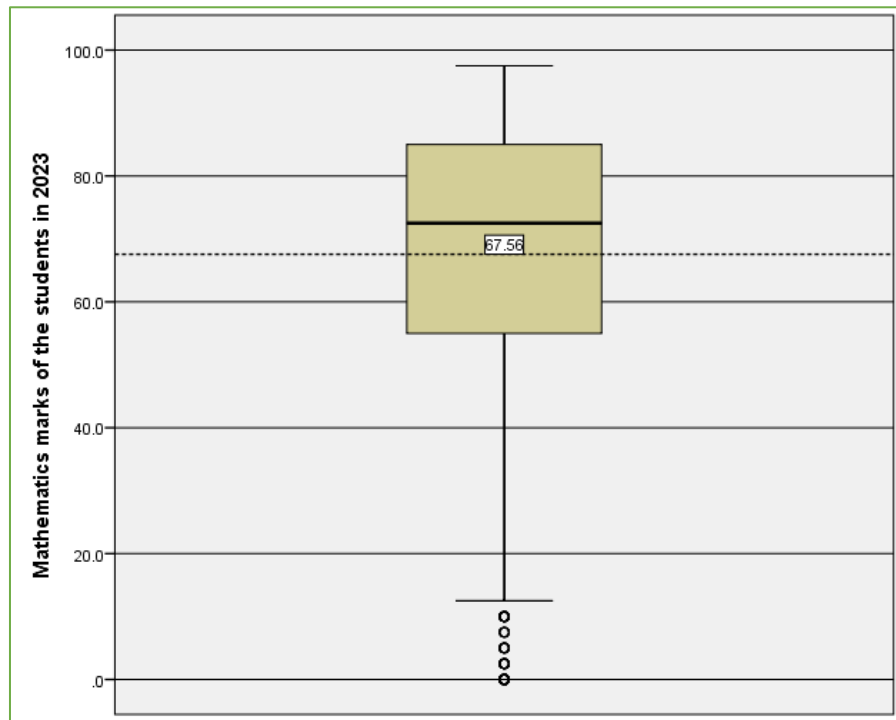


Fig. 3.2: Box plot and whisker chart representing all island mathematics achievement

Summary of national level achievement

- National level mean is 67.56, while the median is 72.50.
- Disparity in achievement prevails with approximately 10.95% of students scoring below 40 and 40% 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.

3.3 Provincial wise student achievement

The nature of the distribution of scores provincial wise reveals certain patterns. These patterns are discussed based on Table 3.2.

Table 3.2: Provincial achievement in mathematics 2022 – Summary statistics

Province	Mean	Rank	Standard Error of Mean	Standard Deviation	skewness	Percentile (p25)	Median (p50)	Percentile (p75)
Southern	70.85	1	0.10	21.05	-0.57	50.00	67.50	82.50
Uva	70.02	2	0.11	20.72	-0.46	47.50	70.00	82.50
Western	69.73	3	0.14	22.14	-0.48	45.00	67.50	82.50
North Western	68.84	4	0.10	20.06	-0.77	55.00	72.50	85.00
Sabaragamuwa	68.42	5	0.16	22.34	-0.53	45.00	67.50	82.50
Eastern	64.43	6	0.11	20.57	-0.64	52.50	72.50	85.00
Central	64.08	7	0.09	19.30	-0.79	57.50	75.00	87.50
North Central	63.68	8	0.13	19.53	-0.75	57.50	75.00	85.00
Northern	63.58	9	0.08	20.87	-0.94	57.50	75.00	87.50
All Island	67.56		0.04	20.84	-0.70	52.50	72.50	85.00

As Table 3.2 indicates based on provincial wise mean achievements Southern Province ranks first. However, Uva Province is ranked second with only a slightly lower mean value.

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

Achievement wise the provinces fall into two categories. Southern, Uva, Western, North Western, and Sabaragamuwa with mean scores above the national mean, fall into the higher category. Eastern, Central, North Central and Northern Provinces cluster in the middle category. Between the Southern and Northern Provinces there is almost six-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. 3.3.

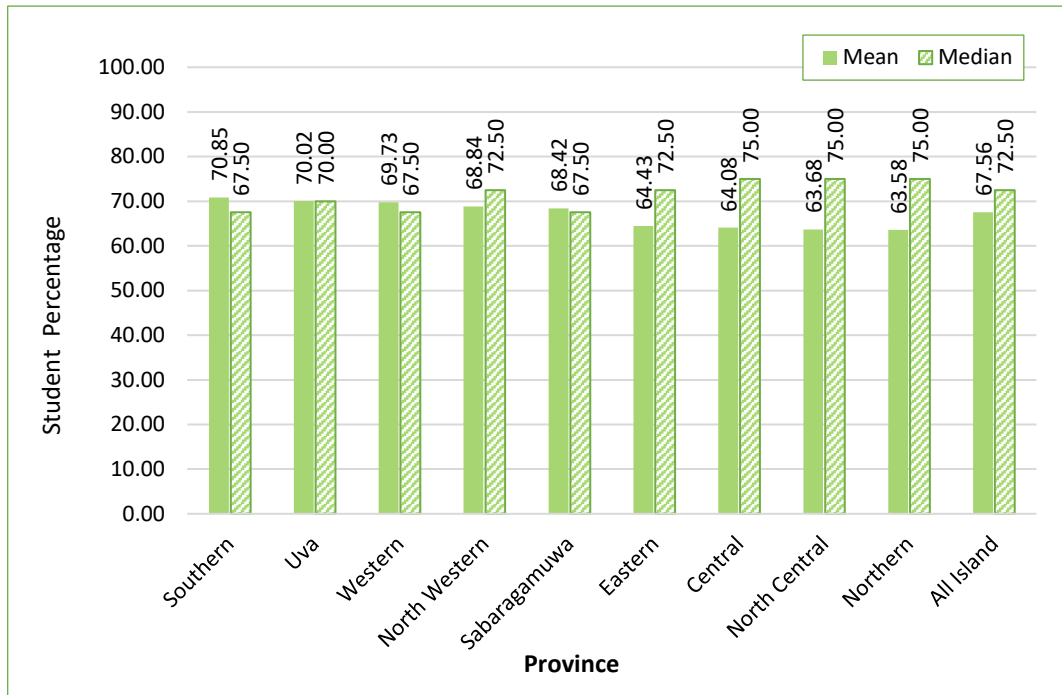


Fig. 3.3: Bar chart to represent mean among the provinces - Mathematics

Disparity in achievement among provinces

According to Table 3.2, Southern Province has the highest mean value but its SD is higher than Uva Province which has the next highest mean value. This means that student performance is more homogeneous in the Uva Province. There are five provinces that have SD values lower than the all-island SD. Sabaragamuwa province has the highest SD value indicating that the variation of students' marks is the highest in this province. The SD values of Western and Northern 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 all provinces have a higher percent of top-performing students.

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

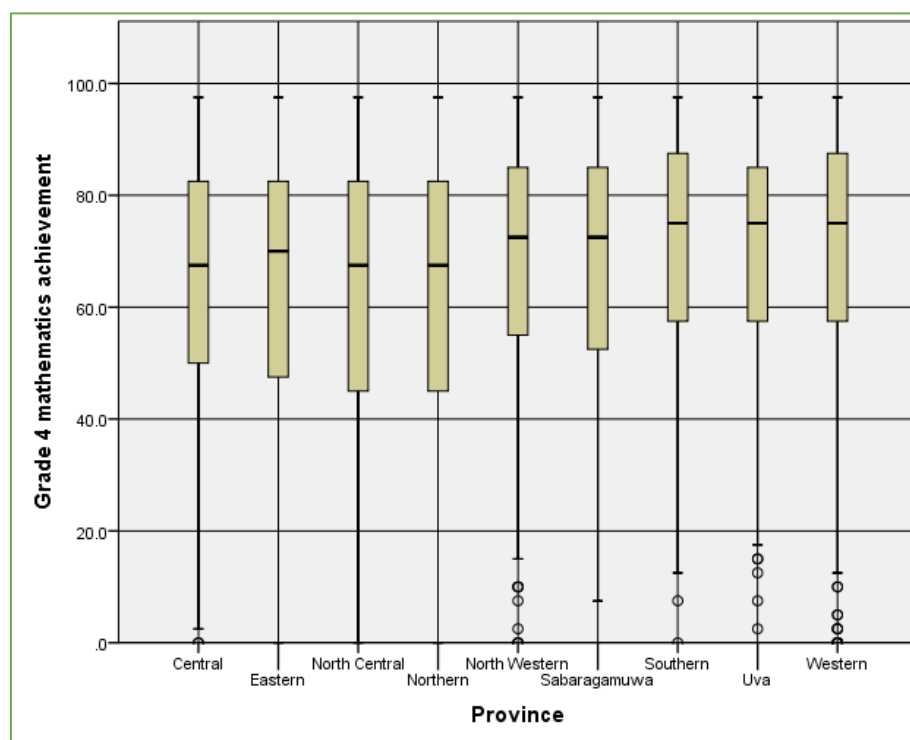


Fig. 3.4: Box plot and whisker chart representing provincial wise mathematics achievement

According to Fig 3.4, the Northern and North Central provinces show similar characteristics at 25th, 50th and 75th percentiles. In the Eastern Province even though the 75th percentile is similar to that of Central, its 25th percentile is lower. Therefore, there is greater disparity of marks in the Eastern Province. While North Western, Sabaragamuwa, and Uva Provinces show similarities at the upper limit their performance at the 25th percentile differs slightly. Furthermore, the high performing provinces, Southern, Uva and Western show similarities at the 75th percentile while the performance at the 25th percentile differs slightly. Among the top-performing provinces, the 50th percentile of the Uva province is quite high, indicating a higher percentage of students scoring 70 or above than in the Southern and Western (67.50).

However, there are no outliers in the Central, Eastern, North Central, Northern and Sabaragamuwa Provinces but there are in North Western, Southern, Uva and Western Provinces. Although the Uva province is ranked second with a slightly lower mean value than the first, the presence of outliers in the Uva province is quite high.

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

Province	Above or equal to 50%	Below 50%
Northern	73.98	26.02
North Central	74.01	25.99
Eastern	75.12	24.88
Central	77.56	22.44
North Western	82.87	17.13
Sabaragamuwa	84.37	15.63
Uva	84.47	15.53
Western	84.52	15.48
Southern	86.06	13.94
All Island	80.40	19.60

Summary of provincial level analysis

- Achievement wise the provinces fall into two categories.

Category 1 – Southern, Uva, Western, North Western, and Sabaragamuwa with mean scores above the national mean (67.56), fall into the higher category.

Category 2 – Eastern, Central, North Central and Northern Provinces cluster in the middle.

3.4 Achievement levels by type of school

Table 3.4: Mathematics achievement according to school type

School Type	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
1AB	74.58	0.08	17.20	-1.12	65.00	80.00	87.50
1C	65.48	0.07	20.10	-0.53	50.00	67.50	82.50
Type 2	61.57	0.08	22.39	-0.41	45.00	65.00	82.50
Type 3	69.08	0.06	20.69	-0.78	55.00	75.00	85.00
All Island	67.56	0.04	20.84	-0.70	52.50	72.50	85.00

As Table 3.4 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 among school types exists.

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

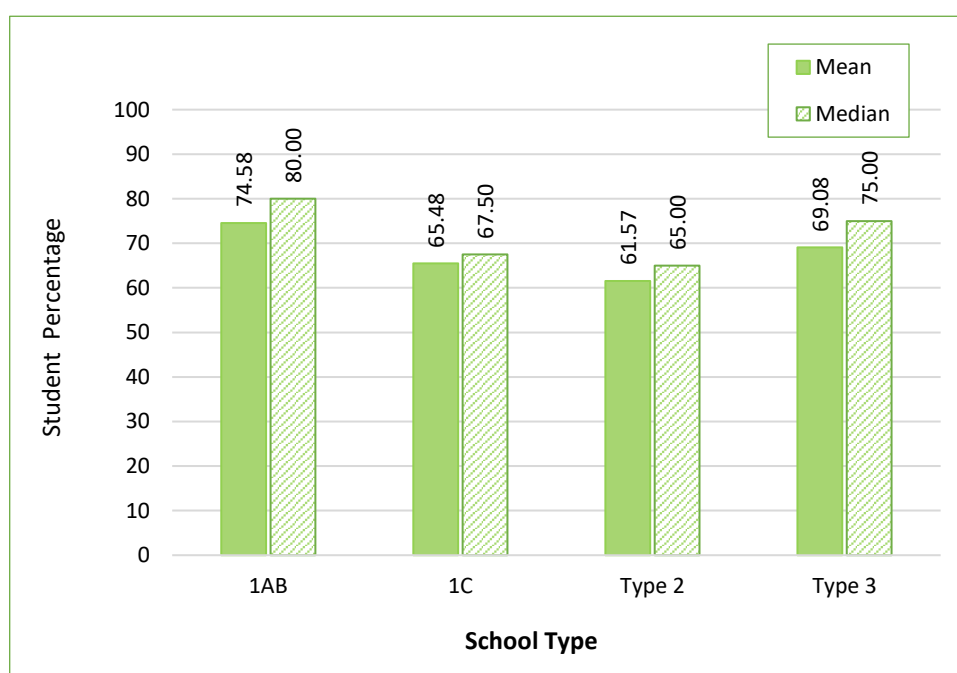


Fig. 3.5: Bar chart representing the mean among the school types- Mathematics

The performance of the school types is further highlighted when the median scores are considered in Table 3.4. All school types have achieved a high median value for the mathematics achievement. Fifty percent of students in 1AB and Type 3 school types have obtained scores above the mean value. At the same time, 1C and Type 2 schools median value is above the mean value (67.50 and 65.00).

Variation among students

According to Table 3.4 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 in Type 2 schools. Type 3 schools having a SD value closer to the national SD value also indicates a high variation in student achievement.

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.

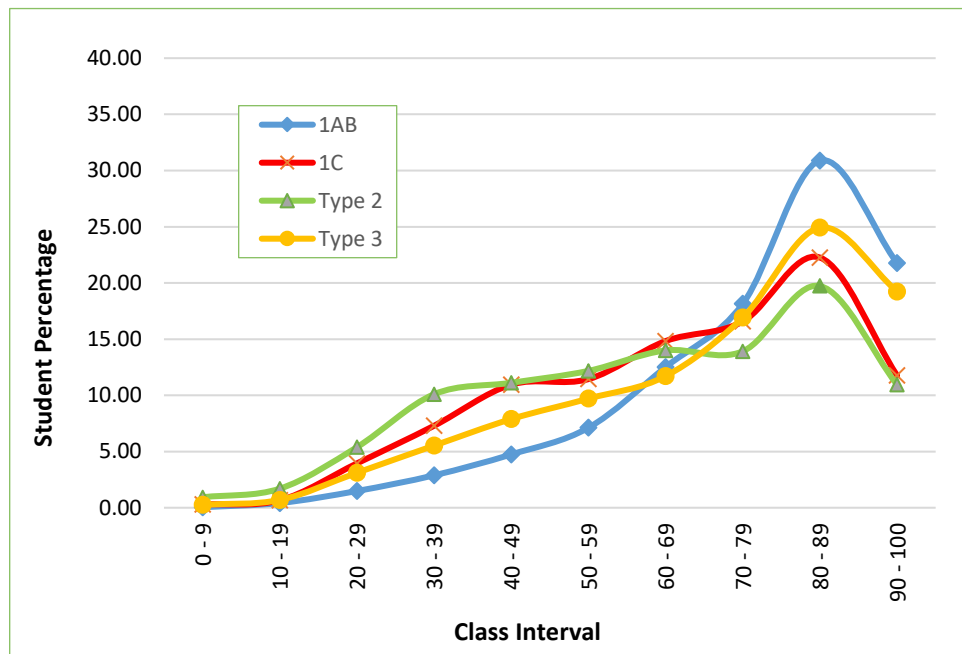


Fig. 3.6: Dispersion of marks by school type – Mathematics

Fig. 3.6 displays that all school curves peaked at the 80-89 class interval.

The spread of marks at different mark intervals is further illustrated in the Table 3.5 containing cumulative percentages.

Table 3.5: 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	0.05	0.05	0.28	0.28	0.93	0.93	0.26	0.26
10 - 19	0.42	0.47	0.66	0.94	1.70	2.63	0.69	0.96
20 - 29	1.49	1.95	3.94	4.88	5.39	8.02	3.11	4.07
30 - 39	2.88	4.84	7.29	12.18	10.10	18.12	5.53	9.60
40 - 49	4.74	9.58	10.96	23.13	11.12	29.23	7.89	17.49
50 - 59	7.12	16.70	11.44	34.58	12.18	41.41	9.71	27.19
60 - 69	12.51	29.21	14.83	49.41	14.00	55.41	11.71	38.91
70 - 79	18.14	47.35	16.57	65.98	13.92	69.33	16.92	55.83
80 - 89	30.88	78.23	22.26	88.24	19.73	89.05	24.93	80.75
90 - 100	21.77	100.00	11.76	100.00	10.95	100.00	19.25	100.00
Total	100.00		100.00		100.00		100.00	

In all the school types high percentage of students has scored between 80-89. In 1AB and Type 3 schools there is a high percent of students in the class intervals 90-100 and 70-79 (21.77 and 18.14 and 19.25 and 16.92 respectively). In 1C type schools there is a high percent of students in the class intervals 70-79 (16.57). In Type 2 schools 14.00 percent of the students belong to the class interval 60-69. When considering student marks below 40 points, 1AB schools cumulative percentage is 4.84, but in other school types this percentage varies from 12.18 in 1C Type to 18.12 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.

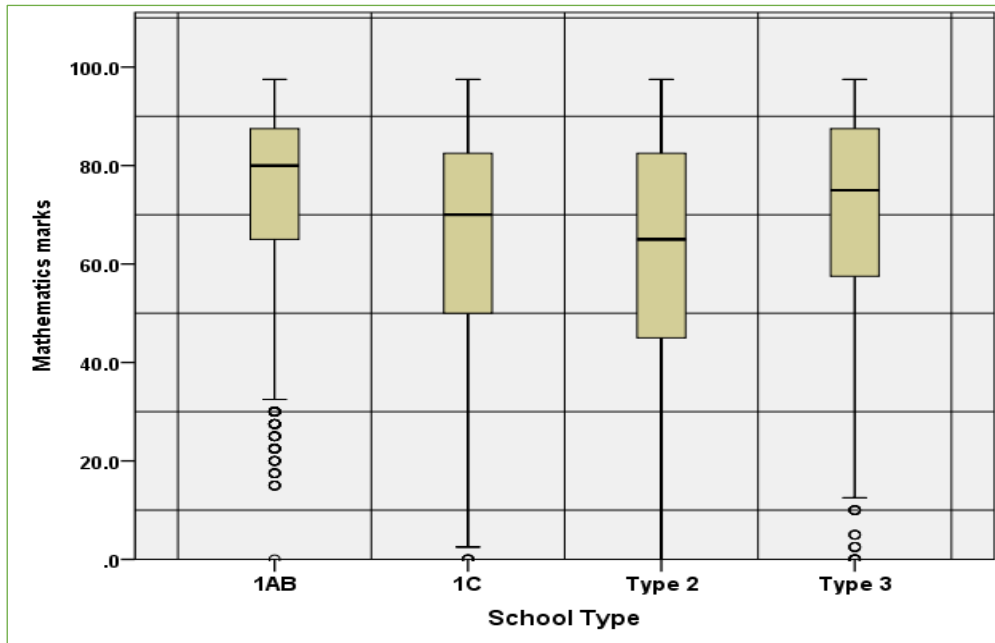


Fig. 3.7: Mathematics marks according to school types using box plot and whisker plot

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.

3.5 Achievement levels by gender

Table 3.6: Mathematics achievement according to gender

Student Gender	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
Male	65.97	0.05	21.75	-0.60	50.00	70.00	85.00
Female	69.06	0.05	19.82	-0.79	57.50	72.50	85.00
All Island	67.56	0.04	20.84	-0.70	52.50	72.50	85.00

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 –Mathematics

Male students' achievement is below than that of female students as well as below the all island mean and median.

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 3.6). 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. 3.9 graphically illustrates the dispersion of marks according to gender.

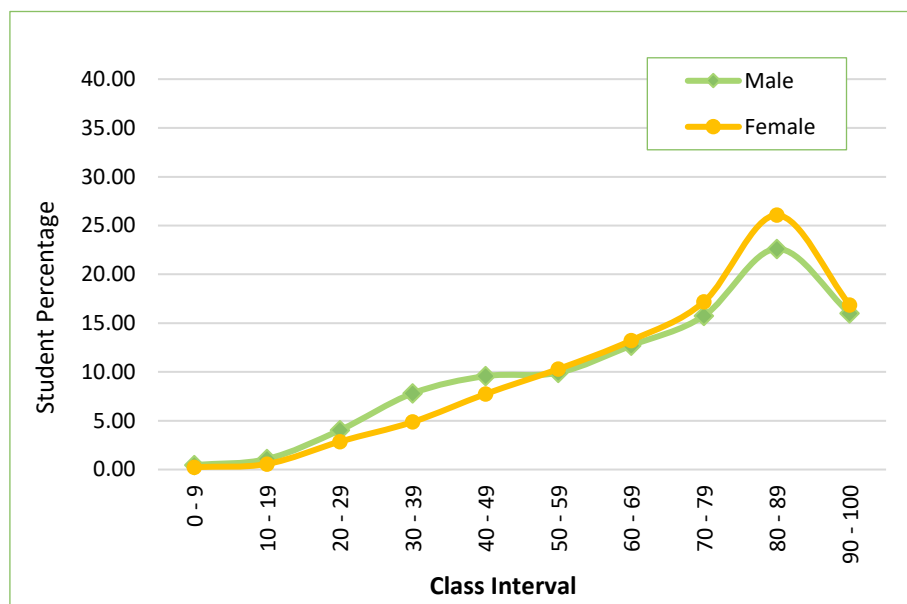


Fig. 3.9: Dispersion of marks by gender – Mathematics

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. However, the pattern of the two curves is 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 3.7: Cumulative student percentages according to the gender –Mathematics

Class Interval	Male		Female	
	Student %	Cumulative %	Student %	Cumulative %
0 - 9	0.46	0.46	0.25	0.25
10 - 19	1.09	1.55	0.57	0.82
20 - 29	4.04	5.59	2.87	3.69
30 - 39	7.82	13.41	4.88	8.57
40 - 49	9.57	22.99	7.75	16.32
50 - 59	9.93	32.91	10.31	26.62
60 - 69	12.71	45.62	13.23	39.86
70 - 79	15.76	61.38	17.20	57.06
80 - 89	22.62	84.00	26.07	83.12
90 - 100	16.00	100.00	16.88	100.00
Total	100.00		100.00	

According to Table 3.7 and Fig. 3.9 it could be concluded that among both females and males, there are high performing students. The highest percentage (26.07%) of female students' marks fall into the class interval 80-89. The highest percentage of male students' marks, even though, a lesser percentage (22.62%) falls into the same class interval. This indicates that the high performing girls achievement is higher than that of the high performing boys.

At the 90-100 class interval percentage of male and female students is almost similar (16.00% and 16.88%).

Even though there are only 8.57 cumulative percent of female students who has scored below 40 marks, there are 13.41% 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.

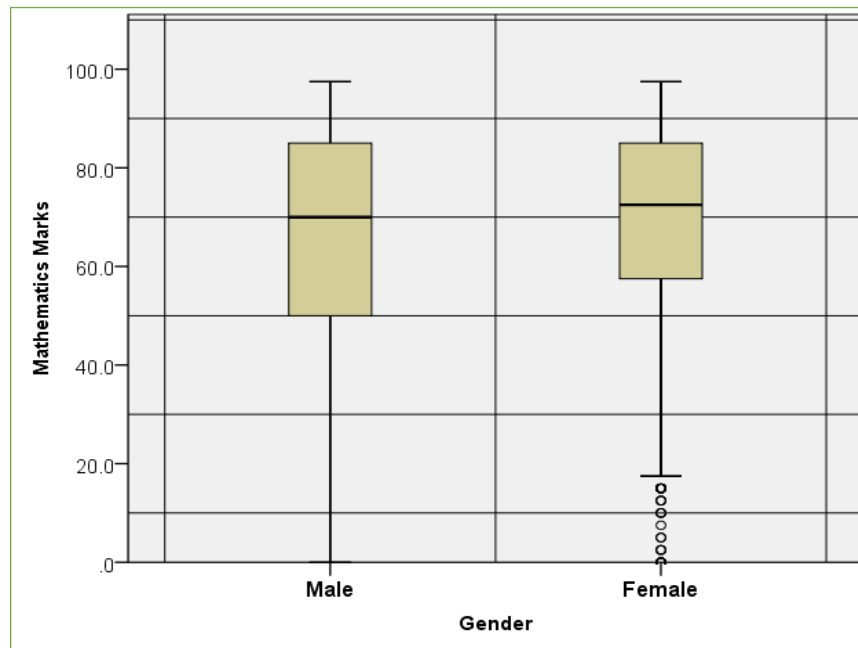


Fig. 3.10: Box plot and whisker plot representing gender wise mathematics marks

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 70.00, fifty percent of female students has scored above 72.50. 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 8.57% of girls has scored below 40, the male percentage is 13.41.
- Highest percentage of females, 26.07% as well as 22.62% of males fall into the mark range 80-89.

3.6 Achievement levels by medium of instruction

Table 3.8: Mathematics achievement according to medium of instruction

Medium	Mean	Std. Error of Mean	Standard Deviation	Skewness	Percentile 25	Median 50	Percentile 75
Sinhala	69.30	0.04	20.33	-0.81	57.50	75.00	85.00
Tamil	62.22	0.08	21.45	-0.39	45.00	65.00	80.00
All Island	67.56	0.04	20.84	-0.70	52.50	72.50	85.00

There is a 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. Sinhala medium students' achievement has greatly impacted on the all island achievement.

These disparities are further highlighted through the bar chart given in Fig. 3.11

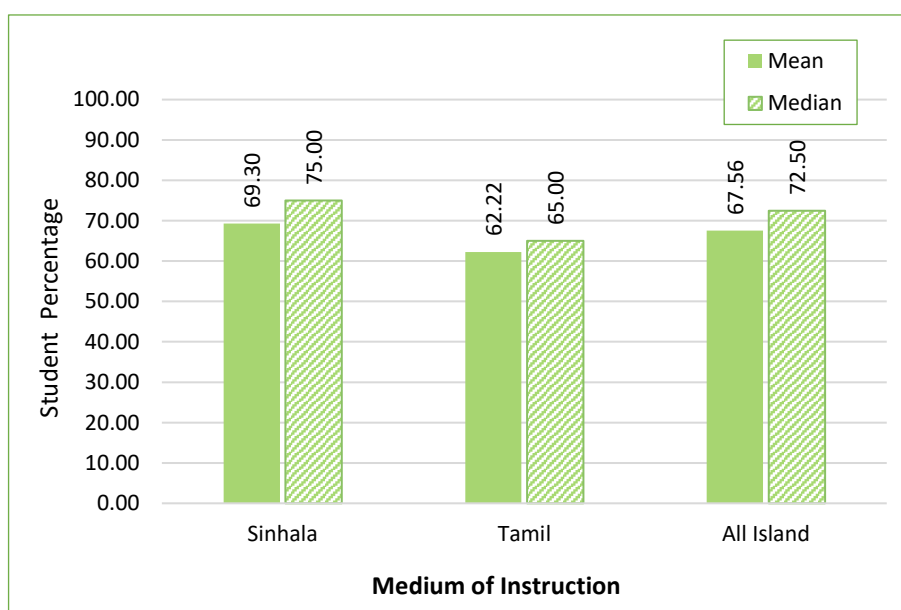


Fig. 3.11: Bar chart representing mean values according to medium of instruction - Mathematics

Tamil medium students' achievement is below that of Sinhala medium students as well as below the all island mean and median. Sinhala medium students have a notably higher median, indicating 50 percent of the Sinhala medium students score 75 marks or higher.

Variation among students

As Table 3.8 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 the performance among Tamil medium students.

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

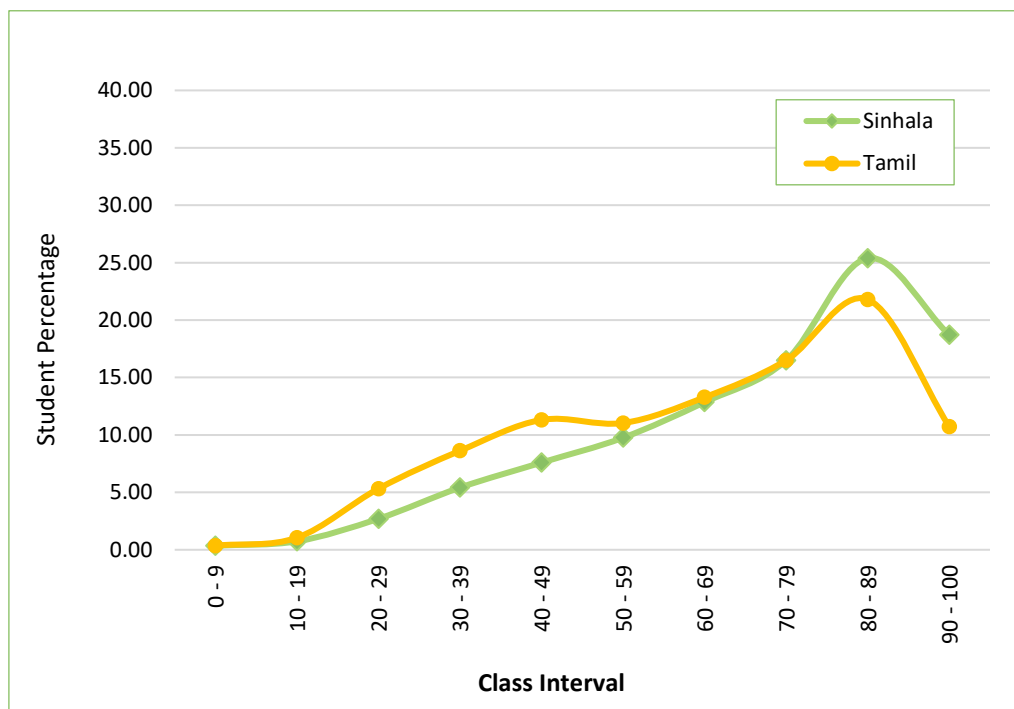


Fig. 3.12: Dispersion of marks by medium of instruction – Mathematics

The two curves on Fig. 3.12 shows two different patterns. While the Sinhala medium curve is negatively skewed with more students scoring high marks the Tamil medium curve is bimodal. Tamil medium students showcases two distinct peaks indicating significant number of students with both low and high marks. The pattern is further illustrated through the cumulative percentage Table 3.9.

Table 3.9: 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	0.74	1.09	1.05	1.41
20 - 29	2.70	3.79	5.32	6.74
30 - 39	5.42	9.21	8.62	15.36
40 - 49	7.59	16.80	11.31	26.67
50 - 59	9.76	26.55	11.03	37.70
60 - 69	12.85	39.41	13.28	50.98
70 - 79	16.49	55.90	16.50	67.48
80 - 89	25.39	81.29	21.79	89.27
90-100	18.71	100.00	10.73	100.00
Total	100.00		100.00	

As Table 3.9 indicates the highest percentage of the Sinhala medium students' marks is in the range of 80-89 with 16.49% and 18.71% in the 70-79 and 90-100 ranges, respectively. This amounts to more than 50%. On the other hand, the highest percentage of Tamil medium students score within 80-89 range, with another prominent group (16.50%) in the 70-79 range.

Accordingly, 9.21% of Sinhala medium students has scored below 40 marks while that percent of Tamil medium students is quite high (15.36%).

Box plot depicting mathematics achievement by medium of instruction graphically shows the differences that have been discussed already.

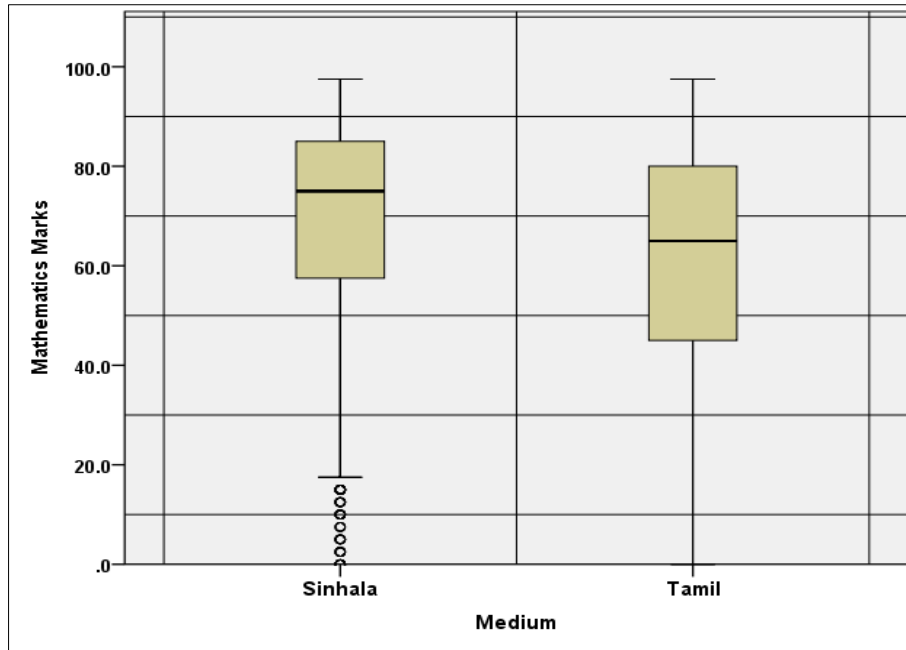


Fig. 3.13: Mathematics marks according to medium of instruction using box plot and whisker plot

Box plot and whisker plot chart shows high differences among both mediums. However, Sinhala medium dispersion of marks in the box plot is less than the Tamil medium students' dispersion of marks. Sinhala medium students' 25th, 50th and 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 a performance gap between students belonging to different instructional mediums.
- The Sinhala medium students' mean score (69.30) is above the national mean while the Tamil medium students' mean stands at 62.22.

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

3.7 Achievement levels by location

Table 3.10: Mathematics achievement according to location

Location	Mean	Std. Error of Mean	Standard Deviation	Skewness	Percentile 25	Median 50	Percentile 75
Municipal Council	68.16	0.10	20.86	-0.82	72.50	55.00	85.00
Urban Council	74.32	0.12	18.20	-1.21	80.00	65.00	87.50
Pradeshiya Saba	66.85	0.04	20.94	-0.64	72.50	52.50	85.00
All Island	67.56	0.04	20.84	-0.70	72.50	52.50	85.00

As Table 3.10 indicates, there is variation in achievement among the schools in the different localities. The Urban Council schools have performed better than the schools in other two localities. Pradeshiya Saba schools not only fall behind the Urban and Municipal schools but also have a mean below the national mean.

The difference in mean values is graphically shown in Fig. 3.14

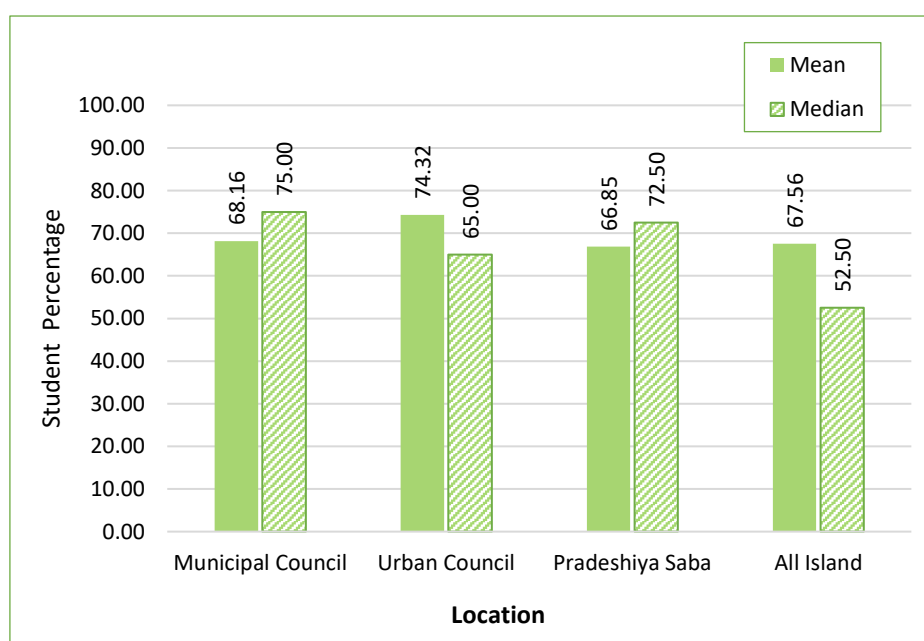


Fig. 3.14: Bar chart representing mean values according to location– Mathematics

As Fig. 3.14 indicates the mean values in the Pradeshiya Saba schools are notably lower than those in Urban and Municipal Council Schools.

According to Table 3.10 the SD also differs in the three localities even though not to a great extent. However, while the SD of the Municipal Council schools is closer to the all island SD, the Urban Council schools SD is lower than the all island SD denoting less variation.

Students' achievement is further elaborated through the frequency distribution graphs in Fig. 3.15.

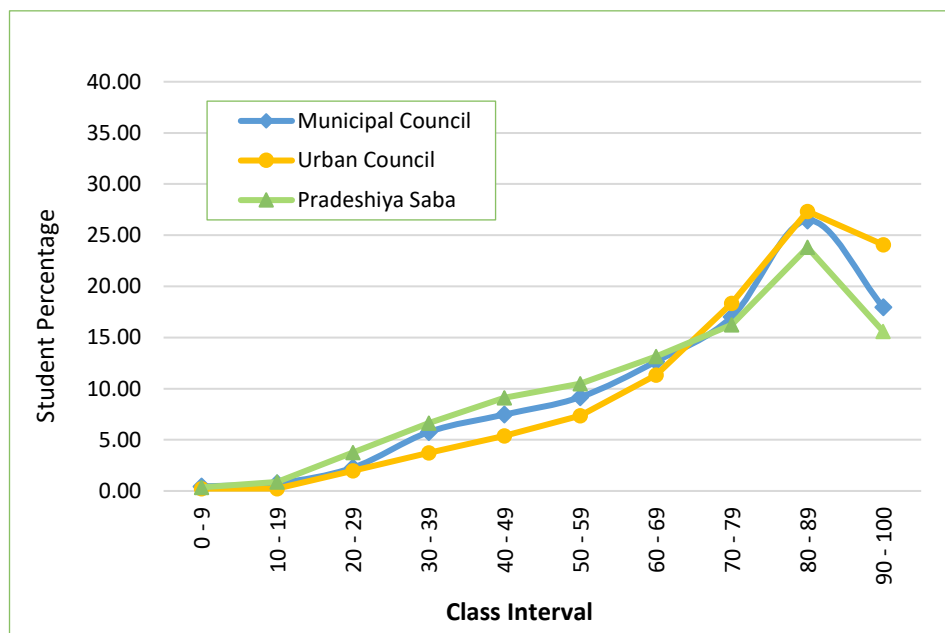


Fig. 3.15: Dispersion of marks by location – Mathematics

Fig. 3.15 displays three negatively skewed curves. This indicates predominant presence of the high achievers in the Municipal, Urban and Pradeshiya Saba schools. Notably, the highest percentage of top performing students is found in the Urban Council schools. This difference can be further explained using the cumulative percentage Table 3.11.

Table 3.11: Cumulative student percentages according to the location –Mathematics

Class Interval	Municipal Council		Urban Council		Pradeshiya Saba	
	Student %	Cumulative %	Student %	Cumulative %	Student %	Cumulative %
0-9	0.44	0.44	0.23	0.23	0.35	0.35
10-19	0.76	1.20	0.23	0.47	0.89	1.24
20 - 29	2.28	3.48	1.99	2.45	3.75	4.98
30 - 39	5.76	9.24	3.74	6.19	6.63	11.61
40 - 49	7.47	16.71	5.37	11.57	9.10	20.71
50 - 59	9.18	25.89	7.36	18.93	10.49	31.21
60 - 69	12.66	38.54	11.33	30.26	13.16	44.37
70 - 79	17.03	55.57	18.34	48.60	16.26	60.62
80 - 89	26.46	82.03	27.34	75.93	23.80	84.43
90-100	17.97	100.00	24.07	100.00	15.57	100.00
Total	100.00		100.00		100.00	

According to Table 3.11 the highest percentage of students in urban schools (27.34%) fall into the class interval 80-89. This is peak of the Urban Council school curve. the highest percentage of students in Municipal Council and Pradeshiya Saba schools, even though lesser percentages (26.46% and 23.80% respectively) fall into the same class interval. Further, the number of students who has scored less than 40 marks is only 6.19% in Urban Council schools while it is 9.24% and 11.61% respectively in Municipal Council and Pradeshiya Saba schools.

The spread of marks is further illustrated through the box plot graph for location wise achievement in mathematics.

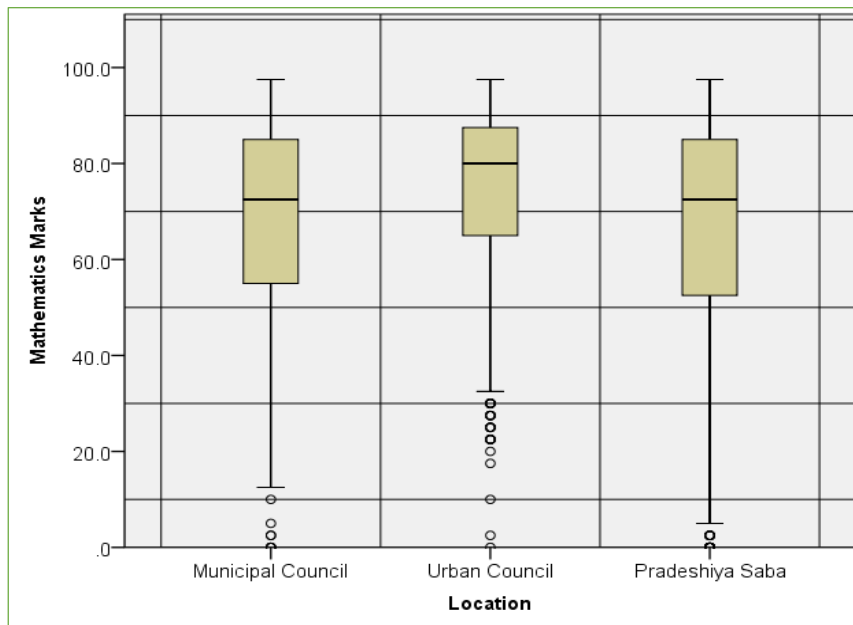


Fig. 3.16: Box plot and whisker plot representing location wise mathematics marks

The box plot depicting mathematics achievement by location visually reinforces the disparities previously discussed.

The range of the box plot for students in Urban Council schools underscores the performance gap among the schools in three localities. At the 25th, 50th and 75th percentiles, students in Urban Council schools surpass their Municipal Council and Pradeshiya Saba counter parts.

Summary

- In terms of location, Pradeshiya Saba schools underperform compared to Urban Council and Municipal Council schools.
- The highest achievers are found in Urban Council schools.
- Notably, there is a significant deviation from the mean score across all localities, indicating varied performance in mathematics within schools in each area.

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.

3.8 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. 3.17

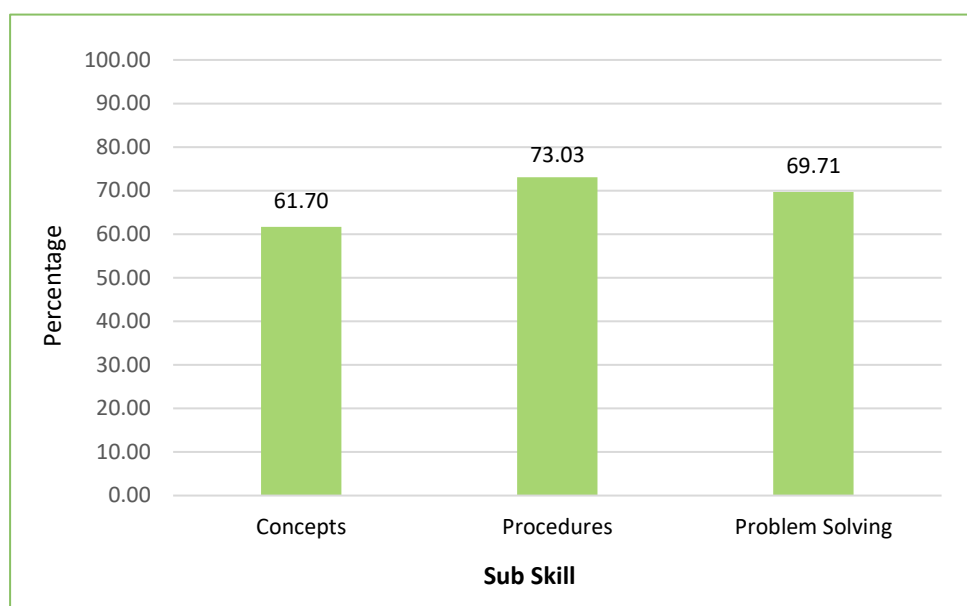


Fig. 3.17: Achievement in sub skills in mathematics

Fig. 3.17 displays the mean values for the different sub skills in mathematics. Accordingly, it shows that students performed satisfactorily in procedures and problem solving. However, their performance in applying mathematical concepts is comparatively low.

A more detailed analysis of student performance in relation to ELCs would be discussed next.

Student achievement in relation to Essential Learning Competencies (ELCs)

Table 2.4 in chapter 2, reveals that the questions in the examination pertain to sub skills of concepts, procedures and problem solving.

Table 3.12 indicates the percentage of students who answered these questions correctly.

Table 3.12: Students' correct responses to questions pertaining to ELCs and DLCs

ELC/ DLC	Description	Q. No	2022 correct response %
ELC 9	Correctly measures a length given using standard units	20	66.90
10	Calculate the balance of 100 rupees note after spending to buy a product valued less than that	17	73.50
		34	38.00
11	Reads a number with three digits	2	89.30
		4	87.90
12	Deduct a number from a number with 3 digits with one carrying forward	5	79.30
		14	66.50
13	Names the shapes of solid objects using its faces	23	81.10
14	Measures a given quantity of liquids using appropriate units	33	62.70
15	write the next of a pattern of numbers with common difference of 3	9	84.20
16	Names objects situated both at left and right sides of one's own position	16	79.30
		39	21.30
17	Read the information presented in a histogram	40	79.40
18	Read the time by 5 minutes intervals on 12 hours clock	8	84.80
19	Multiplies a number with 2 digits by 2 and 3 without carrying forward	10	79.50
20	Divides a number less than 3 digits by 2 without carrying forward	18	70.90
21	Adds two numbers with three digits without carrying forward	01	90.60
22	Solves simple problems with only one mathematical operation	06	86.20
		07	75.90
		11	83.10
		12	48.40
		13	69.50
		15	85.20
		19	82.70
		21	84.40
		22	81.40
		25	64.50
		26	75.40
		30	62.50
		32	52.60
		36	47.50

ELC/ DLC	Description	Q. No	2022 correct response %
DLC1	Place numbers of not higher than 4 digits in descending order	24	53.80
4	Identifies 'half' and 'quarter' as a portion of a complete unit	38	43.60
5	Use Roman numbers from -10	3	83.30
22	Measures a given quantity in Kg	35	15.60
23	Converts Kg into g	28	62.70
26	Measures area of a given surface using desired units	31	69.40
34	Create geometrical shapes	29	64.60
35	Draw rectangular shapes	27	75.70
38	Separates the symmetrical figures	37	37.00

As Table 3.12 indicates, the percentage of students who provided correct responses to the questions pertaining to majority of the Essential Learning Competencies (ELCs) is over 62%. However, the lowest percentage of correct responses, 38.00% and 21.30% were for questions 34 and 39, respectively, which focus on “Calculate the balance of 100 rupees note after spending to buy a product value less than that (ELC 10) and “Names objects situated both at left and right sides of one’s own position (ELC 16). Moreover, it is notable that majority of questions related to DLCs have a correct response rate over 53%. However, the lowest percentage of correct responses, 15.60% and 37.00% were for questions 35 and 37, respectively, which focus on “Measures a given quantity in Kg” (DLC 22) and “Separates the symmetrical figures” (DLC 38). The response rate to the questions which focus on “Identifies ‘half’ and ‘quarter’ as a portion of a complete unit” (DLC 4) is below 50%.

Facility index values for the mathematics paper

The mathematics paper consisted of forty selective type questions.

Fig. 3.18 displays the facility values for questions 1-40.

According to this Figure, the most difficult items had been questions 35, 37, and 39. Therefore, it confirms that students’ achievement of the competencies related to these questions, as discussed above is not satisfactory.

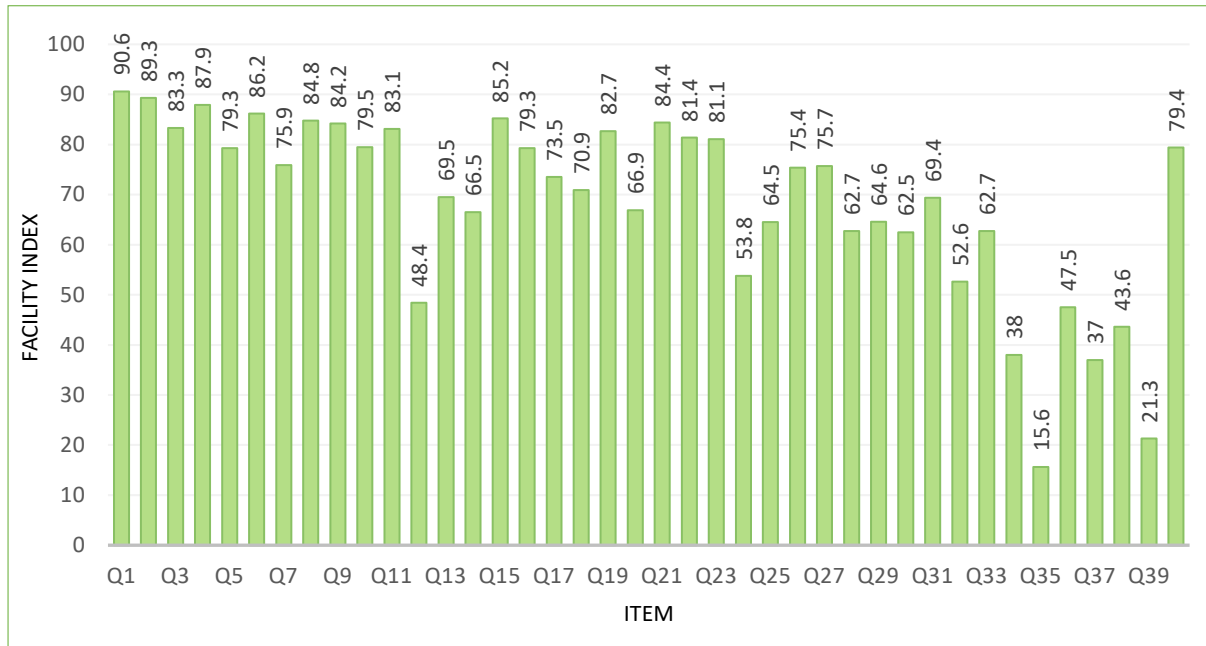


Fig. 3.18: Facility values for the different test items – Mathematics

According to Fig. 3.18 the facility values ranges from 0.16 to 0.91

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 2015 with that of 2022

Trends in achievement over the period 2015-2022 will first be discussed at national level.

3.9 Trends in achievement at national level

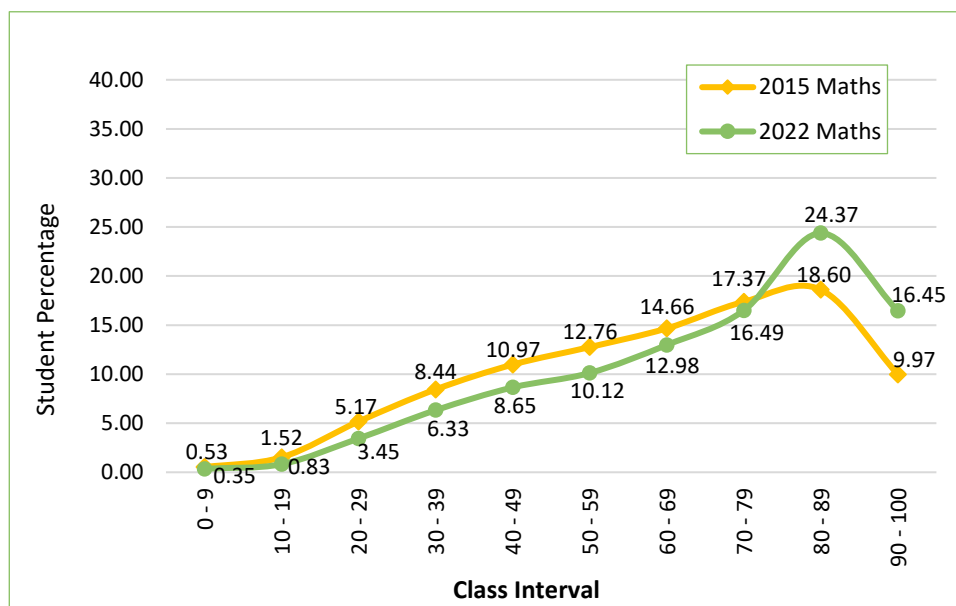


Fig. 3.19: All island achievement in mathematics comparison 2015 -2022 – dispersion of marks

As Fig 3.19 indicates there is an improvement in students' achievement in the year 2022 when comparing 2015 data. The line curve for 2022 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 67.56.

This change is further elaborated through the cumulative percentage Table 3.13.

Table 3.13: Comparison of all island achievement in mathematics - cumulative percentages

Class Interval	Year 2015		Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.53	0.53	0.35	0.35
10-19	1.52	2.05	0.83	1.18
20 - 29	5.17	7.22	3.45	4.63
30 - 39	8.44	15.67	6.33	10.95
40 - 49	10.97	26.64	8.65	19.60
50 - 59	12.76	39.40	10.12	29.72
60 - 69	14.66	54.06	12.98	42.69
70 - 79	17.37	71.43	16.49	59.19
80 - 89	18.60	90.03	24.37	83.55
90-100	9.97	100.00	16.45	100.00
Total	100.00		100.00	

The percentage of low achievers, those who have scored below 40% has decreased from 15.67 % to 10.95%. On the other hand, the percentage of students who has scored in the ranges of 80-89 and 90-100 has increased. This indicates an improvement in mathematics performance of students in 2022.

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

3.10 Provincial wise comparison of student achievement

As Fig. 3.20 displays that student performance in mathematics has improved satisfactorily in all provinces in 2022. Therefore, they have all contributed to the increase in the all island mean value from 62.25 to 67.56 in 2022. It is significant to note that the increase is more in the low performing provinces than in the high performing provinces. Uva, Central, Northern and Eastern Provinces performance has increased by 7-10 points while in the other provinces the increase is by 2- 7 points from 2015 to 2022.

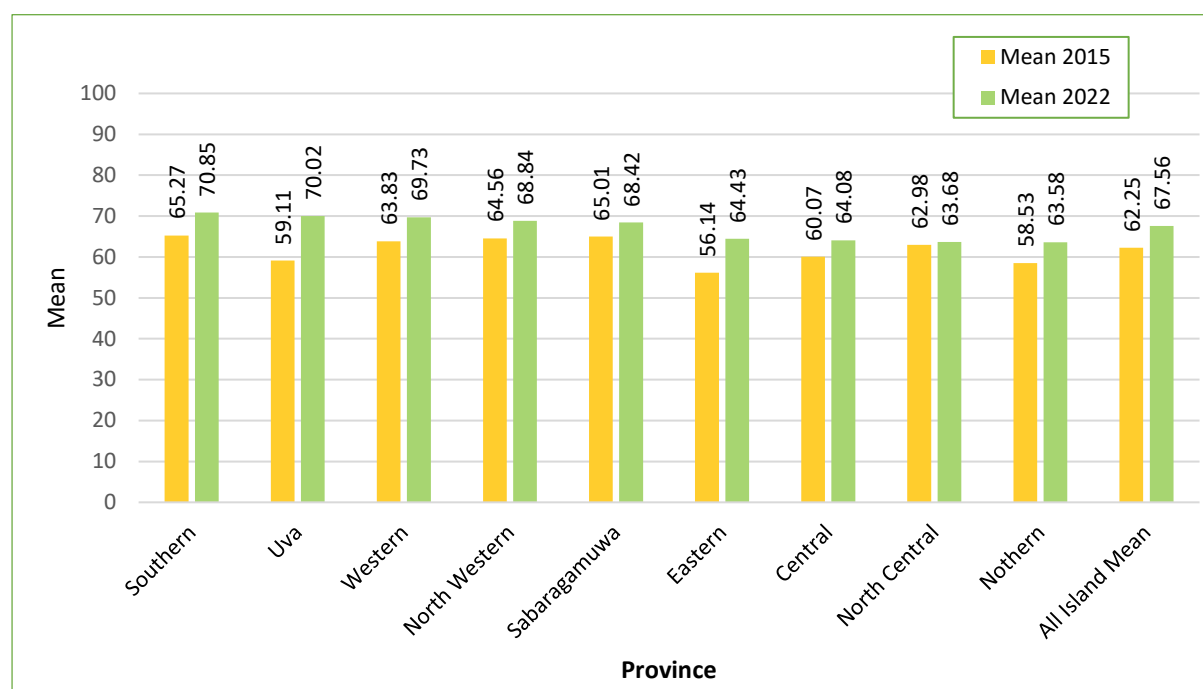


Fig. 3.20: Provincial wise comparison of student achievement - 2015 and 2022

Table 3.14: Provincial wise comparison of student achievement – 2015 & 2022

Province	Year 2015		Year 2015		Z
	Mean	Standard Deviation	Mean	Standard Deviation	
Central	60.07	20.79	64.08	19.30	5.50*
Eastern	56.14	22.38	64.43	20.57	10.46*
North Central	62.98	19.71	63.68	19.53	0.98
North Western	64.56	20.56	68.84	20.06	5.88*
Northern	58.53	21.82	63.58	20.87	6.06*
Sabaragamuwa	65.01	19.97	68.42	22.34	4.52*
Southern	65.27	21.25	70.85	21.05	7.35*
Uva	59.11	21.61	70.02	20.72	13.91*
Western	63.83	21.34	69.73	22.14	7.56*
All Island	62.25	21.30	67.56	20.84	20.71*

* Values are significant at 95%

The upward trend in achievement in all provinces is further reflected in line graphs in Fig. 3.21. Table 3.14 provides more details on these shifts from 2015 to 2022, indicating the significance values at 95%.

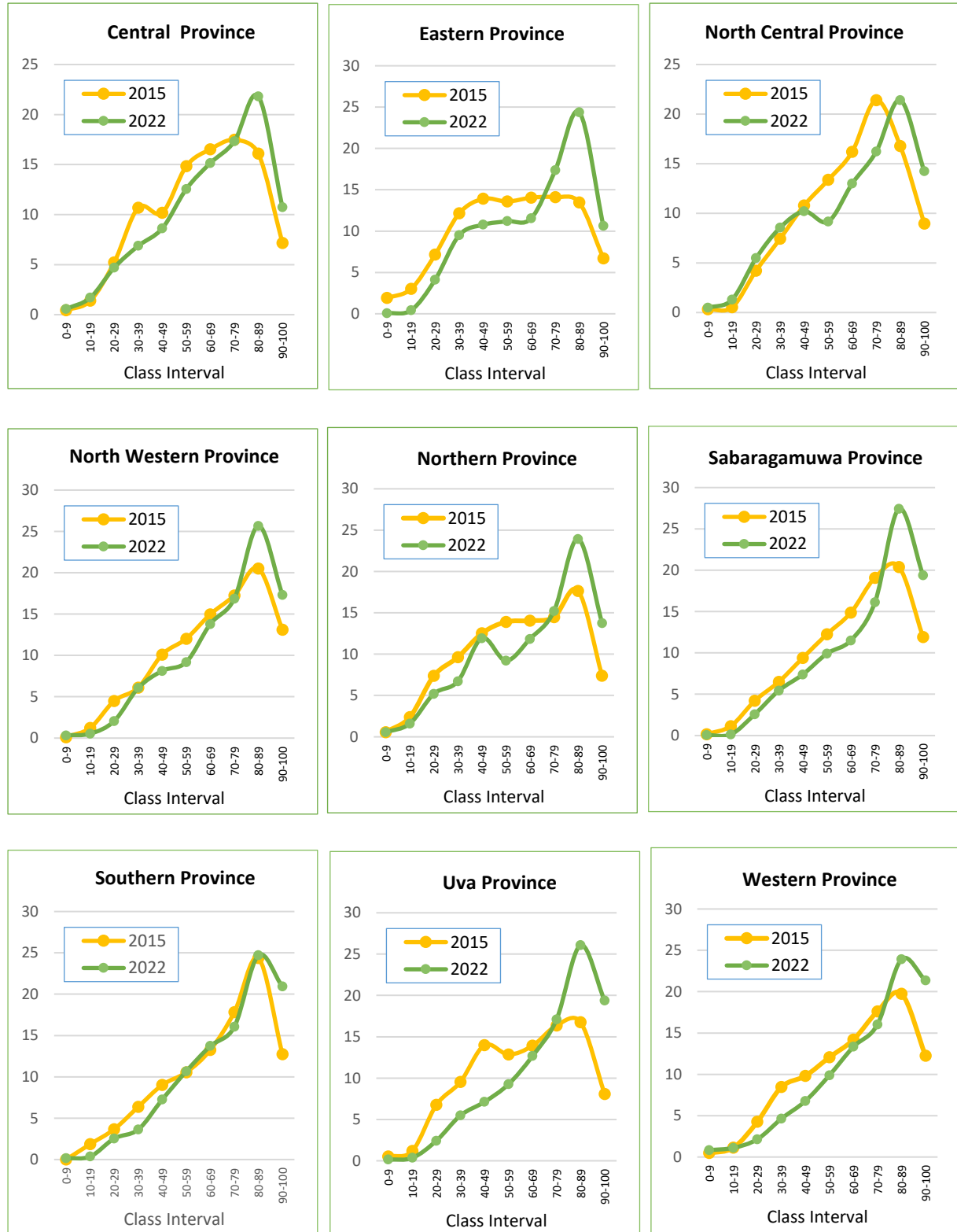


Fig. 3.21: Comparison of provincial wise distribution of marks – Mathematics 2015-2022

3.11 Comparison of marks according to school type

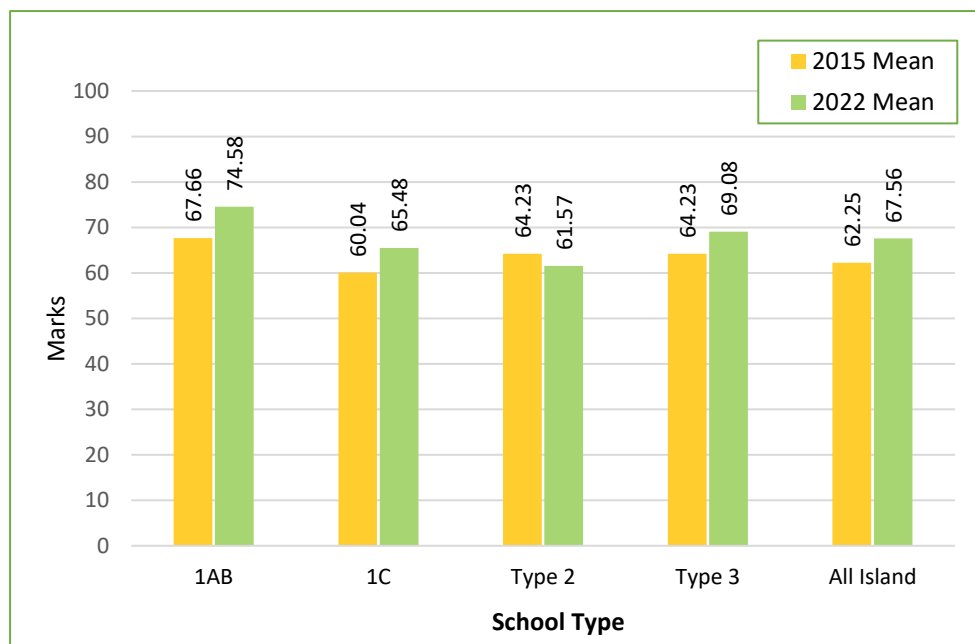


Fig. 3.22: All island comparison of mean values according to school type

As the bar graphs indicate there is a gradual 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 2022. It is noteworthy to indicate that there is an improvement in achievement in 1C schools as well from 2015 to 2022. On the other hand, there is a decrease in performance in Type 2 schools. The downward trend in this school type is also identical. Therefore, action needs to be taken to improve the performance of Type 2 schools as otherwise the gap between the performances in different school types will increase.

Table 3.15: Comparison of achievement of 1AB schools

Class Interval	1AB-Year 2015		1AB-Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.14	0.14	0.05	0.05
10-19	0.69	0.83	0.42	0.47
20 - 29	2.71	3.54	1.49	1.95
30 - 39	4.91	8.45	2.88	4.84
40 - 49	8.02	16.47	4.74	9.58
50 - 59	11.81	28.28	7.12	16.70
60 - 69	14.92	43.19	12.51	29.21
70 - 79	17.95	61.14	18.14	47.35
80 - 89	25.53	86.67	30.88	78.23
90-100	13.33	100.00	21.77	100.00
Total	100		100	

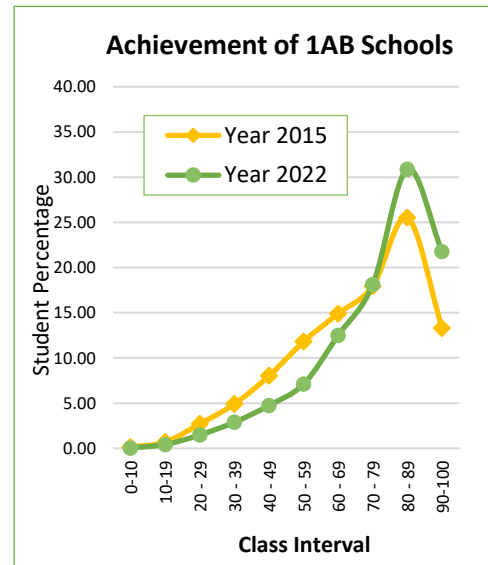


Fig 3.23: Comparison of achievement of 1AB schools –2015 & 2022

The 2015 curve shows a negative skewness. This trend further improved in 2022. Table 3.15 provides more detail on this shift. According to Table 3.15 in 2015, the highest percentage (25.53%) of students in 1AB schools scored in the range of 80-89. This percentage rose to 30.88 percent in 2022. The percentage of students scoring between 90-100 also shows a significant increase. Conversely, fewer students scored in the 20-29 and 30-39 ranges both in 2015 and 2022.

Table 3.16: Comparison of achievement of Type 1C schools

Class Interval	1C - Year 2015		1C - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.64	0.64	0.28	0.28
10-19	1.47	2.11	0.66	0.94
20 - 29	5.46	7.57	3.94	4.88
30 - 39	10.82	18.39	7.29	12.18
40 - 49	12.26	30.65	10.96	23.13
50 - 59	14.34	44.99	11.44	34.58
60 - 69	16.27	61.26	14.83	49.41
70 - 79	16.58	77.84	16.57	65.98
80 - 89	14.92	92.77	22.26	88.24
90-100	7.23	100.00	11.76	100.00
Total	100		100	

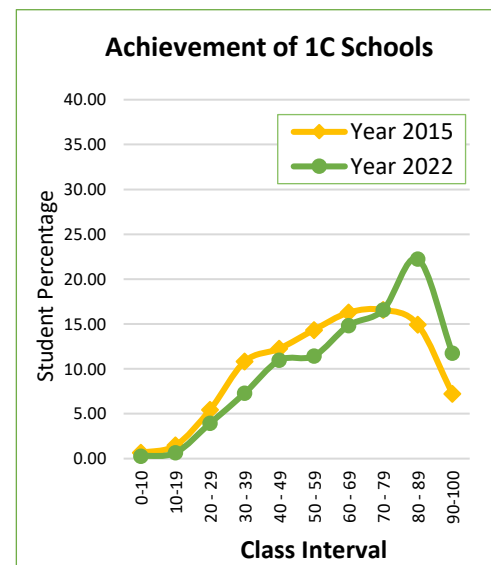


Fig 3.24: Comparison of achievement of 1C schools –2015 & 2022

In 2022, the performance of students in 1C schools follows a similar trend. Two line graphs for 2015 and 2022 in Fig 3.24 show a negative skewness, indicating a predominance presence of higher performing students in 1C schools. The 2022 curve has a more pronounced peak. Cumulative percentage Table 3.16 further clarifies this upward trend. It reveals a decrease in the percentage of students scoring between 20-29, while the percentages in the 80-89 and 90-100 ranges have increased from 2015 to 2022.

Table 3.17: Comparison of achievement of Type 2 schools

Class Interval	Type 2 - Year 2015		Type 2 - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.89	0.89	0.93	0.93
10-19	2.41	3.30	1.70	2.63
20 - 29	7.63	10.92	5.39	8.02
30 - 39	10.95	21.88	10.10	18.12
40 - 49	13.02	34.89	11.12	29.23
50 - 59	13.25	48.14	12.18	41.41
60 - 69	14.94	63.07	14.00	55.41
70 - 79	15.31	78.38	13.92	69.33
80 - 89	14.62	93.00	19.73	89.05
90-100	7.00	100.00	10.95	100.00
Total	100		100	

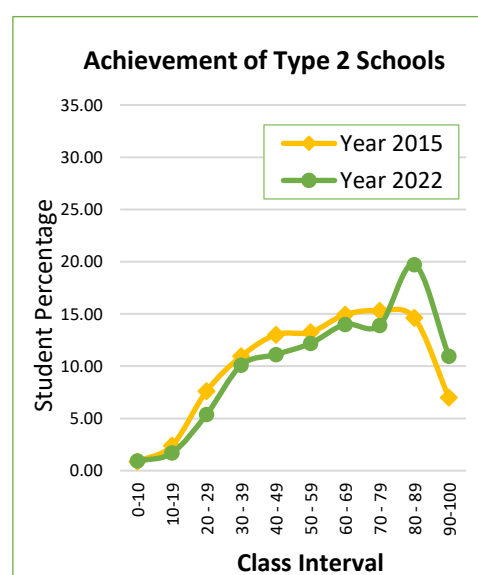
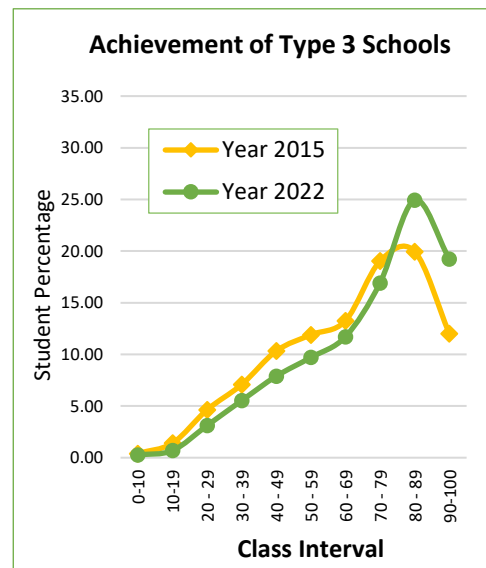


Fig 3.25: Comparison of achievement of Type 2 schools -2015 & 2022

A similar trend can be seen in Type 2 schools with an increase in high achievers in 2022 and a further decrease in low achievers.

Table 3.18: Comparison of achievement of Type 3 schools

Class Interval	Type 3 - Year 2015		Type 3 - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.41	0.41	0.26	0.26
10-19	1.40	1.81	0.69	0.96
20 - 29	4.64	6.45	3.11	4.07
30 - 39	7.08	13.52	5.53	9.60
40 - 49	10.33	23.85	7.89	17.49
50 - 59	11.90	35.75	9.71	27.19
60 - 69	13.26	49.00	11.71	38.91
70 - 79	19.03	68.04	16.92	55.83
80 - 89	19.95	87.98	24.93	80.75
90-100	12.02	100.00	19.25	100.00
Total	100		100	

**Fig 3.26: Comparison of achievement of Type 3 schools -2015 & 2022**

This trend is also evident in Type 3 schools, reflecting an increase in achievement in mathematics across all schools.

The trend in achievement gender wise will be discussed next.

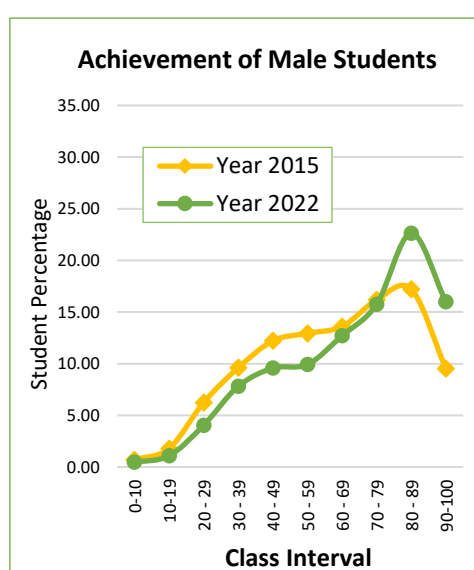
3.12 Comparison of marks according to gender

**Fig. 3.27: All island comparison of mean values according to gender - 2015 & 2022**

Fig. 3.27 shows that in 2022, both male and female students experienced an increase in achievement. This upward trend is further reflected in the cumulative percentage tables and line graphs.

Table 3.19: Comparison of achievement of male students

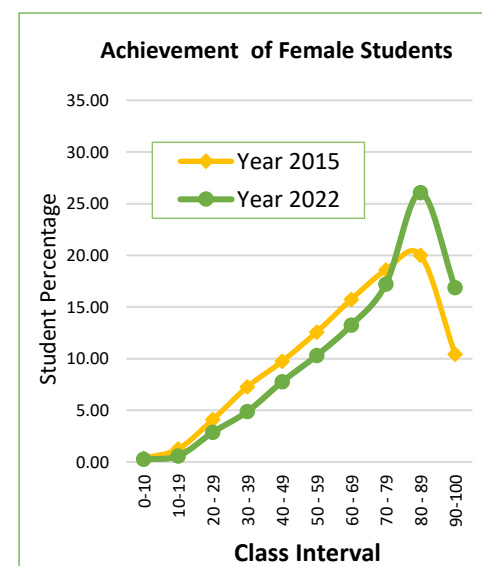
Class Interval	Male - Year 2015		Male - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.71	0.71	0.46	0.46
10-19	1.79	2.49	1.09	1.55
20 - 29	6.24	8.74	4.04	5.59
30 - 39	9.61	18.35	7.82	13.41
40 - 49	12.21	30.56	9.57	22.99
50 - 59	12.95	43.51	9.93	32.91
60 - 69	13.60	57.10	12.71	45.62
70 - 79	16.17	73.28	15.76	61.38
80 - 89	17.20	90.47	22.62	84.00
90-100	9.53	100.00	16.00	100.00
Total	100		100	

**Fig 3.28: Comparison of achievement of male students -2015 & 2022**

Two line graphs for 2015 and 2022 in Fig. 3.28 show a negative skewness, signifying an increase in the percentage of top-performing male students. According to Table 3.19, there is a decline in the percentage of male students scoring between 20-29, while the percentage of those scoring between 80-89 and 90-100 has increased.

Table 3.20: Comparison of achievement of female students

Class Interval	Female - Year 2015		Female - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.35	0.35	0.25	0.25
10-19	1.26	1.61	0.57	0.82
20 - 29	4.10	5.71	2.87	3.69
30 - 39	7.28	12.99	4.88	8.57
40 - 49	9.73	22.71	7.75	16.32
50 - 59	12.57	35.28	10.31	26.62
60 - 69	15.73	51.01	13.23	39.86
70 - 79	18.57	69.58	17.20	57.06
80 - 89	20.00	89.58	26.07	83.12
90-100	10.42	100.00	16.88	100.00
Total	100		100	

**Fig 3.29: Comparison of achievement of Female students -2015 & 2022**

A similar trend is observed in female performance as well. Notably, the highest percentage of top-performing female students is found in the marks range of 80-89 both in 2015 and 2022.

The trend in performance medium wise will be discussed next.

3.13 Comparison of marks according to medium of instruction

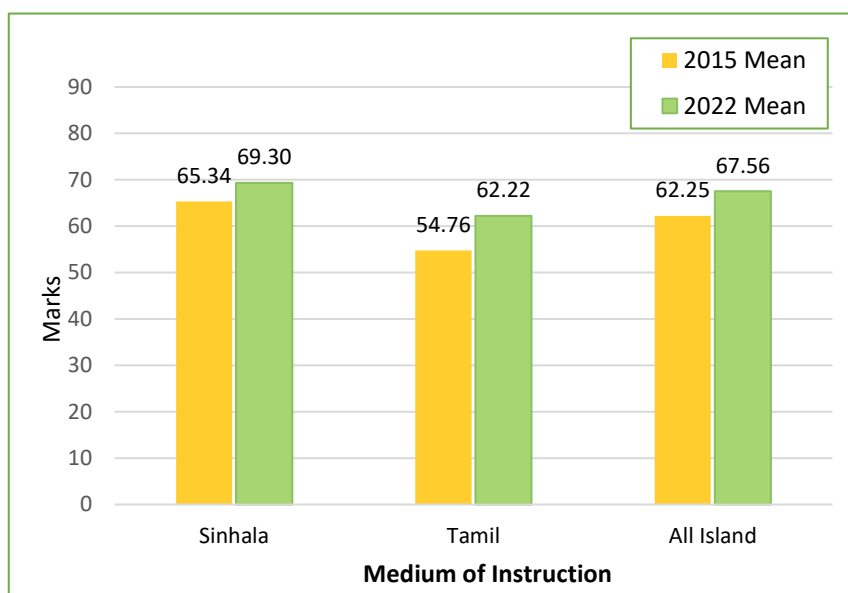


Fig. 3.30: All island comparison of mean values according to medium of instruction- 2015 & 2022

There is an improvement in the performance of both Sinhala medium as well as Tamil medium students' performance from 2015 to 2022 (Fig. 3.30). A notable increase in scores (by nearly 8 points) is evident among Tamil medium students compared to Sinhala medium students.

Table 3.21: Comparison of achievement of Sinhala medium students

Class Interval	Sinhala - Year 2015		Sinhala - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.33	0.33	0.35	0.35
10-19	0.98	1.32	0.74	1.09
20 - 29	3.63	4.94	2.70	3.79
30 - 39	6.52	11.47	5.42	9.21
40 - 49	9.49	20.95	7.59	16.80
50 - 59	11.85	32.80	9.76	26.55
60 - 69	14.88	47.69	12.85	39.41
70 - 79	19.24	66.92	16.49	55.90
80 - 89	21.10	88.02	25.39	81.29
90-100	11.98	100.00	18.71	100.00
Total	100		100	

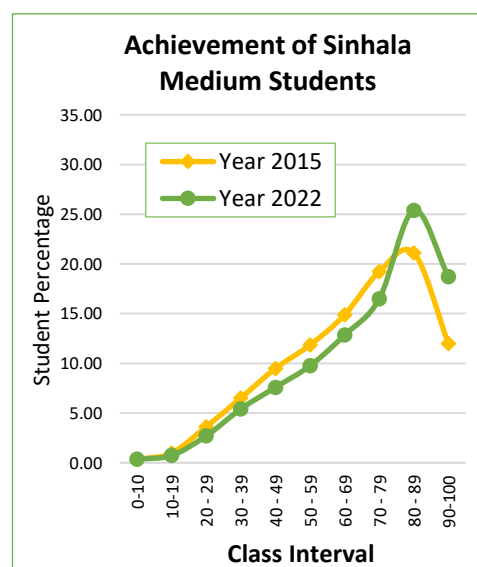


Fig 3.31: Comparison of achievement of Sinhala medium students –2015 & 2022

Fig. 3.21 shows that the percentage of Sinhala medium students scoring between 20-29 decreased from 3.63 in 2015 to 2.70 in 2022. Those scoring between 80-89 and 90-100 show a significant increase, respectively, moving from 21.10 to 25.39 and 11.98 to 18.71.

Table 3.22: Comparison of achievement of Tamil medium students

Class Interval	Tamil - Year 2015		Tamil - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.96	0.96	0.36	0.36
10-19	2.72	3.68	1.05	1.41
20 - 29	8.60	12.28	5.32	6.74
30 - 39	12.70	24.98	8.62	15.36
40 - 49	14.26	39.24	11.31	26.67
50 - 59	14.77	54.01	11.03	37.70
60 - 69	14.17	68.18	13.28	50.98
70 - 79	13.24	81.42	16.50	67.48
80 - 89	13.06	94.47	21.79	89.27
90-100	5.53	100.00	10.73	100.00
Total	100		100	

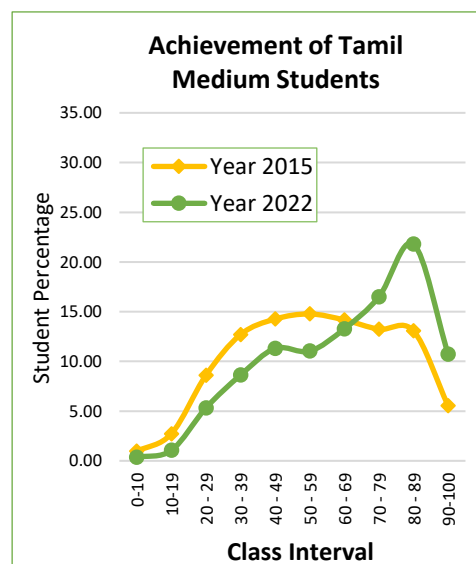


Fig 3.32: Comparison of achievement of Tamil medium students -2015 & 2022

Fig. 3.32 and Table 3.22 show that the percentage of Tamil medium students scoring between 20-29 dropped from 8.60 to 5.32 from 2015 to 2022. Notably, a surge in performance of Tamil medium is more pronounced in the range of 80-89 in 2022.

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

3.14 Skill analysis comparison

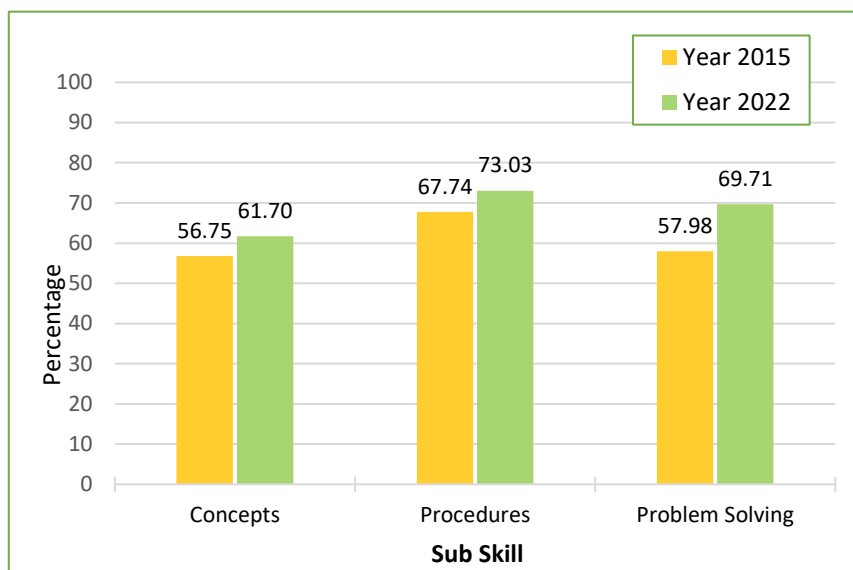


Fig. 3.33: Comparison of achievement of sb skills in mathematics –2015 & 2022

Fig. 3.33 shows an improvement in students' performance in relation to all the three sub skills from 2015 to 2022. This is a positive trend. It is noteworthy to indicate that this increase is significant in the sub skill of problem solving.

Table 3.23: Comparison of students' correct responses to questions pertaining to ELCs and DLCs

ELC/ DLC	Description	Q. No	2015 correct response %	2022 correct response %	Change
ELC 9	Correctly measures a length given using standard units	20	65.00	66.90	+
10	Calculate the balance of 100 rupees note after spending to buy a product valued less than that	17	68.90	73.50	+
		34	32.50	38.00	+
11	Reads a number with three digits	2	84.60	89.30	+
		4	82.30	87.90	+
12	Deduct a number from a number with 3 digits with one carrying forward	5	76.80	79.30	+
		14	64.80	66.50	+
13	Names the shapes of solid objects using its faces	23	76.00	81.10	+
14	Measures a given quantity of liquids using appropriate units	33	59.00	62.70	+
15	write the next of a pattern of numbers with common difference of 3	9	76.60	84.20	+

ELC/ DLC	Description	Q. No	2015 correct response %	2022 correct response %	Change
16	Names objects situated both at left and right sides of one's own position	16	64.60	79.30	+
		39	28.60	21.30	-
17	Read the information presented in a histogram	40	78.60	79.40	+
18	Read the time by 5 minutes intervals on 12 hours clock	8	78.00	84.80	+
19	Multiplies a number with 2 digits by 2 and 3 without carrying forward	10	79.20	79.50	+
20	Divides a number less than 3 digits by 2 without carrying forward	18	59.50	70.90	+
21	Adds two numbers with three digits without carrying forward	01	86.60	90.60	+
22	Solves simple problems with only one mathematical operation	6	76.30	86.20	+
		7	75.20	75.90	Not
		11	77.70	83.10	+
		12	32.80	48.40	+
		13	62.00	69.50	+
		15	78.40	85.20	+
		19	75.20	82.70	+
		21	78.20	84.40	+
		22	67.50	81.40	-
		25	60.20	64.50	+
		26	66.20	75.40	+
		30	52.10	62.50	+
		32	40.50	52.60	+
		36	39.90	47.50	+
DLC1	Place numbers of not higher than 4 digits in descending order	24	43.90	53.80	+
4	Identifies 'half' and 'quarter' as a portion of a complete unit	38	29.80	43.60	+
5	Use Roman numbers from -10	3	78.60	83.30	-
22	Measures a given quantity in Kg	35	22.30	15.60	-
23	Converts Kg into g	28	57.40	62.70	+
26	Measures area of a given surface using desired units	31	50.40	69.40	+
34	Create geometrical shapes	29	56.40	64.60	+
35	Draw rectangular shapes	27	63.10	75.70	+
38	Separates the symmetrical figures	37	44.30	37.00	+

Table 3.23 provides a comparison of student correct responses to questions in the examination over two years. Notably, there is a significant increase in correct answers to all questions pertaining to ELC s with the exception of question 39. Student performance on question number 39, associated with the ELC 16 which focus on “Names objects situated both at left and right sides of one’s own position”, remains the weakest with a further decline in response rate from 28.60% in 2015 to 21.30% in 2022.

In relation to DLCs, students’ response rate to question number 35 associated with DLC 22, which focus on “Measuring a given quantity in Kg”, remains the weakest in 2022 as well.

3.15 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 2015-2022. 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 school type wise and gender wise. The next chapter will present the data pertaining to student achievement in relation to English language.

Chapter 4 Patterns and Trends in Achievement: English Language - 2022

4.1 Introduction

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

Part I – Patterns in achievement in English language

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

4.2 Patterns of achievement at national level

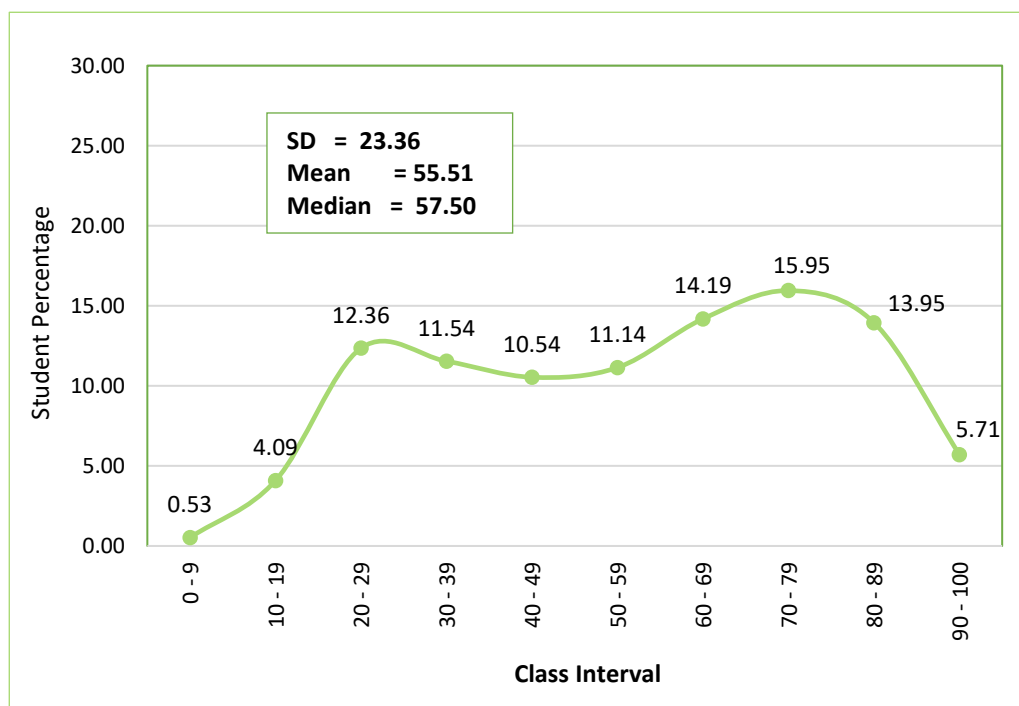


Fig. 4.1: All island achievement in English language 2022 – dispersion of marks

Fig. 4.1 depicts a bimodal distribution of marks as there is a higher percentage of students with low marks and high marks. This phenomenon can be further elaborated through the cumulative percentage table given below.

Table 4.1: All island achievement in English language 2022– cumulative percentages

Class Interval	Student %	Cumulative %
0 –9	0.53	0.53
10 - 19	4.09	4.62
20 - 29	12.36	16.98
30 - 39	11.54	28.52
40 - 49	10.54	39.05
50 - 59	11.14	50.20
60 - 69	14.19	64.38
70 - 79	15.95	80.34
80 - 89	13.95	94.29
90 - 100	5.71	100.00
Total	100.00	

Table 4.1 reveals that 15.95% of students achieved scores within the 70-79 range, making it the highest percentage. Following closely, 14.19% of students scored within the 60-69 range. In relation to the passing mark of 40, a cumulative 39% of students passed the test, while 29% did not meet the threshold. Notably, a significant 12% of students scored within the 20-29 range.

This distribution of high and low achievers has led to a bimodal trend in the data. The national median score stands at 57, meaning 50% of students scored above 57 marks. These high achievers have positively influenced the national average. However, a high Standard Deviation of 23.36 points to a considerable variation in student performance.

The box plot graph in Fig. 4.2 illustrates student achievement patterns further.

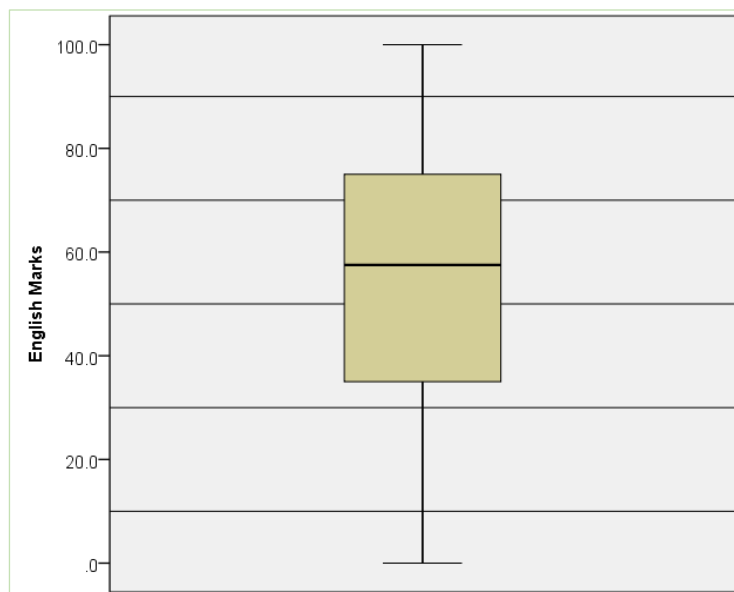


Fig. 4.2: Box plot chart representing all island English language achievement

As depicted in Fig. 4.2, the median surpasses the mean, indicating that over half of the students scored above the average.

The graph further reveals that over a quarter of students scored below 35 marks. In contrast, another quarter scored above 75 marks. The remaining 50% of students have scores that fall between 35 and 75 marks.

Summary of national level achievement

- The national average and median scores stand at 55.51 and 57.50, respectively.
- While the general performance in the English language is commendable, there's a significant variation in achievement, reflected by an SD of 23.36.

Following paragraphs discuss the Provincial wise student achievement.

4.3 Provincial wise student achievement

Table 4.2: Provincial achievement in English language 2022 – Summary statistics

Province	Mean	Rank	Standard Error of Mean	Standard Deviation	skewness	Percentile (p25)	Median (p50)	Percentile (p75)
Southern	62.68	1	0.11	22.82	-0.50	45.00	67.50	82.50
Western	62.03	2	0.09	23.32	-0.45	42.50	67.50	82.50
North Western	55.43	3	0.11	22.75	-0.17	35.00	57.50	75.00
Sabaragamuwa	55.42	4	0.13	22.82	-0.26	35.00	60.00	75.00
Uva	54.07	5	0.15	22.10	-0.08	35.00	55.00	72.50
Eastern	51.25	6	0.12	22.32	0.00	30.00	52.50	70.00
Central	50.90	7	0.11	22.50	0.02	30.00	52.50	70.00
North Central	48.31	8	0.14	22.60	0.18	27.50	47.50	67.50
Northern	45.09	9	0.16	21.66	0.35	27.50	40.00	65.00
All Island	55.51		0.04	23.36	-0.15	35.00	57.50	75.00

As Table 4.2 indicates based on provincial wise mean achievements, Southern Province ranks first. Western Province is ranked second with a slightly lower mean value.

Provinces, based on achievement, can be grouped into two categories. The Southern, Western, North Western, and Sabaragamuwa provinces, with mean scores surpassing the national average, belong to the higher category. Conversely, the Uva, Eastern, Central, North Central, and Northern Provinces, scoring below the national average, are in the lower category. Notably, there is a more pronounced variation in achievement within the lower category, with a nine-point difference between the mean scores of Uva and Northern Provinces. The disparity is even more evident when comparing the top-performing Southern Province to the bottom-ranked Northern Province, showing a 17-point difference.

Yet, a noteworthy observation is that every province has an average score exceeding the passing mark of 40.

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

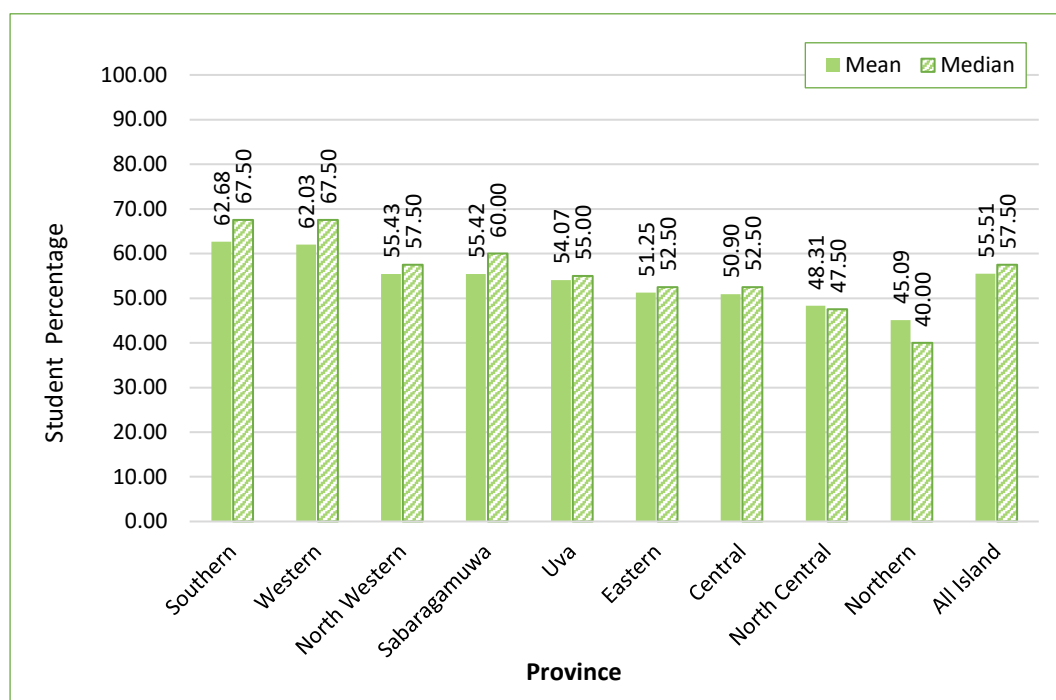


Fig. 4.3: Bar chart to represent mean among the provinces- English language

Disparity in achievement among provinces

While four provinces have surpassed the overall island average, their median scores vary. As per Table 4.2, in both the Southern and Western Provinces, half of the students achieved scores of 67.50 or higher. In contrast, the North Western and Sabaragamuwa Provinces show medians of 57.50 and 60.00, respectively. In Uva Province, the mean and median are closely matched at 54.07 and 55.00, respectively. However, in the Northern Province, these figures are 45.09 and 40.00. This suggests a noticeable achievement disparity among provinces, especially when comparing high-performing provinces like Southern and Western to lower-performing ones like Northern.

Table 4.2 highlights that all provinces have high standard deviation (SD) values. The Western Province shows the highest SD, closely mirroring the overall island SD. While the Northern Province has the lowest provincial SD, the difference between the highest

(23.32) and lowest (21.66) is not substantial. These elevated SD values suggest a significant deviation in student performance from the mean across all provinces, indicating a high degree of variability in student achievement island wide.

Skewness values are negative in five provinces, while the rest show positive values, with the overall island skewness also being negative. Provinces with negative skewness have a higher concentration of top-performing students, whereas those with positive skewness have more students on the lower end of the achievement spectrum.

These differences are further illustrated through the box plot (Fig. 4.4).

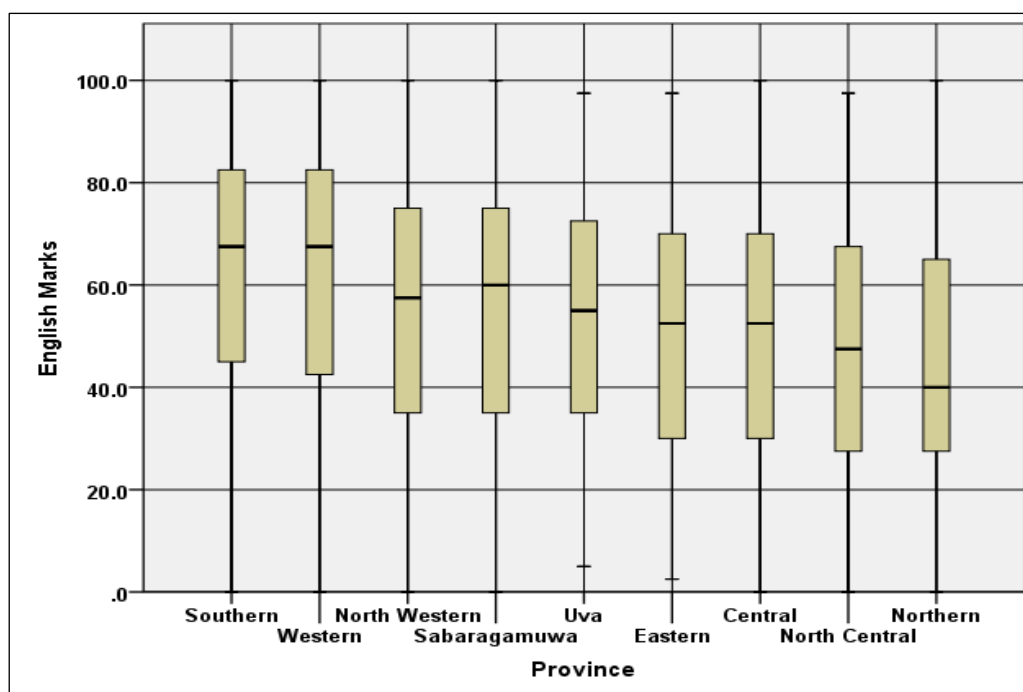


Fig. 4.4: Box plot and whisker chart representing provincial wise English language achievement

Fig. 4.4 and Table 4.2 highlight significant variations in student achievement both among and within provinces. In the Southern Province, student scores range from 45.00 to 82.50 marks, while in the Northern Province, they span from 27.50 to 65.00 marks.

Most provinces, with the exception of the Southern (45.00) and Western (42.50), exhibit notably low performance at the 25th percentile, failing to reach the 40-mark threshold. The North Central and Northern Provinces have particularly low scores at this percentile.

Northwestern, Sabaragamuwa, and Uva all share a 25th percentile score of 35, while the Eastern and Central Provinces both have the lowest shared score of 30 at this percentile.

Every province boasts a median score above 40. In seven of these provinces, the median surpasses the mean, indicating that in these regions, over half of the students scored above the average of 55.51. Conversely, in the North Central and Northern Provinces, half of the students achieved scores of 47 or lower.

The Southern and Western Provinces stand out with higher scores at the 75th percentile compared to other provinces. The North Western and Sabaragamuwa Provinces also demonstrate commendable performance at this percentile.

These disparities are further highlighted in Table 4.3.

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

Province	Above or equal to 50%	Below 50%
Southern	71.17	28.83
Western	70.74	29.26
Sabaragamuwa	62.45	37.55
North Western	59.39	40.61
Uva	57.38	42.62
Eastern	53.33	46.67
Central	52.95	47.05
North Central	47.58	52.42
Northern	40.92	59.08

In the Southern Province, 71.17% of students achieve scores of 50 or higher. In contrast, in the Northern Province, only 40.92% of students reach or surpass a score of 50.

Hence, it is evident that there are disparities in English language proficiency both among and within the provinces.

Summary

- Based on achievement, provinces can be grouped into two categories:
 - Category 1: Southern, Western, Sabaragamuwa, and Northwestern, all of which have mean scores surpassing the national average of 55.51.
 - Category 2: Uva, Eastern, Central, North Central, and Northern Provinces, all scoring below the national average.
- There are noticeable differences in English language proficiency both among and within the provinces.
- Notably, every province has an average score exceeding 40.

4.4 Achievement levels by type of school

Table 4.4: English language achievement according to school type

School Type	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
1AB	68.58	0.09	20.41	-0.82	57.50	75.00	85.00
1C	52.72	0.08	22.55	-0.02	32.50	52.50	72.50
Type 2	47.59	0.08	22.37	0.23	27.50	45.00	67.50
Type 3	56.14	0.06	23.16	-0.22	35.00	60.00	75.00
All Island	55.51	0.04	23.36	-0.15	35.00	57.50	75.00

Table 4.4 shows that the mean scores for 1AB and Type 3 schools surpass the overall island average. In contrast, the other two school types have mean scores that fall below this island-wide average.

The difference in median and mean scores is graphically shown in Fig. 4.5

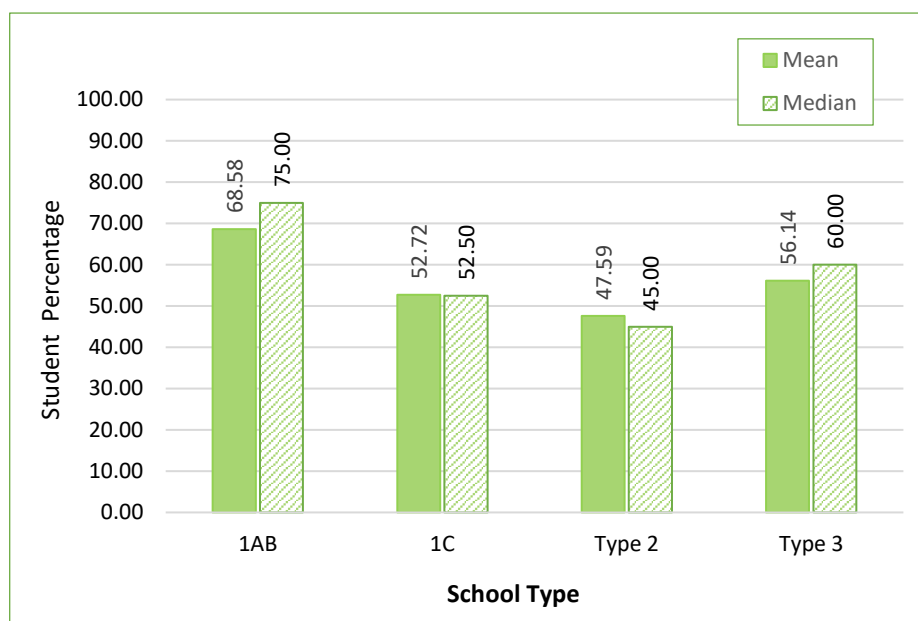


Fig. 4.5: Bar chart representing the median and mean among the school types - English language

The disparity among school types becomes even more pronounced when examining the median scores. 1AB schools have a notably higher median compared to the other three school types, indicating that in these schools, half of the students score 75 marks or higher. In Type 3 schools, half of the students achieve scores of 60 or more. Conversely, in Type 2 schools, 50% of students score 45 or higher.

Variation among student achievement

There is considerable variation in student achievement in all school types. As shown in Table 4.4 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. 4.6

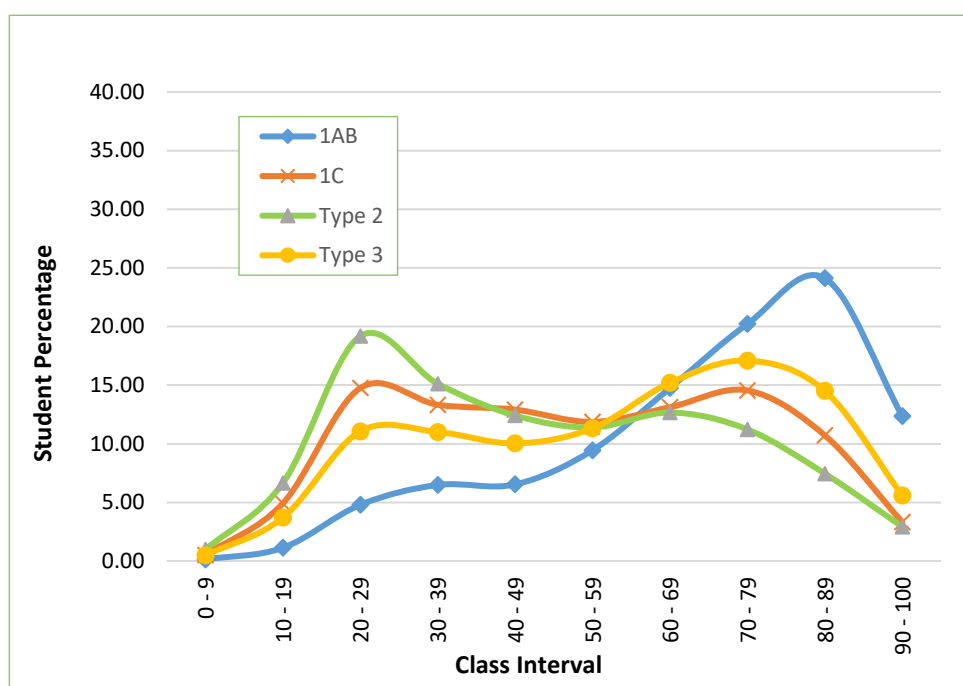


Fig. 4.6: Dispersion of marks by school type – English language

Disparity in marks

The bimodal nature of the curves suggests the presence of both high and low achievers. However, the curves for 1AB and Type 3 schools lean towards the left, indicating a negative skew. While both high and low achievement peaks are present, the peak for high achievers is more pronounced than that for low achievers. Conversely, for Type 2 and 1C schools, the prominence of the low achievers' peak surpasses that of the high achievers, resulting in a positive skew. The performance trends in these two school types have adversely impacted the overall island performance, causing the island-wide curve to also exhibit a positive skew.

The skewness of the curves can be further explained through the cumulative percentages indicated in Table 4.5.

Table 4.5: 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	0.14	0.14	0.52	0.52	0.97	0.97	0.49	0.49
10 - 19	1.13	1.27	4.92	5.44	6.65	7.62	3.69	4.18
20 - 29	4.80	6.06	14.76	20.20	19.19	26.81	11.06	15.24
30 - 39	6.49	12.55	13.33	33.53	15.12	41.93	11.00	26.25
40 - 49	6.54	19.09	12.91	46.44	12.41	54.34	10.03	36.28
50 - 59	9.45	28.54	11.86	58.30	11.39	65.73	11.32	47.60
60 - 69	14.76	43.30	13.12	71.42	12.66	78.40	15.20	62.80
70 - 79	20.22	63.52	14.55	85.97	11.22	89.62	17.10	79.90
80 - 89	24.12	87.64	10.71	96.69	7.45	97.08	14.51	94.41
90 - 100	12.36	100.00	3.31	100.00	2.92	100.00	5.59	100.00
Total	100.00		100.00		100.00		100.00	

Fig. 4.6 reveals that, with the exception of 1AB schools which peak at the 80-89 class interval, 1 C and type 2 school types predominantly peak at the 20-29 class interval. As detailed in Table 4.5, the proportion of scores within this 20-29 range varies by school type. Specifically, only 4.8% of 1AB school students fall within this range. In contrast, Type 2 schools see 19.19% of their students in this bracket, Type 3 schools have 11.06%, and 1C schools have 14.76%. Moreover, 1AB schools also have a significant 24.12% of students scoring within the 80-89 class interval. The other three school types have fewer students in this higher bracket, though more than 10% of scores from 1C and Type 3 still fall within it, highlighting the varied achievement levels across school types. Furthermore, in all school types except 1AB, over 26% of students score below 40%. In 1AB schools, this figure is significantly lower at 12.55%. Notably, Type 2 schools have the highest proportion of students scoring below 40%, at 41.93%.

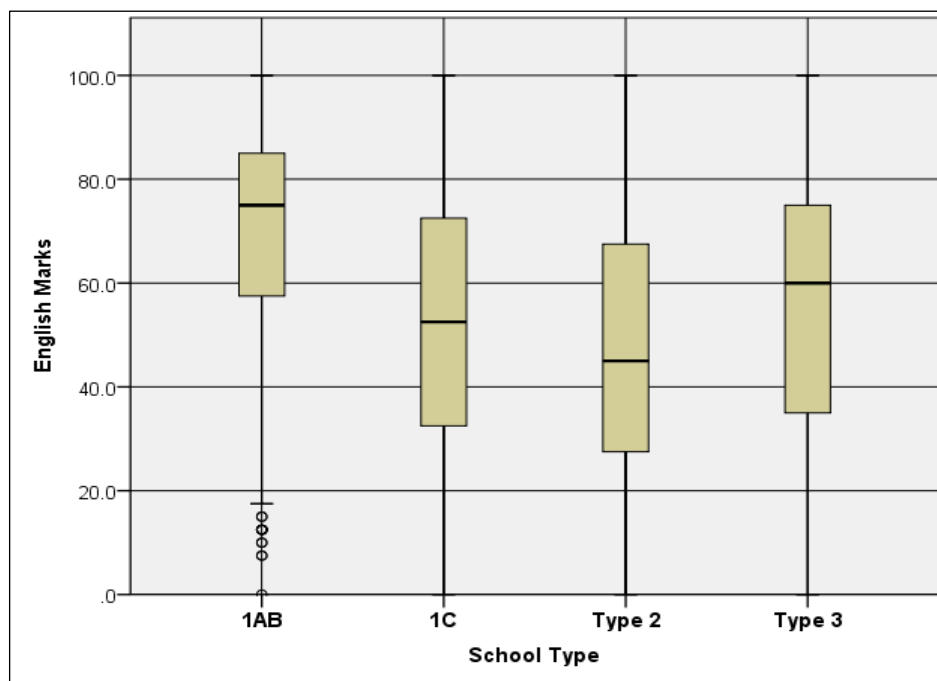


Fig. 4.7: English marks according to the school types using box plot and whisker plot

The analysis of students' performance across the four school types, as previously discussed, is visually represented in the box plot chart shown in Fig. 4.7. The distribution of student achievement in 1AB schools leans more towards higher scores. Conversely, in the other three school types, scores are more uniformly distributed. In 1AB schools, the 25th percentile stands at 58, whereas in the other three school types, it is below 35. This indicates that in these schools, a quarter of the students have not achieved the passing mark of 40.

Summary

- 1AB and Type 3 schools exhibit performance levels above the national average, with scores of 68.58 and 56.14 respectively. In contrast, Type 2 and 1C schools demonstrate lower performance.
- Nonetheless, there is a noticeable range in achievement across school types, encompassing both high and low achievers.

4.5 Achievement levels by gender

Table 4.6: English language achievement according to gender

Student Gender	Mean	Standard Error of Mean	Standard Deviation	Skewness	Percentile (p25)	Median (p50)	Percentile (p75)
Male	51.51	0.06	23.44	0.04	30.00	52.50	72.50
Female	59.29	0.05	22.65	-0.33	40.00	62.50	77.50
All Island	55.51	0.04	23.36	-0.15	35.00	57.50	75.00

The average English language score for female students (59.29) is notably higher than that of male students (51.51). The overall average for all students is also higher than the male students' average. The high achievement of female students in English has significantly influenced the increase in the overall average.

These differences could also be seen in Fig.4.8.



Fig. 4.8: Bar chart representing mean and median values according to gender – English language

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

Fig. 4.9 explains further this low performance of the male students.

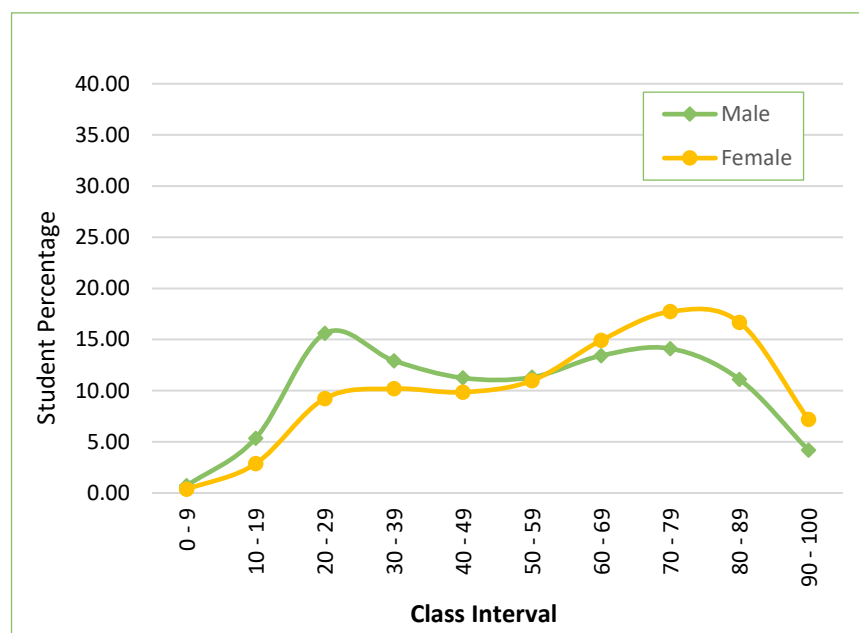


Fig. 4.9: Dispersion of marks by gender – English language

Fig. 4.9 presents two bimodal curves. Yet, as highlighted in Table 4.6, the curve for females is negatively skewed, whereas the curve for males is positively skewed. This suggests a higher proportion of high-performing females and a larger percentage of males performing at a lower level.

This pattern is further illustrated through the cumulative percentage Table 4.7.

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

Class Interval	Male		Female	
	Student %	Cumulative %	Student %	Cumulative %
0 - 9	0.71	0.71	0.36	0.36
10 - 19	5.36	6.06	2.87	3.22
20 - 29	15.59	21.66	9.23	12.46
30 - 39	12.93	34.59	10.19	22.65
40 - 49	11.25	45.84	9.85	32.50
50 - 59	11.31	57.15	10.98	43.49
60 - 69	13.43	70.58	14.92	58.40
70 - 79	14.12	84.69	17.72	76.13
80 - 89	11.12	95.81	16.68	92.81
90 - 100	4.19	100.00	7.19	100.00
Total	100.00		100.00	

Based on Table 4.7 and Fig. 4.9, both male and female groups contain low-performing students. However, a larger percentage of males fall into this category compared to females. Specifically, 0.36% of female students score within the 0-9 range, while 0.71% of male students do. Additionally, 22.65% of females and 34.59% of males score below 40 marks.

Despite the presence of low achievers in both groups, there's a noticeable difference in the distribution of high achievers. Among females, the largest percentage (16.68%) score within the 80-89 range, with 17.72% and 7.19% in the 70-79 and 90-100 ranges, respectively. In contrast, the most significant percentage of males (15.59%) score within the 20-29 range, with another prominent group (14.12%) in the 70-79 range.

In conclusion, while females generally outperform males, both groups have a mix of high and low achievers.

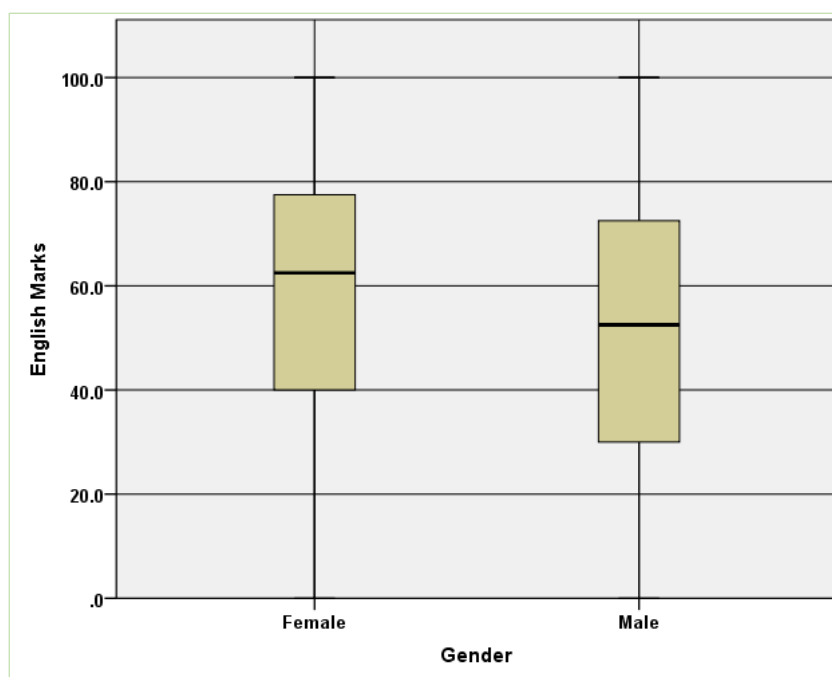


Fig. 4.10: Box plot and whisker plot representing gender wise English language marks

The box plot depicting English language achievement by gender visually reinforces the observations previously discussed. In the plot for females, the first quartile (Q1) begins slightly ahead of the males' Q1 and extends further into the higher marks range. The median for male students is also positioned below that of the female students. This

graphical representation underscores the performance disparities between male and female groups.

Summary

- Females outperform both the overall average and their male counterparts.
- Both male and female groups contain a significant percentage of low achievers. However, the proportion of high achievers is greater among females than males.

4.6 Achievement levels by medium of instruction

Table 4.8: Achievement level by medium of instruction – English language

Medium	Mean	Std. Error of Mean	Standard Deviation	Skewness	Percentile 25	Median 50	Percentile 75
Sinhala	57.92	0.05	23.12	-0.27	37.50	62.50	77.50
Tamil	48.12	0.08	22.52	0.18	27.50	45.00	67.50
All Island	55.51	0.04	23.36	-0.15	35.00	57.50	75.00

There is a noticeable difference in achievement among students based on their medium of instruction. Sinhala medium students' average performance surpasses the national average, whereas the Tamil medium students' average falls significantly 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.

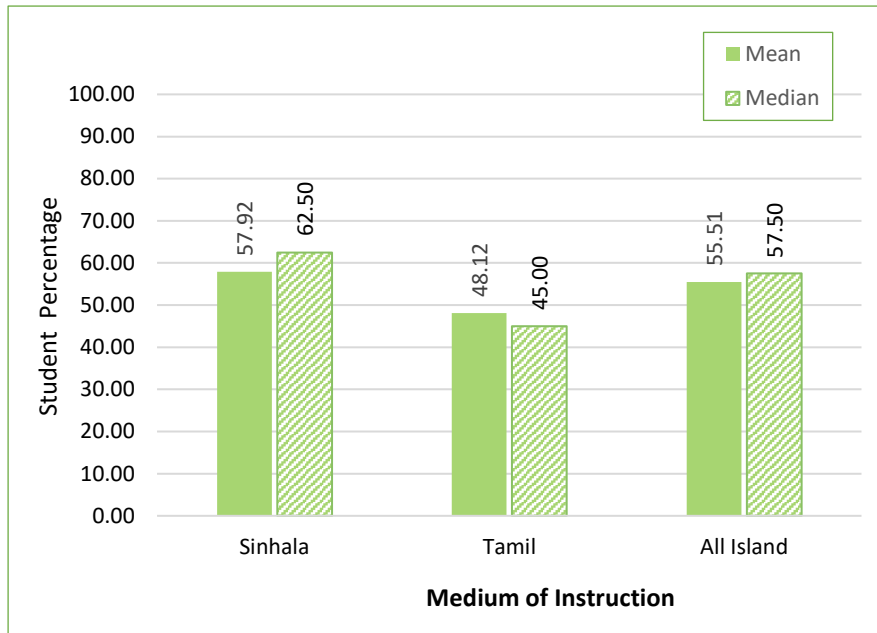


Fig. 4.11: Bar chart representing mean and median values according to medium of instruction – English language

Sinhala medium students' median performance surpasses the overall island median. Half of the Sinhala medium students have scored 62.50% or higher, whereas the same proportion of Tamil medium students have achieved scores of just 45.00% or more.

Disparity in achievement medium wise

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

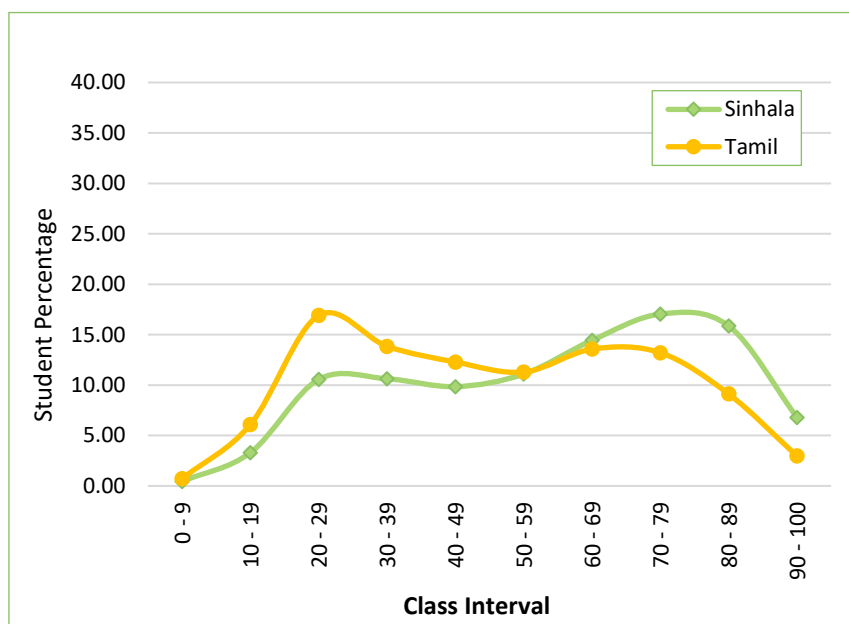


Fig. 4.12: Dispersion of marks by medium of instruction – English language

The displayed curves highlight the performance gap between Tamil and Sinhala medium students. Both the Sinhala and Tamil medium curves are bimodal. The Sinhala medium curve showcases two distinct peaks, indicating a significant number of students with both low and high marks, with the latter being more prevalent. Conversely, the Tamil medium has a higher concentration of low achievers, though there is still a notable presence of high achievers.

This pattern is further illustrated through the cumulative percentage Table 4.9.

Table 4.9: Medium wise cumulative percentage table – English language

Class Interval	Sinhala		Tamil	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.45	0.45	0.72	0.72
10-19	3.30	3.75	6.09	6.81
20 - 29	10.56	14.31	16.90	23.71
30 - 39	10.63	24.94	13.84	37.56
40 - 49	9.84	34.78	12.29	49.85
50 - 59	11.09	45.87	11.29	61.13
60 - 69	14.43	60.30	13.57	74.70
70 - 79	17.04	77.34	13.21	87.91
80 - 89	15.86	93.20	9.12	97.03
90-100	6.80	100.00	2.97	100.00
Total	100.00		100.00	

Most Sinhala medium students, 17.04%, score within the 70-79 range. In contrast, only 13.21% of Tamil medium students achieve marks within this same interval. Conversely, 16.90% of Tamil medium students score within the 20-29 range, while only 10.56% of Sinhala medium students fall into this category. This mark distribution suggests that Sinhala medium students generally outperform their Tamil medium counterparts.

Variation among students

According to Table 4.8 Sinhala, Tamil and all Island standard deviations are very high, 23.12 and 22.52 respectively. 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.

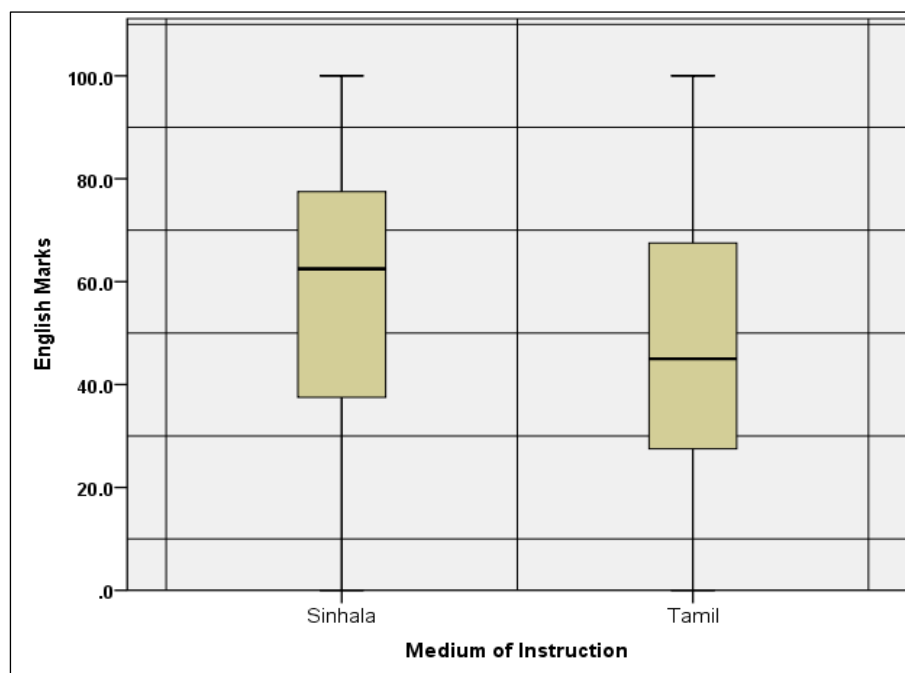


Fig. 4.13: Box plot for medium wise achievement – English language

The box plot depicting achievement by two medium visually reinforces the disparities previously discussed.

The range of the box plot for Sinhala medium students underscores the performance gap between the two mediums. At the 25th, 50th, and 75th percentiles, Sinhala medium students consistently surpass their Tamil medium counterparts.

Summary

- A performance gap exists between students of different instructional mediums.
- Sinhala medium students have an average achievement of 57.92, which is above the national average of 55.51.
- Tamil medium students' average achievement stands at 48.12, not only falling below the national average but also trailing the Sinhala medium students' average by roughly nine points.

Achievement levels by location would be discussed next.

4.7 Achievement levels by location

Table 4.10: English language achievement according to location

Location	Mean	Std. Error of Mean	Standard Deviation	Skewness	Percentile 25	Median 50	Percentile 75
Municipal Council	63.75	0.10	21.39	-0.55	45.00	70.00	82.50
Urban Council	64.93	0.14	22.81	-0.59	50.00	67.50	82.50
Pradeshia Saba	53.18	0.05	23.07	-0.06	32.50	55.00	72.50
All Island	55.51	0.04	23.36	-0.15	35.00	57.50	75.00

Table 4.10 highlights differences in achievement among schools based on their localities. Urban schools and Municipal Council schools outshine Pradeshia Saba schools in performance. Further, Pradeshia Saba schools not only fall behind the two council schools but also has a mean below the national mean.

The difference in mean values is graphically shown in Fig. 4.14

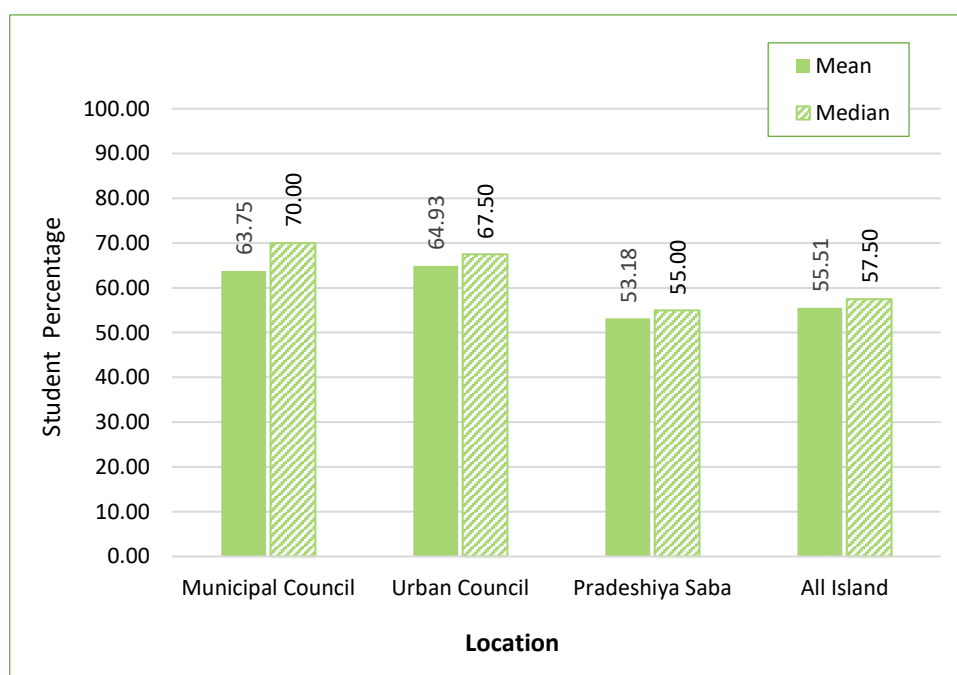


Fig. 4.14: Bar chart representing mean and median values according to location– English language

Fig. 4.14 shows that the average scores in Pradeshiya Saba schools are notably lower than those in urban area and municipal council schools. The disparity is substantial. Additionally, the variation in scores for Pradeshiya Saba schools, at 23.07, is greater than that of the other two councils, which stand at 21.39 and 22.81 respectively.

The dispersion of marks among the different localities is displayed in Fig. 4.15.

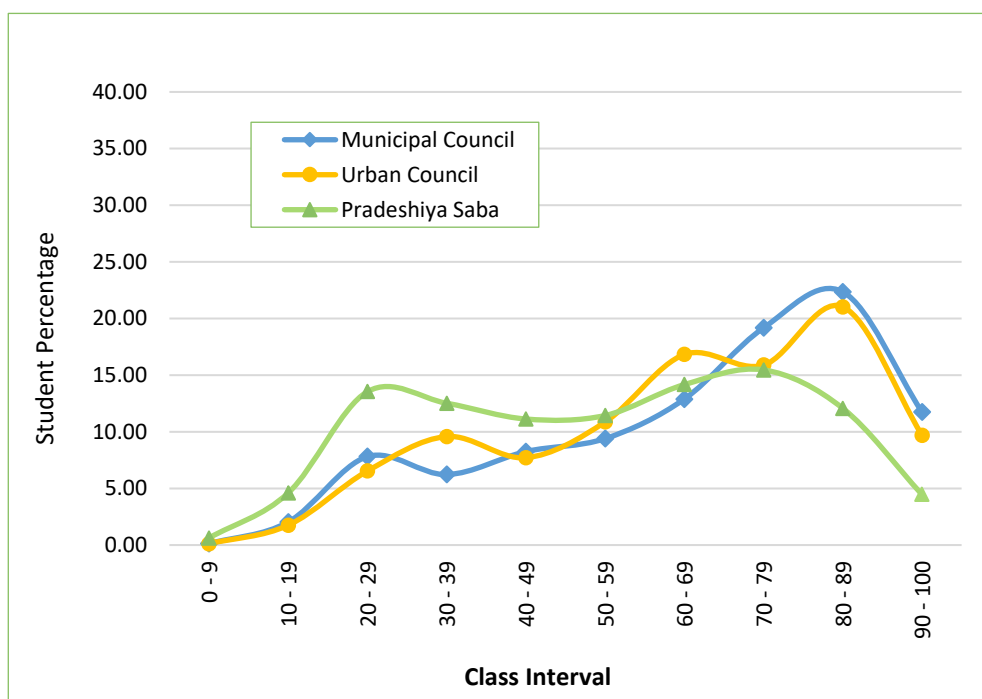


Fig. 4.15: Dispersion of marks by location – English language

Fig. 4.15 showcases two curves with a negative skew and another that's bimodal. The urban area and Municipal council schools' curves display a negative trend, while the Pradeshiya Saba schools' curve exhibits a bimodal pattern. This indicates a predominant presence of high achievers in urban and municipal schools. On the other hand, Pradeshiya Saba schools demonstrate a distribution of both low and high achievers. Notably, the highest concentration of top performers is found within the Municipal council schools.

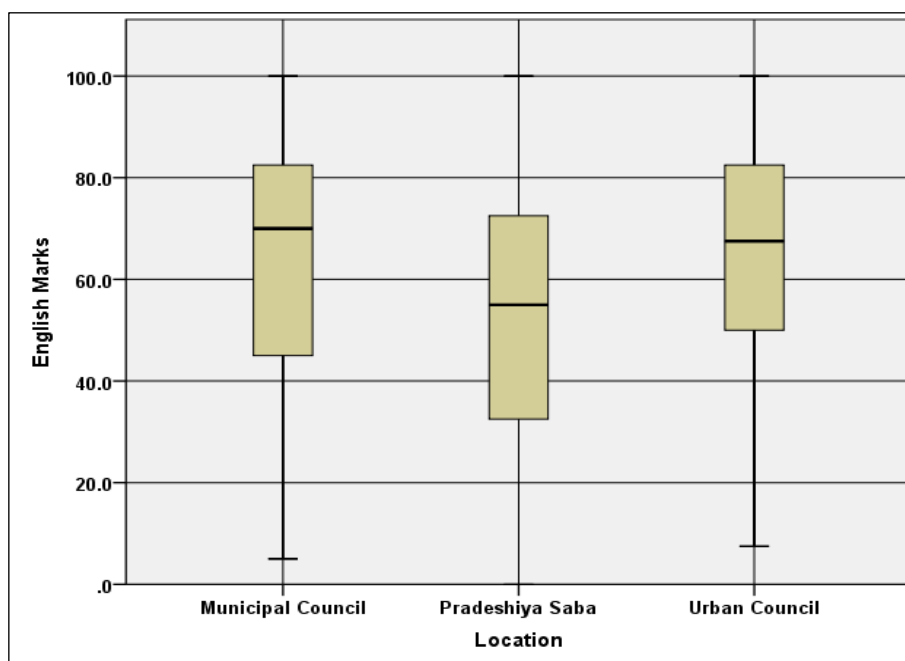
This pattern is further illustrated through the cumulative percentage Table 4.11.

Table 4.11: Cumulative student percentages according to the location – English language

Class Interval	Municipal Council		Urban Council		Pradeshiya Saba	
	Student %	Cumulative %	Student %	Cumulative %	Student %	Cumulative %
0-9	0.13	0.13	0.12	0.12	0.62	0.62
10-19	2.03	2.16	1.75	1.87	4.60	5.23
20 - 29	7.81	9.97	6.54	8.41	13.54	18.77
30 - 39	6.22	16.19	9.58	17.99	12.52	31.29
40 - 49	8.25	24.44	7.71	25.70	11.12	42.41
50 - 59	9.40	33.84	10.86	36.57	11.44	53.85
60 - 69	12.89	46.73	16.82	53.39	14.17	68.01
70 - 79	19.17	65.90	15.89	69.28	15.46	83.47
80 - 89	22.35	88.25	21.03	90.30	12.07	95.54
90-100	11.75	100.00	9.70	100.00	4.46	100.00
Total	100.00		100.00		100.00	

Table 4.11 reveals that the majority of students across schools in Municipal and urban councils score within the 80-89 range, while that of Pradeshiya Saba schools fall into 70-79 range. Yet, it's notable that Pradeshiya Saba schools also have a significant number of students scoring in the 20-29 interval.

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

**Fig. 4.16: Box plot for location – English language**

The box plot indicates that while the median score for Pradeshiya Saba schools falls below the national average, both Urban Council schools and Pradeshiya Saba schools have medians that exceed the all-island mean.

Summary

- In terms of location, Pradeshiya Saba schools underperform compared to Urban Council and Municipal Council schools.
- The highest achievers are found in Municipal Council schools.
- Notably, there's a significant deviation from the mean score across all localities, indicating varied student performance within each area.

4.8 Analysis of achievement by sub skills

The achievement tests were formulated based on the language sub-skills outlined in Table 2.5 of Chapter 2. Students' performance in relation to these sub-skills is depicted in Fig. 4.17

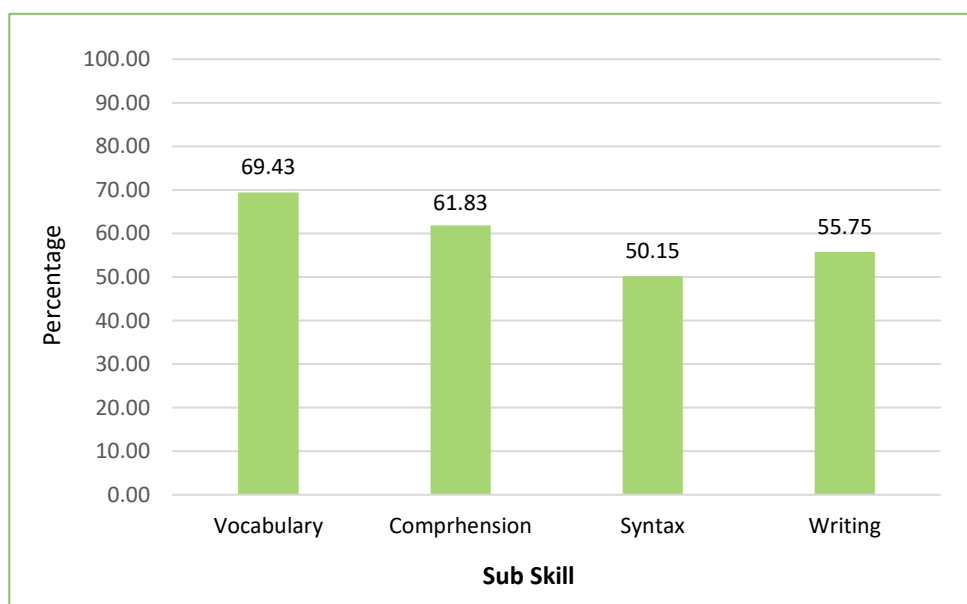


Fig. 4.17: Achievement in sub skills in English language

Fig. 4.17 above shows that students performed satisfactorily in vocabulary and reading comprehension. However, their proficiency in syntax and writing sub-skills seems to be lacking. A more detailed analysis of their writing performance can be found in Table 4.12.

Table 4.12: Responses to questions pertaining to syntax

Content of the paper / according to the syllabus	Que. No.	2022 correct %
Vocabulary related to different themes	Q1	88.44
	Q2	71.8
	Q3	71.94
	Q4	88.71
	Q5	61.85
	Q6	67.31
	Q7	67.03
	Q8	57.67
	Q9	67.07
	Q10	52.45
	Q11	59.9
	Q12	63.9
	Q13	47.35
	Q14	28.33
	Q15	39.76
	Q16	77.7
	Q17	79.66
	Q18	77.39
	Q19	75.68
	Q20	68.66
	Q21	50.42
	Q22	69.6
	Q23	73.15
	Q24	48.87
	Q25	50.95
	Q26	42.8
	Q27	48.51
	Q28	55.02
	Q29	44.87
	Q30	17.27
Writing meaningful sentences	Q31	73.45
Write down personal information	Q32	43.91
	Q33	56.65
	Q34	51.56
	Q35	53.16

Table 2.4 in Chapter 2 reveals that questions 21-30 in the exam pertain to syntax. Table 4.12 displays the percentage of students who answered these questions correctly. The majority of these questions have a correct response rate of over 50%. However, only 17.27% of students answered question 30 correctly. The lowest percentages of correct answers, 28.33% and 17.27%, were for questions 14 and 30, respectively, which focus on adjectives and the third person singular present tense.

For the writing task, students were asked to construct five sentences using a provided clue. Fig. 4.18 illustrates that many students struggled to form a grammatically accurate sentence for the second clue. Additionally, over 60% of students failed to create a grammatically correct sentence.

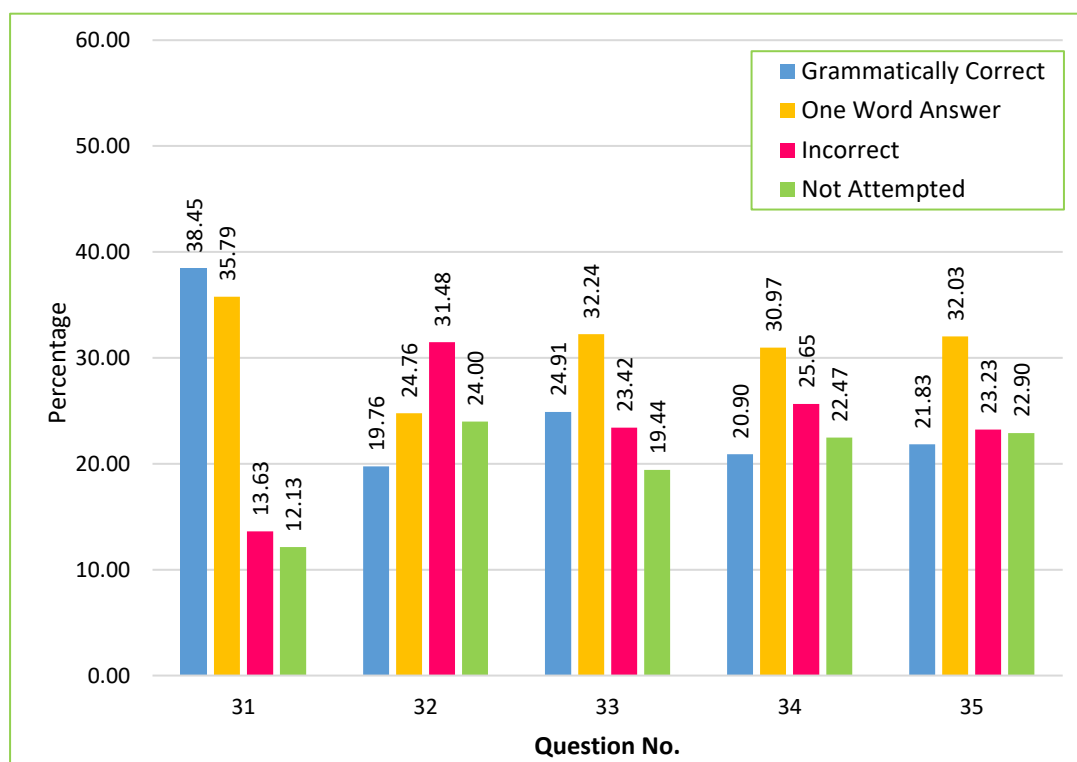


Fig. 4.18: Competency related to writing – English language

The proportion of students who crafted grammatically accurate sentences is below 25%, with the exception of the first sentence. This suggests that a lack of grammar knowledge adversely impacts students' writing abilities.

For the initial sentence, students were required to write their names, which was the sole Essential Learning Competency related to writing in English. As depicted in Fig. 4.18, only 38.45% of students managed to frame their names in a grammatically correct manner. Conversely, 35.79% of students correctly wrote their names. Yet, 12.13% did not even attempt to write their names, and 13.63% provided incorrect responses. Thus, roughly 26% of students struggle to write their own names correctly.

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. 4.19 displays the facility values for questions 1-30

According to this Figure facility index ranges from 0.173 to 0.884

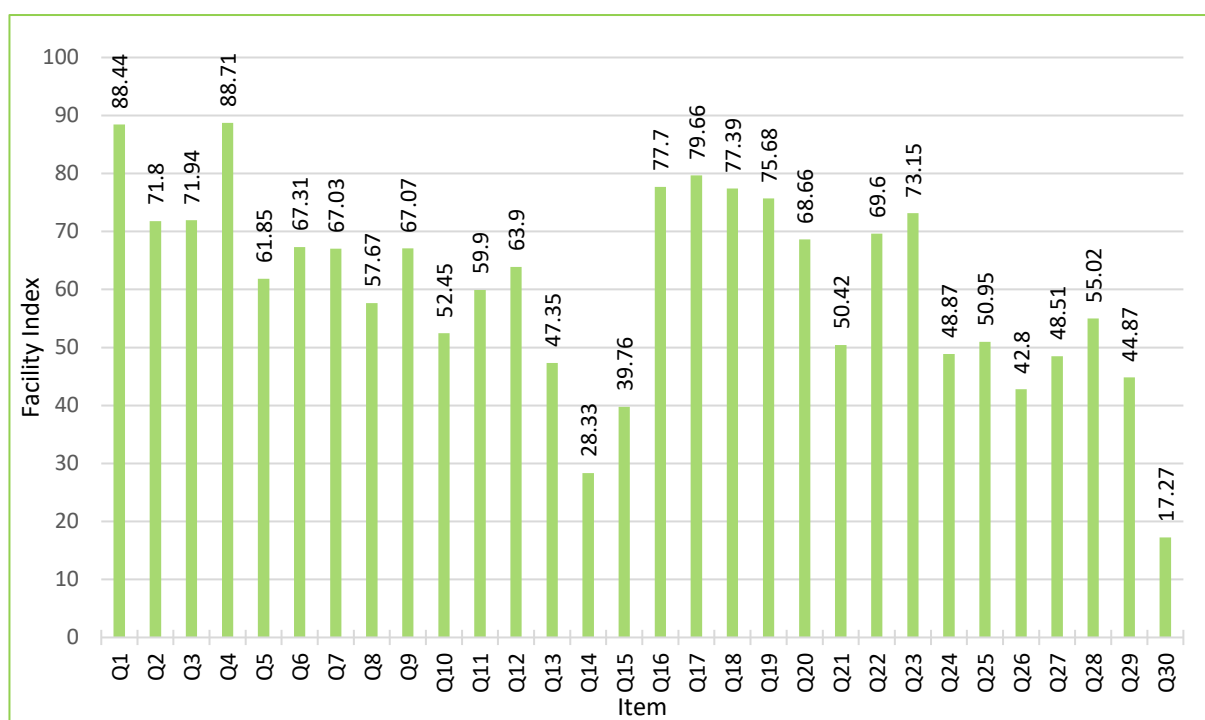


Fig. 4.19: Facility values for the different test items –English language

Question 30, which pertains to syntax, has the lowest facility index.

The first section of this chapter delves into the patterns of students' English language performance, breaking it down by national and provincial levels, school type, gender, instructional medium, and location.

Additionally, the test items evaluating students' performance were scrutinized to determine their success in mastering the language sub-skills expected of grade 4 students.

It's evident that there's an inconsistency in the attainment of learning outcomes in English language education.

The subsequent section of the chapter will juxtapose student performance from 2015 and 2022, shedding light on the evolving trends in learning outcome achievements.

Part II- Comparison of achievement level of students in 2015 with that of 2022

4.9 Trends in achievement at national level

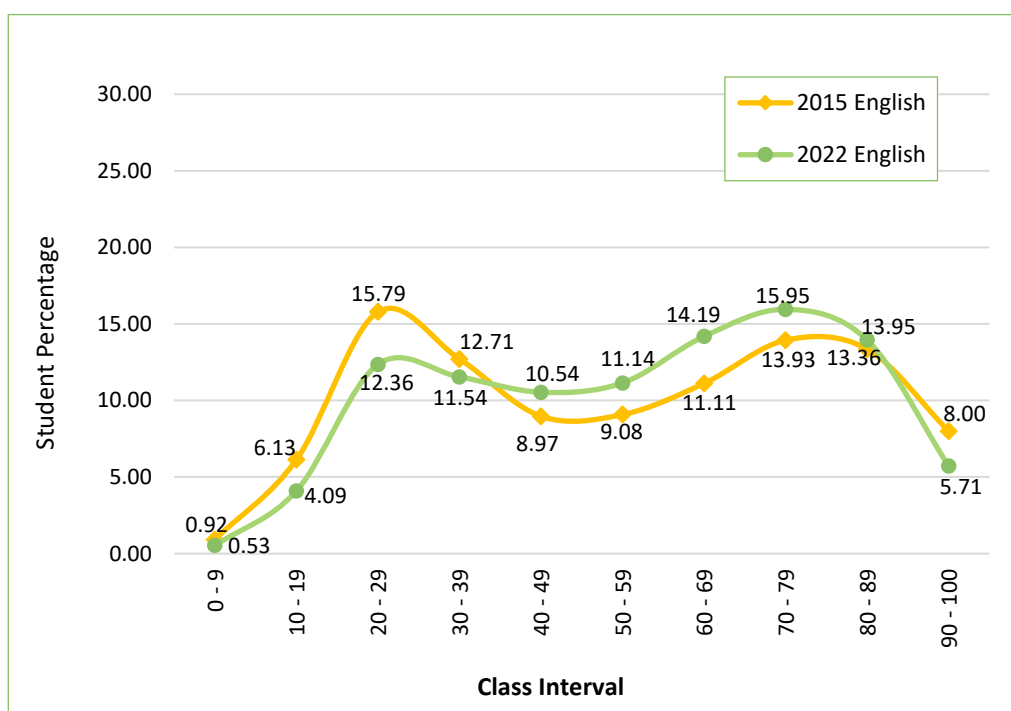


Fig. 4.20: All island achievement in English language comparison - 2015 & 2022 dispersion of marks

Fig. 4.20 shows an improvement in student performance when comparing 2015 data with that of 2022. While all the data curves are bimodal, 2022 shows a further rise in the number of students achieving higher scores and a further decline in those with lower scores. This trend is further elucidated in Table 4.13.

Table 4.13: Comparison of all island achievement in English language – Cumulative percentages

Class Interval	Year 2015		Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.92	0.92	0.53	0.53
10-19	6.13	7.05	4.09	4.62
20 - 29	15.79	22.84	12.36	16.98
30 - 39	12.71	35.55	11.54	28.52
40 - 49	8.97	44.52	10.54	39.05
50 - 59	9.08	53.59	11.14	50.20
60 - 69	11.11	64.71	14.19	64.38
70 - 79	13.93	78.64	15.95	80.34
80 - 89	13.36	92.00	13.95	94.29
90-100	8.00	100.00	5.71	100.00
Total	100.00		100.00	

The Table 4.13 shows fewer students scoring between 20-29 in 2022, while more students achieved scores in the ranges of 60-69, 70-79, and 80-89, and 90-100. This indicates an improvement in the English language performance of students in 2022.

4.10 Provincial wise comparison of student achievement

Fig. 4.21 shows a rise in student achievement across most provinces, leading to a boost in the national English language performance. The mean value has grown from 53.53 to 55.51 in 2022. However, the Central and North Central and Northern Provinces experienced a minor drop in student achievement.

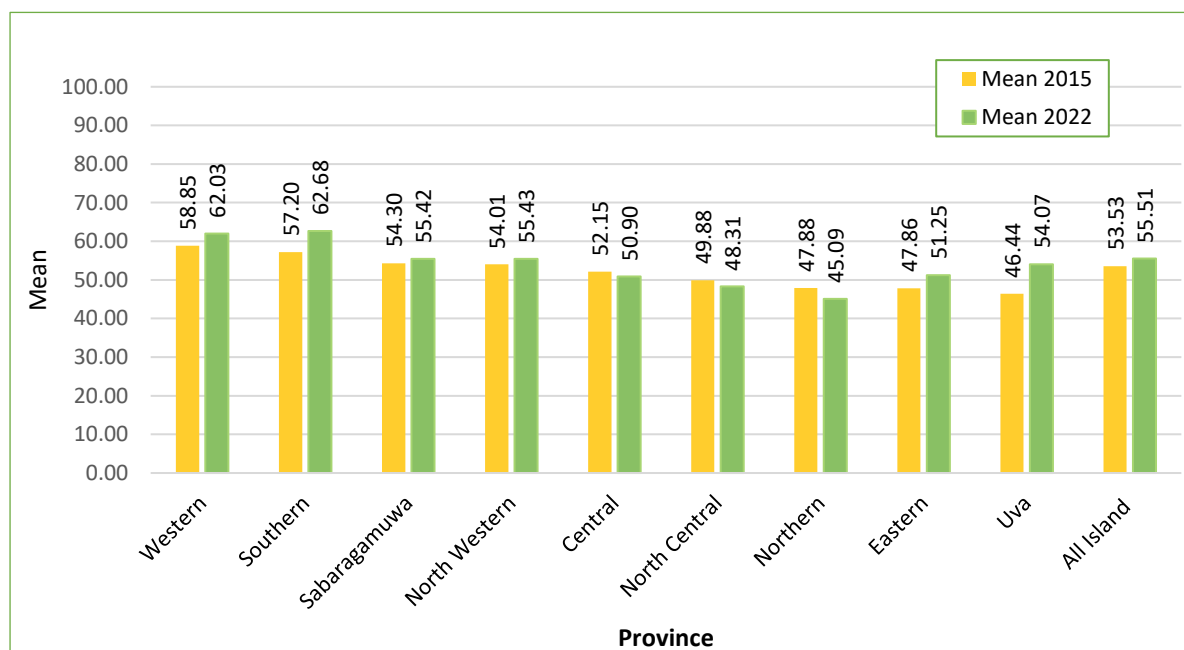


Fig. 4.21: Provincial wise comparison of student achievement – 2015 & 2022

Table 4.14: Provincial wise comparison of student achievement – 2015 & 2022

Province	Year 2015		Year 2022		Z
	Mean	Standard Deviation	Mean	Standard Deviation	
Central	52.15	24.20	50.90	22.82	-1.46
Eastern	47.86	25.12	51.25	23.32	3.79*
North Central	49.88	23.24	48.31	22.60	-1.87
North Western	54.01	25.21	55.43	22.75	1.65
Northern	47.88	24.82	45.09	21.66	-3.09*
Sabaragamuwa	54.30	24.81	55.42	22.82	1.34
Southern	57.20	25.49	62.68	22.82	6.35*
Uva	46.44	24.01	54.07	22.10	8.93*
Western	58.85	24.95	62.03	22.82	3.72*
All Island	53.53	25.13	55.51	23.36	6.72*

* Values are significant at 95%



Fig. 4.22: Comparison of provincial wise distribution of marks – English language

4.11 Comparison of marks according to school type

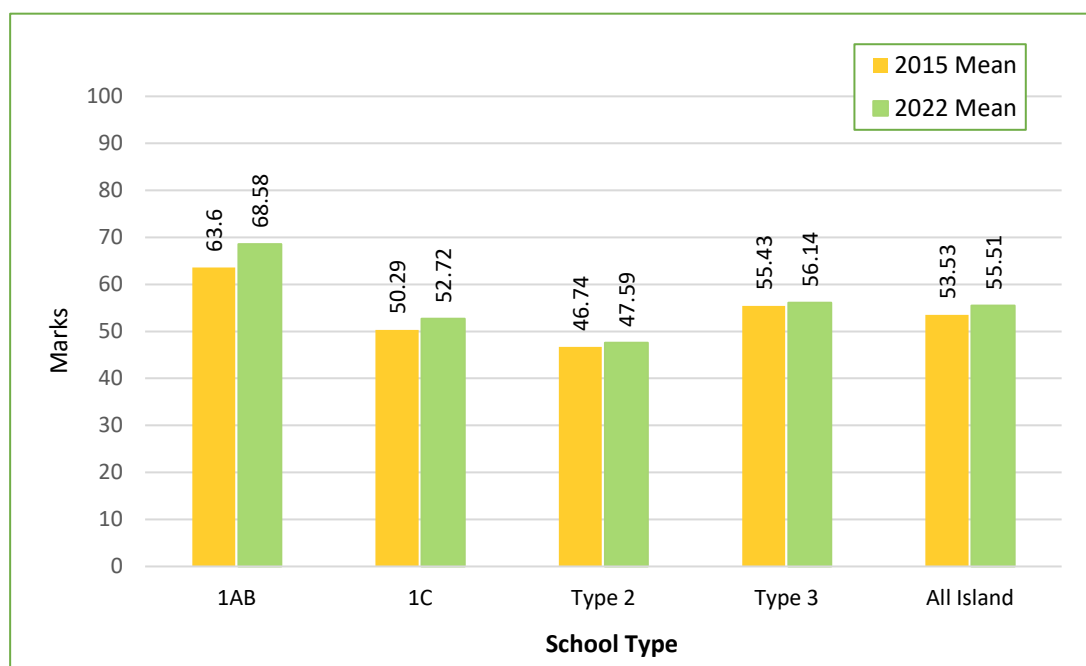


Fig. 4.23: All island comparison of mean values according to school type

Fig. 4.23 shows that student performance has improved satisfactorily in all school types. In Type 1AB schools, student achievement has increased by five points. The line graphs and cumulative frequency tables offer a deeper insight into the variations in achievement among different school types.

Table 4.15: Comparison of achievement of 1AB schools

Class Interval	1AB-Year 2015		1AB-Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.50	0.50	0.14	0.14
10-19	2.67	3.17	1.13	1.27
20 - 29	8.36	11.53	4.80	6.06
30 - 39	7.68	19.21	6.49	12.55
40 - 49	7.53	26.74	6.54	19.09
50 - 59	8.72	35.46	9.45	28.54
60 - 69	12.55	48.01	14.76	43.30
70 - 79	17.59	65.60	20.22	63.52
80 - 89	19.90	85.50	24.12	87.64
90-100	14.50	100.00	12.36	100.00
Total	100		100	

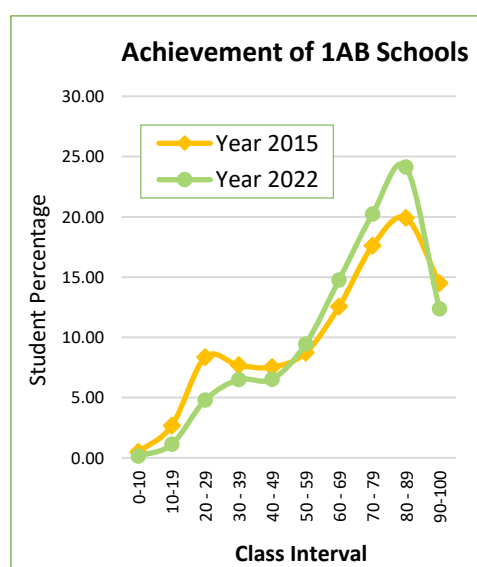


Fig 4.24: Comparison of achievement of 1AB schools –2015 & 2022

The line graph 2015 shows a negatively skewed and bimodal curve, with two clear groups of students scoring high and low marks. This trend improved further by 2022. Table 4.15 provides more detail on this shift. According to Table 4.15, in 2015, the largest group of students (19.90%) scored between 80-89. This percentage rose to 24.12 percent in 2022. The percentage of students scoring between 70-79 also shows an increase. Conversely, fewer students scored in the 20-29 and 30-39 ranges.

Table 4.16: Comparison of achievement of Type 1C schools

Class Interval	1C - Year 2015		1C - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	1.04	1.04	0.52	0.52
10-19	7.38	8.42	4.92	5.44
20 - 29	18.92	27.34	14.76	20.20
30 - 39	14.88	42.22	13.33	33.53
40 - 49	9.64	51.86	12.91	46.44
50 - 59	9.67	61.53	11.86	58.30
60 - 69	10.41	71.94	13.12	71.42
70 - 79	12.37	84.31	14.55	85.97
80 - 89	10.13	94.44	10.71	96.69
90-100	5.56	100	3.31	100.00
Total	100		100	

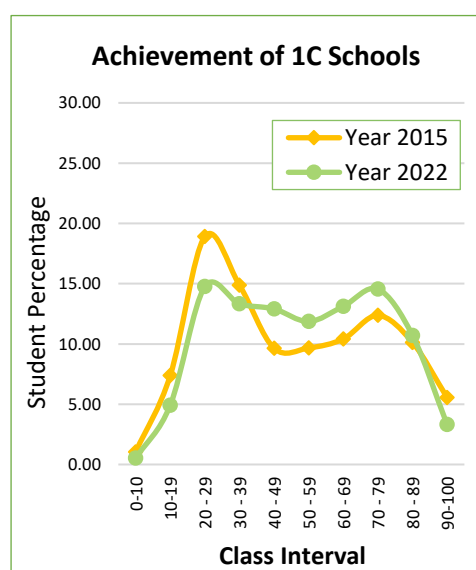


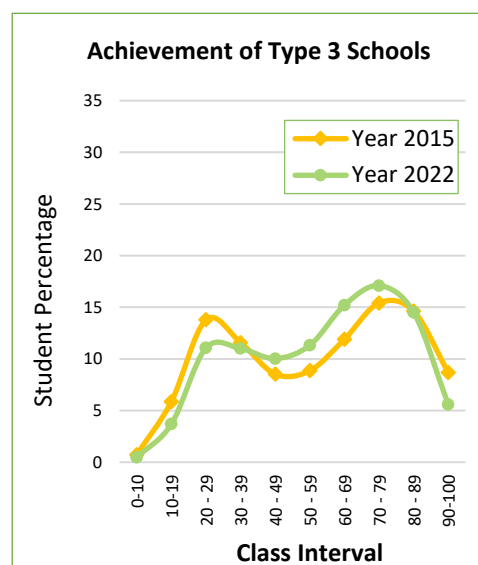
Fig 4.25: Comparison of achievement of 1C schools -2015 & 2022

In 2022, the performance of students in 1C schools follows a similar trend. Fig. 4.25 shows all curves as bimodal. Yet, the 2022 curve has a more pronounced peak on the right and a diminished peak on the left.

Cumulative percentage Table 4.16 further clarifies this pattern. It reveals a decrease in the percentage of marks in the 20-29 range, while the percentages in the 70-79 and 80-89 ranges have increased.

Table 4.17: Comparison of achievement of Type 3 schools

Class Interval	Type 3 - Year 2015		Type 3 - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.73	0.73	0.49	0.49
10-19	5.87	6.6	3.69	4.18
20 - 29	13.79	20.39	11.06	15.24
30 - 39	11.58	31.97	11.00	26.25
40 - 49	8.53	40.5	10.03	36.28
50 - 59	8.86	49.36	11.32	47.60
60 - 69	11.9	61.26	15.20	62.80
70 - 79	15.42	76.68	17.10	79.90
80 - 89	14.63	91.31	14.51	94.41
90-100	8.69	100	5.59	100.00
Total	100		100	

**Fig 4.26: Comparison of achievement of Type 3 schools –2015 & 2022**

A similar trend can be seen in Type 3 schools as well with an increase in high achievers in 2022 and a further decrease in low achievers.

This trend is also evident in Type 2 schools, reflecting both an increase and a decrease in achievement across all schools.

Table 4.18: Comparison of achievement of Type 2 schools

Class Interval	Type 2 - Year 2015		Type 2 - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	1.4	1.4	0.97	0.97
10-19	8.08	9.48	6.65	7.62
20 - 29	21.58	31.06	19.19	26.81
30 - 39	16.28	47.34	15.12	41.93
40 - 49	10.09	57.43	12.41	54.34
50 - 59	9.11	66.54	11.39	65.73
60 - 69	9.52	76.06	12.66	78.40
70 - 79	10.4	86.46	11.22	89.62
80 - 89	9.4	95.86	7.45	97.08
90-100	4.14	100	2.92	100.00
Total	100		100	

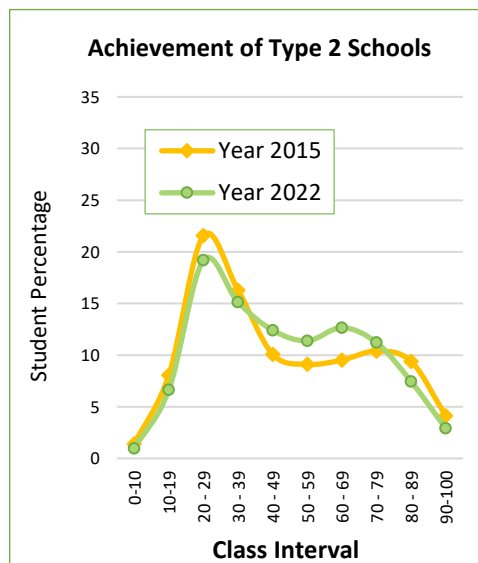
**Fig 4.27: Comparison of achievement of Type 2 schools –2015 & 2022**

Fig. 4.27 shows an enlarged peak on the left, indicating an increase in the percentage of scores between 40-49 and 50-59. Conversely, the peak on the right has diminished, signifying a decrease in the percentage of scores in the 80-89 range.

4.12 Comparison of marks according to gender

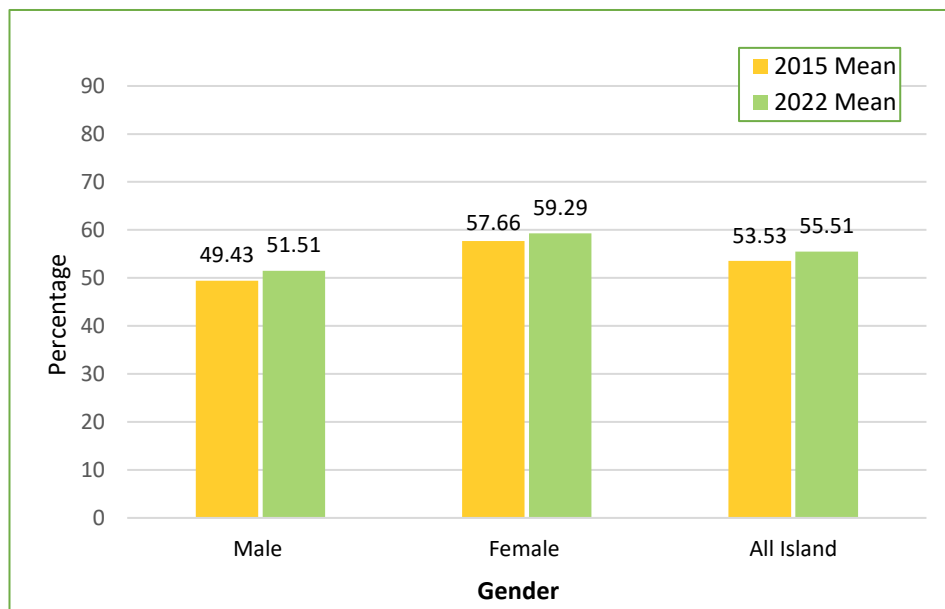


Fig. 4.28: All island comparison of mean values according to gender

Fig. 4.28 shows that in 2022, both male and female students experienced an increase in achievement. This upward trend is further reflected in the cumulative percentage tables and line graphs.

Table 4.19: Comparison of achievement of male students

Class Interval	Male - Year 2015		Male - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	1.23	1.23	0.71	0.71
10-19	7.69	8.92	5.36	6.06
20 - 29	18.97	27.89	15.59	21.66
30 - 39	14.08	41.97	12.93	34.59
40 - 49	9.39	51.36	11.25	45.84
50 - 59	9.02	60.38	11.31	57.15
60 - 69	10.47	70.85	13.43	70.58
70 - 79	12.6	83.45	14.12	84.69
80 - 89	10.61	94.06	11.12	95.81
90-100	5.94	100	4.19	100.00
Total	100		100	

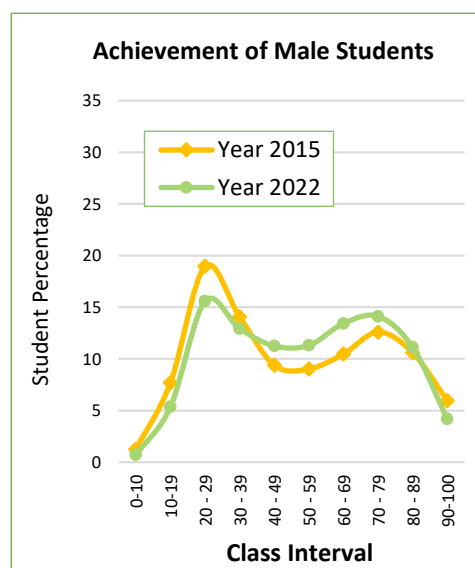


Fig 4.29: Comparison of achievement of male students –2015 & 2022

Fig. 4.29 reveals a change in the shape of the curves. According to Table 4.19, there's a decline in the percentage of students scoring between 20-29, while the percentage of those scoring between 80-89 has risen.

Table 4.20: Comparison of achievement of female students

Class Interval	Female - Year 2015		Female - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.61	0.61	0.36	0.36
10-19	4.57	5.18	2.87	3.22
20 - 29	12.61	17.79	9.23	12.46
30 - 39	11.34	29.13	10.19	22.65
40 - 49	8.54	37.67	9.85	32.50
50 - 59	9.14	46.81	10.98	43.49
60 - 69	11.75	58.56	14.92	58.40
70 - 79	15.27	73.83	17.72	76.13
80 - 89	16.11	89.94	16.68	92.81
90-100	10.06	100.00	7.19	100.00
Total	100		100	

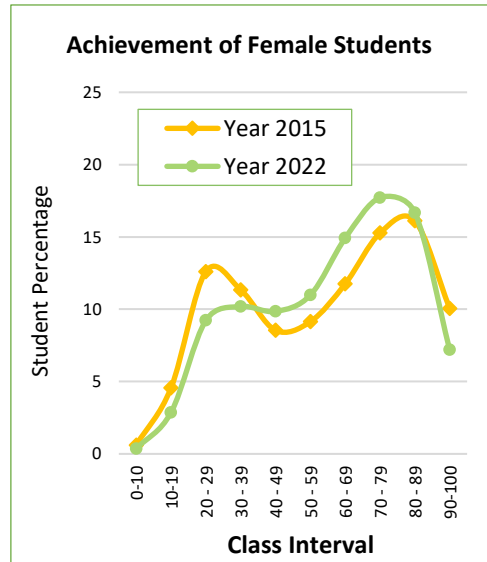


Fig 4.30: Comparison of achievement of female students -2015 & 2022

Table 4.20 and Figure 4.30 shows a similar trend in achievement.

4.13 Comparison according to medium of instruction

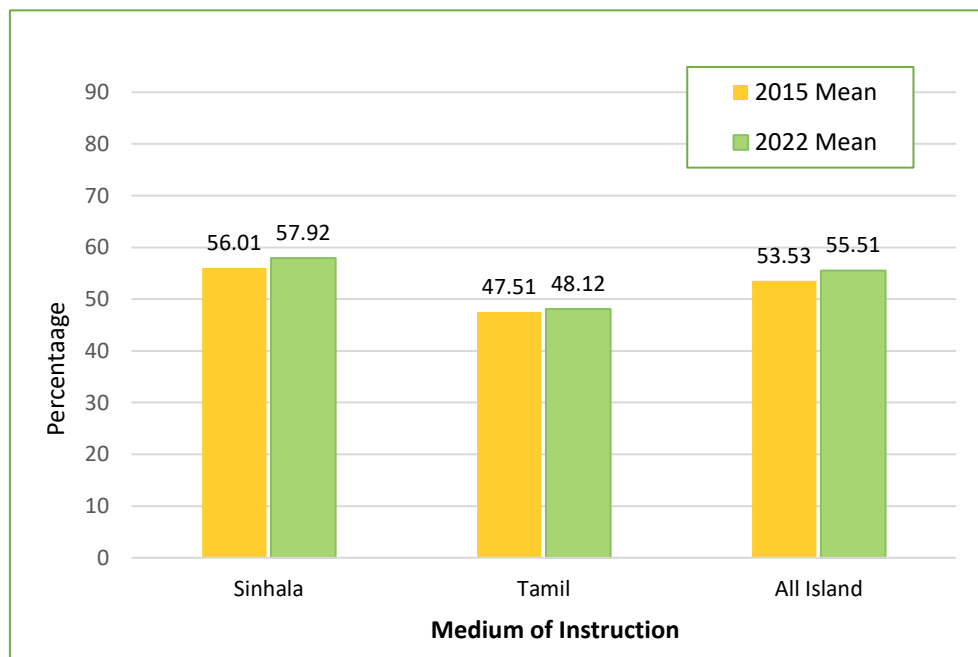


Fig. 4.31: All island comparison of mean values according to medium of instruction

As Fig. 4.31 displays achievement of both Sinhala and Tamil medium students has increased.

These differences can be seen in the cumulative Table 4.21.

Table 4.21: Comparison of achievement of Sinhala medium students

Class Interval	Sinhala - Year 2015		Sinhala - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	0.66	0.66	0.45	0.45
10-19	4.65	5.31	3.30	3.75
20 - 29	13.98	19.29	10.56	14.31
30 - 39	11.92	31.21	10.63	24.94
40 - 49	8.67	39.88	9.84	34.78
50 - 59	8.99	48.87	11.09	45.87
60 - 69	11.9	60.77	14.43	60.30
70 - 79	15.4	76.17	17.04	77.34
80 - 89	14.96	91.13	15.86	93.20
90-100	8.87	100	6.80	100.00
Total	100		100	

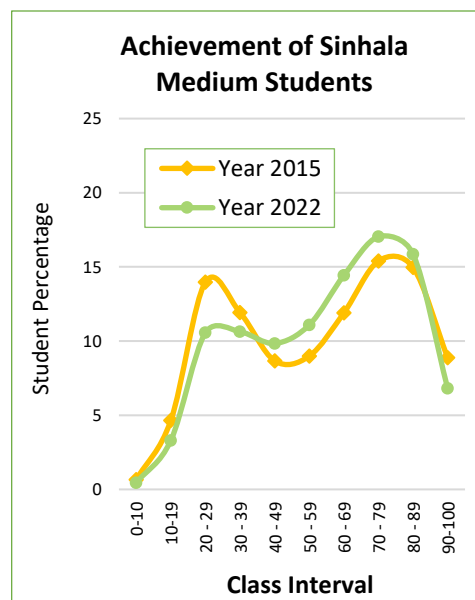


Fig 4.32: Comparison of achievement of Sinhala medium students -2015 & 2022

Fig. 4.32 shows that the percentage of Sinhala medium students scoring between 20-29 decreased from 13.98 in 2015 to 10.56 in 2022. Those scoring between 80-89 shows a slight increase, moving from 14.96 to 15.86. Conversely, the percentage of Tamil medium students scoring between 20-29 dropped from 19.80 to 16.90, but the high achievers in this group decreased from 9.81 to 9.12 (Table 4.22).

Table 4.22: Comparison of achievement of Tamil medium students

Class Interval	Tamil - Year 2015		Tamil - Year 2022	
	Student %	Cumulative %	Student %	Cumulative %
0-9	1.49	1.49	0.72	0.72
10-19	9.41	10.9	6.09	6.81
20 - 29	19.8	30.7	16.90	23.71
30 - 39	14.46	45.16	13.84	37.56
40 - 49	9.63	54.79	12.29	49.85
50 - 59	9.28	64.07	11.29	61.13
60 - 69	9.37	73.44	13.57	74.70
70 - 79	10.68	84.12	13.21	87.91
80 - 89	9.81	93.93	9.12	97.03
90-100	6.07	100	2.97	100.00
Total	100		100	

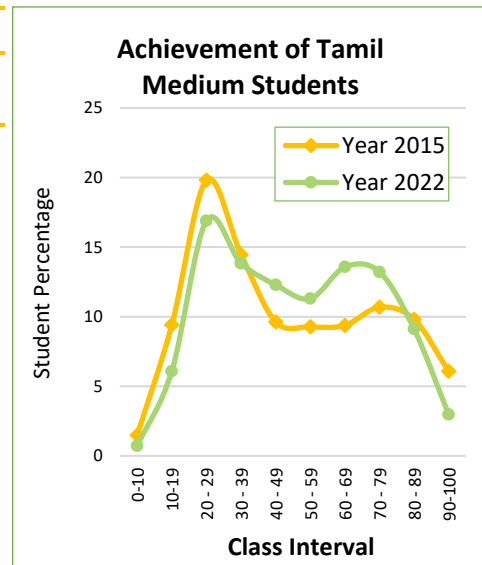


Fig 4.33: Comparison of achievement of Tamil medium students –2015 & 2022

4.14 Skill analysis comparison

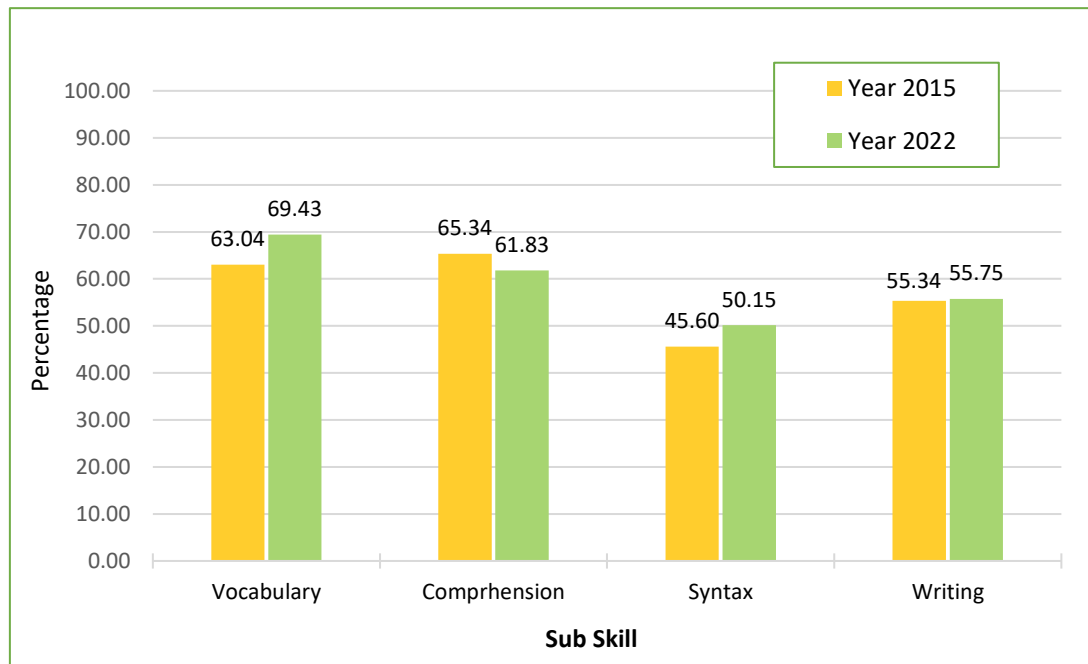


Fig. 4.34: Comparison of achievement of sub skills in English language

Fig. 4.34 shows improvement in all subskills, with the exception of comprehension.

Table 4.23 provides a comparison of student achievement in syntax questions over two years. Notably, there is a significant increase in correct answers to question number 23, which pertains to personal pronouns. This might have played a significant role in the observed decline in syntax achievement.

Conversely, student performance on question number 30, associated with the third person singular present tense, remains the weakest.

Table 4.23: Trends in achievement in syntax

Question No.	right/wrong answer	Year-2015 %	Year-2022 %
Q21	0	55.50	49.58
	1	44.50	50.42
Q22	0	38.20	30.40
	1	61.80	69.6
Q23	0	73.40	26.85
	1	26.60	73.15
Q24	0	50.40	51.13
	1	49.60	48.87
Q25	0	49.80	49.05
	1	50.20	50.95
Q26	0	45.70	57.20
	1	54.30	42.80
Q27	0	51.10	51.49
	1	48.90	48.51
Q28	0	56.10	44.98
	1	43.90	55.02
Q29	0	49.80	55.13
	1	50.20	44.87
Q30	0	74.00	82.73
	1	26.00	17.27

The comparison of students' performance in the writing task is further analysed in Table 4.24.

The percentage of grammatically correct and one-word answers has risen for each response in 2022. This has positively impacted the overall writing performance.

Table 4.24: Trends in analysis of writing skills

Question No	Writing	Year 2015	Year 2022	Change
31	Grammatically Correct	35.08%	38.45%	+
	One Word Answer	33.85%	35.79%	+
	Incorrect	20.86%	13.63%	-
	Not Attempted	10.21%	12.13%	+
32	Grammatically Correct	19.91%	19.76%	-
	One Word Answer	27.70%	24.76%	-
	Incorrect	37.55%	31.48%	-
	Not Attempted	14.84%	24.00%	+
33	Grammatically Correct	24.57%	24.91%	+
	One Word Answer	31.82%	32.24%	+
	Incorrect	28.37%	23.42%	-
	Not Attempted	15.24%	19.44%	+
34	Grammatically Correct	22.31%	20.90%	-
	One Word Answer	29.46%	30.97%	+
	Incorrect	30.49%	25.65%	-
	Not Attempted	17.75%	22.47%	+
35	Grammatically Correct	22.60%	21.83%	-
	One Word Answer	29.97%	32.03%	+
	Incorrect	29.24%	23.23%	-
	Not Attempted	18.20%	22.90%	+

The overall proficiency in writing skills remains subpar. The percentage of grammatically correct sentences for each item from questions 31-35 is still below 40%. This analysis underscores the necessity to revise the ELCs. Given that there are no ELCs related to

writing, aside from writing the student's name, it is ambiguous whether students are expected to compose complete sentences. However, the grade 4 syllabus, along with activities in the textbook and workbook, requires students to write sentences. This inconsistency might have negatively influenced students' writing skills.

4.15 Summary

The first section of this chapter delved into students' English language performance on both national and provincial scales, segmented by school type, gender, instructional medium, and location. Additionally, the test items evaluating students' performance were scrutinized to determine their proficiency in mastering the language sub-skills expected of grade 4 students.

The second section highlighted the shifts in achievement from 2015 to 2022. While there is a noticeable inconsistency in the attainment of learning outcomes in English language education, the overarching trend indicates an improvement in student performance.

Chapter 5

Conclusion and the Way Forward

5.1 Introduction

This chapter discusses the main patterns in learning outcomes identified through the National Assessment of learning outcomes of students completing grade 4. It discusses three main objectives.

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

5.2 Patterns and trends identified in the achievement of learning outcomes -2022

5.2.1 All island performance

All island performance is discussed below.

Patterns in performance - English language

The national average and median scores for English Language are 55.51 and 57.50, respectively. Although the overall performance in the English language is commendable, there exists a significant variation in achievement, as indicated by a standard deviation (SD) of 23.36.

Trends in English language performance

Comparing student performance of 2015 with 2022 reveals an upward trend. In 2022, more students achieved higher scores. While there remain two distinct groups of high and low achievers, the number of students with lower scores has diminished.

Patterns in performance - mathematics

In 2022, the national average score stands at 67.56, with a median of 72.50. There's a noticeable disparity in achievement: around 10.95% of students score below 40%, while 40% achieve scores above 80%. Notably, the majority of students have scores within the range of 81-90.

Trends in achievement

There is an improvement in students' achievement in the year 2022. As discussed in chapter 3, the percentage of low achievers has decreased, and the percentage of high achievers has increased.

5.2.2 Provincial wise performance and trends

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

Patterns in achievement - English language

Provinces can be categorized into two groups based on achievement for English language. Category 1 comprises the Southern, Western, Sabaragamuwa, and Northwestern provinces, all of which boost mean scores exceeding the national average of 55.51. By contrast, Category 2 includes the Uva, Eastern, Central, North Central, and Northern Provinces, all of which score below the national average. There are distinct variations in English language proficiency both across and within these provinces. However, it is noteworthy that every province has an average score above 40.

Trends in achievement

Student achievement has risen in the majority of provinces, leading to an enhancement in the national English language performance. The mean value has grown from 53.53 in 2015 to 55.89 in 2022. Nonetheless, this time, the Northern Province experienced a minor dip in student achievement, though it is not of significant concern.

Patterns of achievement in mathematics

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.

Trends in achievement

Every province has shown an improvement in achievement, collectively contributing to the rise in the overall island mean value. Notably, the surge in performance is more pronounced in provinces that previously had lower achievements compared to those that were already high performing. The Uva, Central, Northern, and Eastern Provinces have seen an increase ranging from 7 to 10 points, whereas the boost in other provinces ranges between 2 to 7 points.

5.2.3 Achievement according to school types

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

Patterns in achievement - English language

1AB and Type 3 schools showcase performance levels surpassing the national average, registering scores of 68.58 and 56.14, respectively. On the other hand, Type 2 and 1C schools display a comparatively lower performance. However, there is a distinct spectrum of achievement across school types, which includes both high and low achievers.

Trends in achievement

In 2022, 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. In 2022, the high scoring group in 1AB and Type 3 schools has increased, and the low scoring group has decreased.

Patterns in achievement - mathematics

The performance in mathematics in 1AB and Type 3 schools is relatively comparable. Similarly, the achievement levels of Type 2 and 1C schools are closely aligned. However, while the achievement gap seems to be closing between 1AB and Type 3 schools, it is becoming more pronounced when comparing these schools to Type 2 and 1C schools.

Trends in achievement

There is a consistent rise in achievement for both 1AB and Type 3 schools. The uptrend in these two school types is quite similar, and their collective performance has positively influenced the overall island mathematics achievement in 2022. It is also worth noting that 1C schools have seen an improvement in their achievement from 2015 to 2022. However, Type 2 schools have experienced a decline in performance, with the downward trajectory being quite evident. It is imperative that this decline be addressed in Type 2 schools; otherwise, the disparity in performance across different school types will continue to widen.

5.2.4 Achievement according to gender

Females have outperformed males in English language achievement.

Patterns in achievement in English language

Females excel by surpassing both the overall average and their male counterparts. While both genders have a notable percentage of low achievers, the proportion of high achievers is notably higher among females compared to males.

Trends in achievement

In 2022, both male and female students have shown improved achievement. The most significant increase in performance for both genders corresponds to the class interval of 70-79.

Patterns in achievement in mathematics

Female students outperform both the overall island average and their male counterparts. While 8.57% of girls score below 40, the percentage for males is higher at 13.47%.

Notably, the majority of females, at 26.07%, and a significant 22.62% of males achieve scores within the range of 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.

5.2.5 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

A discernible performance gap is evident between students of different instructional mediums. Students instructed in the Sinhala medium boost an average achievement of 57.92, surpassing the national average of 55.51. By contrast, Tamil medium students have an average achievement of 48.12, which not only falls below the national average but also lags the Sinhala medium students' average by approximately nine points.

Trends in achievement

In 2022, students from both Sinhala and Tamil mediums experienced a rise in achievement. Notably, the increment for both groups is approximately 2 points.

Patterns in achievement in mathematics

A significant disparity exists among students based on their medium of instruction. Sinhala medium students boost a mean score that surpasses the national average, whereas the mean score for Tamil medium students falls below it.

Trends in achievement

Both Sinhala and Tamil medium students have shown enhanced performance. While the performance of Sinhala medium student has risen by 4 points, the Tamil medium students have seen a more substantial increase of nearly 8 points.

5.2.6 Achievement according to location

Patterns in achievement in the English language

In terms of location, schools under the jurisdiction of Pradeshiya Saba tend to underperform when compared to those governed by Urban Councils and Municipal Councils. The schools that fall under the Municipal Councils produce the highest achievers. It is also worth noting that there is a considerable deviation from the average score across all localities. This suggests that there is a wide variation in student performance within each area.

Patterns in achievement in mathematics

The students in schools located in the urban council areas tend to perform better than those in the municipal and Pradeshiya Saba areas. Additionally, the variation in marks is narrower in schools from the urban areas compared to the others.

5.2.7 Achievement of skills and Essential Learning Competencies

The following paragraphs discuss achievement of skills and Essential Learning Competencies (ELCs).

Patterns in achievement in the English language

Students demonstrated satisfactory performance in vocabulary and reading comprehension. However, they appear to have deficiencies in syntax and writing sub-skills. A significant factor contributing to their writing challenges is their inadequate grasp of grammar. Alarming, about 26% of students even face difficulties in correctly writing their own names.

Trends in achievement

An analysis of performance in syntax showed a significant decline in students' correct answers to question number 14 which pertains to syntax. This decline obviously played a substantial role in the overall drop in comprehension of the syntax language. Conversely, students' performance on question number 30, related to the third person singular present tense, has been the poorest similar to 2015. This suggests that students

have a weak grasp of grammar. However, in 2022, there was a rise in the percentage of answers that were grammatically correct and concise, consisting of just one word. This improvement positively influenced the overall writing performance.

Patterns in achievement in mathematics

Student performance in relation to each ELC is 60% or above except in the competencies¹⁰(which pertains to mathematical operations of deduction from 100), 16(which pertains to naming objects situated both at left and right sides of one's own position) and 22 (which pertains to solving simple problems with only one mathematical operation).

Trends in achievement

Students have shown improved performance in all the three sub-skills of concepts, procedures and problem-solving, marking a positive trajectory in 2022. However, there is a concerning decline in their grasp of concepts compared to other two sub skills. This upward trend in conceptual understanding could have positively impacted the boost in achievement in problem solving.

5.3 What the findings reveal

5.3.1 Opportunities for equitable quality education

After analyzing student performance from in 2015 and 2022, there are clear and positive trends. Notably, there is a marked improvement in English and mathematics.

In 2022, certain provinces, especially those that underperformed in 2015, showed significant progress in English language and a remarkable improvement in all provinces in mathematics. Therefore, it is essential to sustain and further this positive momentum.

However, challenges remain as the same trends can be seen in 2022, across provinces, between males and females, among various linguistic and ethnic groups, across school types, instructional mediums, and even based on school locations. The differences are not

just inter-provincial but also intra-provincial. Thus, patterns of disparity from 2015 seem to persist in 2022. Consequently, equity in education seems to remain unfulfilled.

5.3.2 Impact on the curriculum reforms

The English Language curriculum presents a pronounced imbalance in the Essential Learning Competencies (ELCs), with only one ELC related to writing, which lacks clarity. In the case of mathematics, the ELCs are limited to just thirteen competencies, failing to encompass all mathematical sub-skills comprehensively. This discrepancy is a pressing concern that should be addressed in upcoming curriculum revisions.

The observations in 2015 remain applicable to 2022, underscoring the need for future curriculum modifications to incorporate these insights.

A pressing issue is the depth of understanding teachers possess regarding ELCs. It is essential that the curriculum provides a detailed explanation of ELCs.

5.3.3 Impact on pedagogy

As discussed in 5.2.7 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. Shifting from an exam-centric approach might seem distant, but without implementing a more effective assessment system, this issue will remain unresolved.

5.4 The way forward

In 2012, the World Bank emphasized the importance of leveraging the national assessment of learning outcomes more effectively for policy-making purposes. In response, the Ministry of Education (MoE), in partnership with the Provincial Education

Authorities (PEAs) and national educational institutions, crafted the Education Sector Development Framework and Programme (ESDFP) for the period 2012-2016. Building on this strategy, the ESDFP plan for 2013-2017 was subsequently developed (Ministry of Education, 2013).

Section 5.4 of this chapter delves into how the results from the national assessment of 2022 can be used to reinforce the proposals set forth by the ESDFP.

Equity in learning opportunities

Increasing equitable access to primary and secondary education, strengthening planning at the divisional level, and enhancing resources to foster student learning at all stages are among the strategies pinpointed by the Education Sector Development Framework and Programme. Yet, the results from the national assessment highlight disparities both between and within provinces, types of schools, ethnic groups, and to some degree, between genders. Various factors might contribute to these disparities, necessitating the focused attention of policy planners. Additionally, a greater allocation of public resources should be directed towards these provinces and underperforming subgroups.

In relation to this, as detailed in section 5.4, there were certain encouraging trends noted in 2022. For instance, provinces that had lagged in performance in 2015 showed significant improvement by 2022. This is largely why the Southern province boosted the highest number of top-performing students for English language. Further investigations are essential to pinpoint the effective practices employed in these provinces and to share them with other provinces.

Impact on policy

The results from the 2022 study showed that 1AB and Type 3 schools performed better than Type 2 and 1C schools, consistent with the trends observed in 2015. There is a need for additional research to understand why Type 1C schools and Type 2 schools continue to be the lowest achievers.

Additionally, the fact that females consistently outperform males warrants further investigation. Even though the performance gap has narrowed, it is essential to identify and address the underlying causes of this disparity.

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 discussed in section 5.3.2, there is a clear need to upgrade Essential Learning Competencies. To achieve this, coordination is crucial among various stakeholders, including the primary education branch, subject directors of the Ministry of Education, and the National Institute of Education. Additionally, the outcomes of national assessments should be taken into account during curriculum revisions.

Section 5.3.1 delved into the topic of providing equity. The results highlighted disparities in achievement across various dimensions, such as provincial, school type, gender, instructional medium, and location. Consequently, students are performing at varying levels. One proposed solution to address this issue, as suggested in 2015 studies, is to develop standards for each key stage and align them with the Essential Learning Competencies. The results from the 2022 study further underscore the importance of this approach.

Diversify the curricular

The observed trend underscores the presence of both high-achieving and significantly low-achieving students who are not adequately addressed by the current curriculum. This discrepancy is particularly pronounced in the performance related to the English language. The consistent application of uniform teaching methodologies for students with varied performance levels in the same classroom has been recurrently pinpointed

as a challenge, especially in subjects like English language and mathematics. Hence, echoing the suggestions in 2015, it might be beneficial to emulate countries like Singapore and the United Kingdom by introducing multiple textbooks or, at the very least, a range of activities tailored to cater to at least three distinct levels.

Such diversified curricula could be aligned with the established standards, facilitating the creation of activities and assessments tailored to the diverse learning levels.

Teacher development

The data analysis distinctly highlights the presence of high achievers across both subjects, and in the same vein, there are also groups of low achievers. It is imperative for teachers to recognize students who exhibit exceptional talents and those who require additional support. Moreover, teachers should be equipped to modify learning materials to offer accelerated programs for top-performing students and remedial initiatives for those who lag. Consequently, teacher training programs should incorporate these competencies and instruct educators in employing techniques like mixed-ability and same-ability groupings.

Additionally, the outcomes of the national assessment should be integrated into teacher training initiatives. Teacher development programs at the provincial and zonal levels should leverage the findings from the National Education Research and Evaluation Center to design School-Based Teacher Development programs. Within these programs, educators can engage in action research to refine their teaching methodologies.

Research and monitoring

Several patterns have become evident when compared with 2015 as discussed above. Additional research is required to validate these observed trends to improve skills in English language and mathematics.

References

- Aturupane, H. (2009). *The pearl of great price: Achieving equitable access to primary and secondary education and enhancing learning in Sri Lanka*. UK: CREATE.
- Cherry, M. G., & Vignoles, A. (2020). *What is the economic value of literacy and numeracy?*, IZA World of Labor, ISSN 2054-9571, Institute of Labor Economics (IZA), Bonn, <https://doi.org/10.15185/izawol.229.v2>
- Department of Education, Skill and Employment. (2019). *The Alice Springs (Mparntwe) Education Declaration*. Australia. <https://www.education.gov.au/alice-springs-mparntwe-education-declaration/resources/alice-springs-mparntwe-education-declaration>
- Education for All Assessment Sri Lanka: The Country Status Report (1999) Colombo: Ministry of Education and Higher Education. <https://unesdoc.unesco.org/ark:/48223/pf0000219519>
- Kamens, D. H. & McNeely, C. L. (2010). Globalization and the growth of international educational testing and national assessment. *Comparative Education Review*, 54(1), 5-25.
- Kellaghan, T., & Greaney, V. (2008). *Assessing national achievement levels in education*. Washington: World Bank.
- Kellaghan, T., Greaney, V. & Murray, S. (2009). *Using the results of a national assessment of educational assessment*. Washington: World Bank.
- Kellaghan, T., Bethell, G., & Ross, J. (2011). National and international assessments of student achievement. *Guidance Note: A DFID Practice Paper*, 1-32. <https://assets.publishing.service.gov.uk/media/57a08ab440f0b6497400071a/04-Learning-Outcomes-How-To-Note.pdf>
- Ministry of Education (2011). *The national strategic plan for the general education sector. Education Sector Development Framework and Programme (ESDFP) 2012 -2016*. Colombo, Sri Lanka.
- Ministry of Education (2013). *The national strategic plan for the general education sector. Education Sector Development Framework and Programme (ESDFP) 2013-2017*. Colombo, Sri Lanka.

- Ministry of Education (2018). *General Education Modernization (GEM) Project. Operational manual*. Ministry of Education, Sri Lanka.
- Ministry of Education (2020). *Sri Lanka: General education sector development plan (2020 - 2025)*. Battaramulla: Ministry of Education.
- National Education Research and Evaluation Centre (NEREC) (2016). *National Report: National Assessment of Achievement of Students Completing Grade 4 in Year 2015 Sri Lanka*. University of Colombo, Sri Lanka.
- National Institute of Education (2018a). *Common Teacher Instructional Manual: Grade 4*. Colombo: Educational Publications Department.
- National Institute of Education (2018b). *Mathematics Pupils Book: Grade 4*. Colombo: Educational Publications Department.
- National Institute of Education (2018c). *English Pupils Book: Grade 4*. Colombo: Educational Publications Department.
- Postlethwaite, T., & Kelleghan, T. (2008). *National assessment of achievement*. Paris: International Institute for Educational Planning, Brussels: International Academy of Education.
- Ross, K. (eds.) (2005). *Sample design for educational survey research*. Paris: IIEP, UNESCO.
- Sumathipala, K. H. M. (1968). *History of education in Sri Lanka*. Dehiwala: Thisara Publishers.
- The Constitution of the Republic of Sri Lanka (1978). Colombo: Department of Government Printing.
- UNESCO, (2015). Equitable and inclusive quality education and lifelong learning for all by 2030. <http://en.unesco.org/world-education-forum-2015>
- UNESCO, (2016). Incheon Declaration and Framework for Action for the implementation of Sustainable Development Goal 4. https://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf accessed on 25th August 2023
- UNESCO, (2000). *The Dakar Framework for Action: Education for All – Meeting our Collective Commitment*. Paris: UNESCO.

Annex 1

Representativeness of Sample by School Type, School Location and Medium of Instruction

Sample by school type

School Type	Number of Schools	Percentage (%)	Total Number of Students
1AB	65	14.44	2127
1C	99	22.00	2866
Type 2	100	22.22	2361
Type 3	186	41.34	5334
Total	450	100.00	12688

Sample by location

School Type	Number of Schools	Percentage (%)	Total Number of Students
Municipal Council	51	11.33	1575
Pradeshiya Saba	371	82.45	10257
Urban Council	28	6.22	856
Total	450	100.00	12688

Sample by medium of instruction

School Type	Total Number of Students
Sinhala	9091
Tamil	3597
Total	12688