AN EVALUATION REPORT OF THE 2019 ZIMBABWE EARLY LEARNING ASSESSMENT (ZELA) CYCLE

By

MINISTRY OF PRIMARY AND SECONDARY EDUCATION (MOPSE) and

The Zimbabwe School Examinations Council (ZIMSEC)

ZIMSEC

For Performance Measurement

Funded by

THE UNITED NATIONS CHILDREN'S FUND – (UNICEF ZIMBABWE)

ABSTRACT

The Zimbabwe Education Development Fund (EDF) program is being administered by the United Nations Children's Fund (UNICEF). The programme's goal is to improve equitable access to good quality primary and secondary education for all children in Zimbabwe, by providing the education sector with technical and financial support. The programme benefits over 3 million primary school learners and over nine hundred thousand secondary school learners and is also supporting the recovery of the education sector through enhancing service delivery (Ukaid, 2020). The EDF program provides essential material resources and support for the education systems and structures. It also gives special attention to the most vulnerable children.

The Zimbabwe Early Learning Assessment (ZELA) project is aimed at improving Zimbabwe's student learning. This is done by conducting an early-grades learning assessment to determine and take stoke of the extent to which different variables contribute to the achievement of desired educational goals in producing positive learning outcomes for children, parents/guardians schools, and the education sector in general. In 2012, the tools developed for ZELA provided a means of monitoring and evaluating the EDF program across the programme's life cycle. Currently ZELA has been transformed into a national assessment under the Ministry of Primary and Secondary Education, with the Zimbabwe School Examinations Council (ZIMSEC) giving technical support to the project, while UNICEF provides the financial assistance. The key measure is the extent of improvement in learner learning outcomes. The extent of this improvement is measured in scores on tests of language and Mathematics in the early years of schooling.

The baseline study developed a measure of learner performance in language and Mathematics. Information was also collected during ZELA via learner and school head questionnaires in order to develop an understanding of learners' education backgrounds and learning outcomes. Data gathered from the questionnaires included learner background characteristics, the availability of teaching resources, and the level of funding and facilities.

In the first ZELA implementation phase (2012-2015), UNICEF contracted the Australian Council for Educational Research (ACER) to undertake a baseline study in 2011, in collaboration with ZIMSEC. After the baseline study was completed in 2012, ACER was contracted to undertake two monitoring cycles (2013 and 2014) and an impact evaluation (2015), in collaboration with ZIMSEC. Upon the expiry of ACER's contract in December 2015, a decision was made to continue the ZELA programme with the Ministry of Primary and Secondary Education (MoPSE) playing a coordinating role and ZIMSEC taking over the technical responsibilities that use to be done by ACER, as well as apprenticing and orienting the MoPSE team on the technical aspects of the assessment for programme sustainability before weaning out the Consultant's technical support that used to be done by ACER in the ZELA project.

In order to effectively carry out the ZELA programme after the expiry of ACER's contract, a local consultant (Mr. Munyaradzi Damson) was contracted to provide technical support to the MoPSE and ZIMSEC to ensure quality assurance of aspects of the 2016, 2017, 2018 and 2019 ZELA activities and support multivariate analysis. With the support of Mr. Damson, this report was prepared by Officers from MoPSE: Mr. Chirume, Mrs. Chegovo, Mr. Chidota, Mr. Moyo, Miss Mutsau and ZIMSEC Officers: Mr. Kupfumira, Mrs. Charumbira and Mr. Manokore. The processes which led to this report involved among other activities: data capturing and cleaning, coding, formatting, creation of plausible values and creation of weights Topics that included data cleaning and formatting, Item Response Theory (IRT), creation of plausible values, creation of weights, sampling for ZELA 2019, data analysis and report writing were key. These tasks included calculating the mean performance of population subgroups and determining if differences between subgroups or assessment years are statistically significant; developing graphs and tables; creating proficiency levels and calculating the percentage of learners within each level and analysing learner performance against learner and school characteristics and the calculation of the 2018-2019 shift based on 2018-2019 link items.

ACRONYMS AND ABBREVIATIONS

ACER	Australian Council for Educational Research
BEGE	Basic Education and Gender Equality
CBC	Competence Based Curriculum
ECD	Early Childhood Development
EDF	Education Development Fund
ETF	Education Transition Fund
IRT	Item response theory
MDG	Millennium Development Goal
MoPSE	Ministry of Primary and Secondary Education
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for International Student Assessment
PSU	Primary Sampling Units
SEACMEQ	Southern Eastern Africa Consortium for Monitoring Educational Quality
SDG	Sustainable Development Goal
SES	Socio-Economic Status
SPSS	Statistical Product and Service Solutions
SSU	Secondary Sampling Units
TMO	Test Monitoring Officers
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations Children's Fund
ZELA	Zimbabwe Early Learning Assessment
ZIMSEC	Zimbabwe School Examinations Council
ZIMSTAT	Zimbabwe National Statistics Agency

EXECUTIVE SUMMARY

Initially, when the Zimbabwe Early Learning Assessment (ZELA) program started in 2012, it was a four-year project commissioned by the United Nations Children's Fund (UNICEF) to support and enhance national capacity to carry-out national assessment at early grades in Zimbabwe.

The programme focus has since shifted to be an annual assessment meant to take stoke of the extent to which the desired teaching and learning outcomes are being achieved by learners upon exiting the Infant School Module at Grade 2 level. The programme is also aimed at determining whether the EDF and GPE support funding in the procurement of the Textbooks for the Competency Based Curriculum is adding value to learner performance and the general achievement of learning outcomes at the infant school level.

Since 2010 to date, the EDF and GPE intervention included the provision of textbooks (English, Mathematics, Shona, Ndebele and Environmental Science) and the establishment of supporting resources related to the use of these books in schools. When MoPSE and ZIMSEC took over the management of the ZELA project in 2016, they had to ride on the systems and structures set by ACER. In view of this, a local consultant was engaged to provide technical support. With the introduction of the Competence Based Curriculum in 2017, new learning areas have been embraced where relevant textbooks are also provided for the same cause.

The Competence Based Curriculum focuses on equipping learners with the 21st century skills. The learner is expected to exit the education system with profile skills for life sustenance at whatever point of exit. It is expected to produce individuals who can compete with the best in the world, who are knowledgeable, critical thinkers and problem solvers, creative, innovative and imaginative, have leadership skills, have digital literacy, entrepreneurial skills, citizenship, who can communicate and collaborate effectively. The learner must be imbued with values, ethics, and a sense of

national identity enabling them to make the right choices for themselves, their families and the nation with a view to enduring and overcoming life's inevitable challenges.

In the context of the above, 2019 ZELA cycle focused on evaluating the impact of the recently EDF and GPF supplied teaching and learning resources under the Competence Based Curriculum and how they relate to learner performance, considering the other attributory variables.

This report relates to the ZELA 2019 monitoring cycle built on the baseline data collected in 2012 for the evaluation of the EDF programme. The major research questions for this monitoring cycle are:

1. How do the Zimbabwe learners perform in the languages (literacy) and Mathematics (numeracy) tests under the Competence Based Curriculum? Is there a noticeable pattern of change over time since 2017?
2. What are the relationships of the following groups of variables with performance on tests of languages and Mathematics at the end of the Infant School Module (Grade two) in Zimbabwe?
   a) Learner background characteristics
   b) Teachers and teaching resources
   c) School funding and facilities
3. To what extent can improvement in test performance be attributed to the Education Development Fund and partners?

Sample and Data Collection

The target population was learners in Grade 2 in Zimbabwe. A representative sample was drawn which yielded 14930 learners in 435 schools across the 10 provinces of Zimbabwe. Seven sets of ZELA tests were set and administered to measure two critical learner exit skills at infant level that is literacy (English and one of the local languages) and numeracy (Mathematics). Home and school background information was collected through a Learner Questionnaire, which contained 22 questions and a School Head Questionnaire, which contained 43 questions respectively.

ZELA Tests

A single scale was developed to align the abilities of learners and difficulties of the items was constructed for each ZELA test after test-by-test analyses. For each subject scale, the distribution of learner abilities in ZELA 2019 was transformed to a scale with a mean of 300 and a standard deviation of 25. Link items from the 2018 and 2019 tests were used in the analysis to ensure that 2018-2019 test results were comparable.

Key findings

1. How do the Zimbabwe learners perform in the language and Mathematics tests? Is there a noticeable pattern of change over time?

The study explored how Zimbabwe learners performed in assessments of languages and Mathematics over time. The overall mean English performance decreased by 5.3 score point from a mean of 315.47 in 2018 to 310.17 in 2019, whilst Mathematics performance also decreased by 6.05 score points from 316.67 to 310.62 over the same period. The change in both English and Mathematics was statistically significant. Over time, both English and Mathematics exhibit a significant improvement between 2012 and 2019.

The 2012 baseline study found that for English, 49 per cent of Grade 2 learners were achieving at or above the grade level benchmark and that for Mathematics, 46 per cent of learners were achieving at or above the grade appropriate level. In 2015, 53 per cent of Grade 3 learners were performing at or above the grade level benchmark in English, and that for Mathematics, 66 per cent of learners were achieving at or above the grade appropriate level. In 2016, 71 per cent of Grade 3 learners were performing at or above the grade level benchmark in English, and that for Mathematics, 65 per cent of learners were achieving at or above the grade appropriate level. In 2017, 68 per cent of Grade 3 learners were performing at or above the grade level benchmark in English, and that for Mathematics, 55 per cent of learners were achieving at or above the grade appropriate level. In 2018, 76.4% and 72.2% of the learners performed at or above grade level in English and Mathematics respectively. In 2019, 61.1% of the learners

performed above grade level in English and 60% of the learners performed above grade level in Mathematics.

2. Relationships of learner, teaching and school characteristics with performance on tests of language and Mathematics at the end of grade two in Zimbabwe.

The research explored the relationships of learner, teaching and school variables with performance on tests of language and Mathematics at the end of Grade 2 in Zimbabwe. Analysis by gender showed that girls outperformed boys in both English and Mathematics in 2019. As has been the case for the previous ZELA cycles, the 2019 results indicated that learners from urban schools outperformed learners from rural schools. In 2019, the difference in mean performance between learners from urban and rural schools was 27.38 score points in English and 17.51 score points in Mathematics. There was a decrease in performance in both English and Mathematics in rural and urban schools between 2018 and 2019.

Analysis by age group showed significant increases in both English and Mathematics performance between 2012 and 2018 for all age groups. However, there was a decrease in performance across all age groups. In terms of age, the 2019 results indicate that learners aged 8 performed the best in English and in Mathematics, learners aged 12 had the highest performance. Learners aged 13 years performed the worst in English while those aged 6 were the worst in Mathematics. Further analysis revealed the existence of a strong relationship between learner's performance and their socio-economic status (SES). The 2019 results have shown a significant decrease in the mean performance of learners in all classes of socio economic status between 2018 and 2019 in English and Mathematics.

Analysis by province revealed that Bulawayo and Harare learners outperformed learners from all other provinces in both English and Mathematics in 2019. The results also show that learners who speak English at home outperformed those who speak local languages at home in both English and Mathematics.

There are notable performance variations associated to the number of hours that learners spend working for their families. The 2019 results indicate that learners who work for less hours at home outperformed those who work for more hours at home in both English and Mathematics. Learners who had three or more meals per day outperformed those with two meals who in-turn outperformed those who take one meal per day. The difference in performance between learners with three or more meals and those with two meals is statistically significant while the differences between the performance of those with two meals and one meal were not statistically significant in both English and Mathematics.

Learners who had four or more home possessions outperformed those with two or three, who in-turn outperformed those with one or less home possessions. The differences in learner performance among all the groups were statistically significant in both English and Mathematics. The 2019 results also show that 80.5% of learners with four or more home possessions performed at or above grade level in English, while 58.1% and 53.2 % of learners with two or three and those with one or less respectively performed at or above grade level. In Mathematics 71.9%, 58.2% and 50.7% of learners with four or more, two or three and one or less home possessions respectively performed at or above grade level.

In 2019, learners who had four or more home educational resources outperformed those with two or three and those with one or less in both English and Mathematics. However, there was no significant difference between learners with two or three and those with one or less home educational resources in both English and Mathematics. In addition, the 2019 English and Mathematics results showed that learners with a parent or guardian who completed a tertiary course outperformed those with a parent who completed secondary education who in-turn outperformed learners with a parent or guardian who completed primary education. Furthermore, learners with a parent or guardian who completed primary education outperformed those with a parent who did not go to school.

Prior to 2017, school budget was found to predict performance significantly. However, in 2017 and 2018, results from multiple regression show that school budget did not

predict learners' performance significantly. In a twist of events, the 2019 results show that budget predicted English and Mathematics performance significantly. In 2019, results show that learners from schools with a high budget outperformed their counterparts from schools with low budgets. Learners who were never absent in the term the assessment was administered, outperformed those who were absent for one or two days who in-turn outperformed learners who were absent for three or more days in both English and Mathematics. In English, the performance increases between the groups were statistically significant between learners who were never absent and those who were absent for one or two days. The difference between the performances of learners in the other two categories was not statistically significant. There were significant differences across all categories in Mathematics. In both English and Mathematics, all groups showed a significant increase in performances between 2012 and 2019.

3. To what extent can improvement in test performance be attributed to location, socio-economic factors, teaching and learning variables and the Global Partnership in Education (GPE) funds?

The results from the multiple regression analysis revealed that possible changes in location (urban versus rural) only accounted for 16.2% of the amount of variation in English performance. Addition of socio-economic variables (number of home possessions, number of meals at home per day, highest parental education and home educational resources) to the model increased the variation explained to 21.2%. Two background variables (gender and the number of hours working for the family per day) were then added to the model and the amount of variation in English explained by all these variables increased to 22.2%. Finally, teaching and learning variables (number of satellite schools, the budget per learner, the number of days a learner was absent and the number of meals at school) were added to the model and the total amount of variation in English performance explained was 23.5%. The fact that all these variables explained only 23.5% of the increase in English performance in 2019, imply that 76.5% of the increase is explained by other factors. A plausible factor is the change in curriculum and the support from the Global Partnership in Education (GPE).

In Mathematics, the location variables, socio-economic variables, background variables and teaching and learning variable cumulatively explain 16.3% of the amount of variation in Mathematics performance. This also suggests that 83.7% of the Mathematics performance could be attributed to other factors such as the change in curriculum and the support from the Global Partnership in Education (GPE).

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CHAPTER 1

EDUCATION PARNTER FUNDING AND CONTEXT OF THE ZELA PROGRAM

1.1 Introduction

The term assessment, in its widest meaning, denotes a process of collecting and interpreting information about learning and achievement of learners (Saklofske and Janzen, 1990). This assessment which is an integral part of teaching and learning provides information to students and their parents about the progress in acquiring knowledge, skills and attitudes. It also provides support to teachers to modify their instruction and the learning activities of their students. Most importantly, assessments provide information to various stakeholders that make decisions about educational policy related to learners and this is the primary focus of Zimbabwe Early Learning Assessment (ZELA).

1.2 Background to the study

After gaining independence in 1980, Zimbabwe expanded access to primary school education. This resulted in the number of primary school enrolments more than doubling in seven years. By 1982, primary school enrolment rates were reported at almost 100% (Nyanguru and Peil, 1991). However, the deterioration of the country's economy beginning in 2000 had serious negative impacts on the delivery of education services (Government of Zimbabwe, 2009). A high unemployment rate and hyperinflation peaked in Zimbabwe in 2008. This created an unstable environment that led to the loss of substantial investments in education and an exodus of skilled workers, including teachers (Kwenda and Ntuli, 2014). UNICEF (2009) reported that between 2008 and 2009, school attendance fell from 80% to 20%. It was also estimated that only about 40% of the country's teachers were attending lessons (UNICEF, 2008).

The sector slowly began to recover in 2009, with education taken as a priority in the new government's Short Term Emergency Recovery Programme (Government of

Zimbabwe, 2009). By 2012, international education data indicated increases in enrolments and improvements in the education system. The UNESCO Institute for Statistics (UIS) reported a total net enrolment rate of 93.9% in primary education (UNESCO, 2015b). While enrolment and teacher numbers have recovered from 2008-2009, there continued to be significant achievement lags in the education system (UNICEF, 2013). Given the high variation in learner achievement in rural and urban areas and funding for programmes that support children with disabilities, there was therefore need to focus on resolving systemic equity issues (UNICEF, 2014).

After all these considerations and in line with the Basic Education and Gender Equality (BEGE)'s key focus within MoPSEs, coupled with the provisions of the Medium-Term Strategic Plan, educational resources were given to primary schools in Zimbabwe. The focus was in line with UNICEFs contribution to the Sustainable Development Goals (SDGs) number four. After educational resources were given to schools, the ZELA program was instituted as a four-year program to monitor and evaluate the impact of educational resources which were given to schools across the country through the then Education Development Fund (EDF). In 2012, the Australian Council for Educational Research (ACER) was engaged and a ZELA baseline study was carried out to determine change in learner performance from 2012-2015; to explore the relationships of learner, teacher and school-level variables on learner learning outcomes; and to explore the extent to which tests performance can be attributed to the EDF educational resources. Also one of the terms of reference of the ZELA programme was to support and enhance national capacity in student assessment through capacity building in areas to do with test development, data analysis and report writing.

After conducting four cycles of ZELA, the contract of ACER expired and a decision was made to continue with ZELA with the Ministry of Primary and Secondary Education (MoPSE) coordinating the activities in collaboration with the Zimbabwe School Examinations Council (ZIMSEC). To that end, a local consultant was also engaged to offer technical support to MoPSE and ZIMSEC. For 2019, the same model and structures which were set up by ACER were adopted in totality to allow for

comparability of 2019 results to previous years. In light with the initial vision and focus of the ZELA, the 2018 and 2019 ZELA cycle maintained the sample-based National Assessment format, though testing grade 2 learners as opposed to the previous years where tests were administered to grade 3 learners in the first term of each year, testing from the Infant School Module content. ZELA 2016 is conceptualised as the first cycle of the Zimbabwe Early Learning National Assessment.

1.2.1 Scope of the study

The 2019 Zimbabwe Early Learning National Assessment sought to answer the following questions:

a) How do the Zimbabwe learners perform in the language and Mathematics tests of the Competence Based Curriculum? Closely related to this is the question: Is there a noticeable pattern of change over time?
b) What are the relationships of the following groups of variables with performance on tests of language and Mathematics at the end of Grade 2 in Zimbabwe?
    - Learner background characteristics
    - Teacher and teaching resources
    - School funding and facilities
c) To what extent can improvement in test performance be attributed to the Education Funding under the Education Development Fund and Global Partnership Fund?

Other sub-questions which were pursued as a follow up to the above-mentioned question were as follows:

i. How do early-grade Zimbabwe learners perform in tests of language and Mathematics, particularly in the Competence Based Curriculum?
ii. Is it possible to identify learner-level and school-level variables that influence test performance?

Following the same structure that was set by ACER, MoPSE and ZIMSEC did the following in order to answer these questions:

This report rode on the already reviewed literature on international experience in national assessment with particular emphasis on the African context contained in the 2012 baseline study. This was done in order to ensure that the project worked with the latest and best information for implementing the project.

A representative sample of Grade 2 learners from schools across the 10 provinces of Zimbabwe was drawn in 2019 based on the model developed by ACER. The sample was structured as; the first choice schools were the (s), then the first replacement schools were (r1) and in rare cases second choice schools for replacement (r2) were used. This sampling strategy allowed the study to generalise to the population of all Grade 2 learners in Zimbabwe.

Tests of Mathematics, English and all local languages examined at Grade 7 level, were developed and administered at Grade 2. Security procedures surrounding test development, printing, administration and marking were developed and implemented. Learner and School Head Questionnaires were developed by MoPSE and administered. This was designed to collect information about learner background, school and teachers. A manual for school administrators and for Grade 2 teachers were developed as advance information to ensure the tests were administered consistently and appropriately. Test Administrators and Test Monitoring Officers (TMO) were trained to ensure that they fully understood test protocols and the reasons for them. TMOs were important for ensuring that the quality of the data was protected at key stages during their collection and processing.

Training manuals were developed and published for test administrators and TMOs. These manuals provided guidelines for quality assurance practices as well as being the basis for their feedback to ZIMSEC on the conduct of the tests. Visits to schools by ZIMSEC and MoPSE officials were conducted as part of the quality assurance for the study. Procedures were designed for data capture that is, moving the information from the completed test forms and questionnaires to an electronic format. Data entry , data cleaning, data analysis and report writing was done by ZIMSEC with support

from the consultant while MoPSE monitored these processes under the ZIMSEC mentorship.

Students were sampled from registered and satellite schools. Satellite schools are not registered schools but are attached to a registered school referred to as a 'mother' school. Questionnaires were distributed to learners and to heads of schools (or their representatives) during the ZELA administration. These questionnaires are included in Appendices 2 and 3 of this report. Learner questionnaires were designed to collect contextual information relating to learner-level variables, while head of school questionnaires were designed to gather information on school-level variables. Questionnaires were printed in English, but teachers were allowed to assist students in their local language and in filling out the questionnaire, if necessary.

1.2.2 The implementation of the study over time

The progression of cohorts of learners being surveyed is summarised in Table 1.1 The number in parenthesis refers to the order of the test cycles over the duration of the evaluation. This report addresses the 2019 cycle. 2019 is the fourth cycle of ZELA conceptualised as sample-based national assessment.

Table 1.1: Location of the 2019 cycle within the wider evaluation

2012	2013	2014	2015	2016	2017	2018	2019
1st cycle	2nd cycle	3rd cycle	4th cycle	1st cycle	2nd cycle	3rd cycle	4th cycle
Sample-based Baseline	Sample-based Monitoring	Sample-based Monitoring	Sample-based Evaluation	Sample-based National Assessment	Sample-based National Assessment	Sample-based National Assessment	Sample-based National Assessment

1.3 Literature Review

A significant number of researchers have offered a wide range of perspectives and advice pertaining to the issues of early learning assessment and how to integrate these elements into their practices. Research by (UNESCO, 2015a) indicates that there is improved preparation of children for primary education especially in the development of basic skills such as reading, writing, numeracy and language learning. The main purpose of linking early childhood development and primary education is to ensure that there is a smooth transition for children from one level of learning to another. Bukaliya and Mubika (2012) indicated that toddlers with ECD background were more competent than those who went straight into Grade 1 without having gone through Early Childhood Development (ECD). Their results indicate that children's positive attitudes toward school are reinforced; they feel competent and their teachers identify them as competent and treat them as such. Zimbabwe's education system has registered significant progress in terms of quality and participation between 2012 and 2015, with pass rates at primary and secondary level all showing a steady upward trend over the past four years (UNICEF, 2015).

According to UNESCO (2007), the academic performance of boys and girls globally is moving towards convergence. In the sub-Saharan region challenges regarding gender differences in learning outcomes remain. These vary by country, grade and subject. Out of the southern and eastern African countries that participated in Southern Africa Consortium for Monitoring Educational Quality II (SACMEQ II), Seychelles faces the greatest challenges with gender differences favouring girls in all school subjects. In language subjects, Botswana, Burkina Faso, Madagascar, Mali, Seychelles and South Africa are among those countries with the largest gender differences in learning outcomes, often favouring girls, in Mathematics.

Burkina Faso, Chad, Kenya, Mali, Niger, Senegal, Seychelles and the United Republic of Tanzania are among those with the largest gender differences, often favouring boys. Equity remains a big challenge in Africa (Sharpe, 2007). Large disparities in access to education exist between children from different socio-economic backgrounds, between children living in different locations and between boys and girls. Children

born into poor households, especially in rural areas, are exceedingly unlikely to reach or progress in secondary school, no matter their aptitude for learning. In Mozambique, for instance, girls are much less likely to attend school than boys. In Angola the secondary enrolment rate in urban areas is more than six times higher than in rural areas and fewer than one child in ten aged 12 to 18 years from the poorest households are in secondary school. According to Donald and Sondergaard (2008), most girls throughout Uganda continue to face more obstacles in completing a quality basic education than their male counterparts.

Some learners who live in rural areas attend schools where there are teacher shortages and inadequate teaching resources and that can be a barrier to learning. In the United Republic of Tanzania, where average performance in Mathematics is better than elsewhere in southern and eastern Africa, only 25% of poor children living in rural areas are in school and learning, compared with 63% of rich children living in urban areas (UNESCO, 2015a). In Angola, Malawi and Zimbabwe prolonged drought and reduced rainfall caused a major food crisis, putting millions of people at risk. As a result, the education system is burdened by large classes, teacher shortages, and inadequate school supplies and damaged infrastructure. In addition, the food crisis affecting the entire Sahel-region caused some 50,000 children in the most exposed areas in Niger to temporarily quit school.

1.4 Methodological Framework

The overall framework for the ZELA study is an adaptation of the input-process-output (3P) model of learning and teaching developed by Biggs (1993). This model portrays learning as an interactive system that examines three points in time where learning takes place. These points include:

i. The point before learning takes place (presage)
ii. The process of learning
iii. The outcome of learning

The model for data in the learner learning environment is represented in Figure 1.1. The framework portrays learning as an interactive system, identifying three points of

time at which learning-related factors are placed: presage, before learning takes place; process, during learning; and product, the outcome of learning (Biggs, 1993).

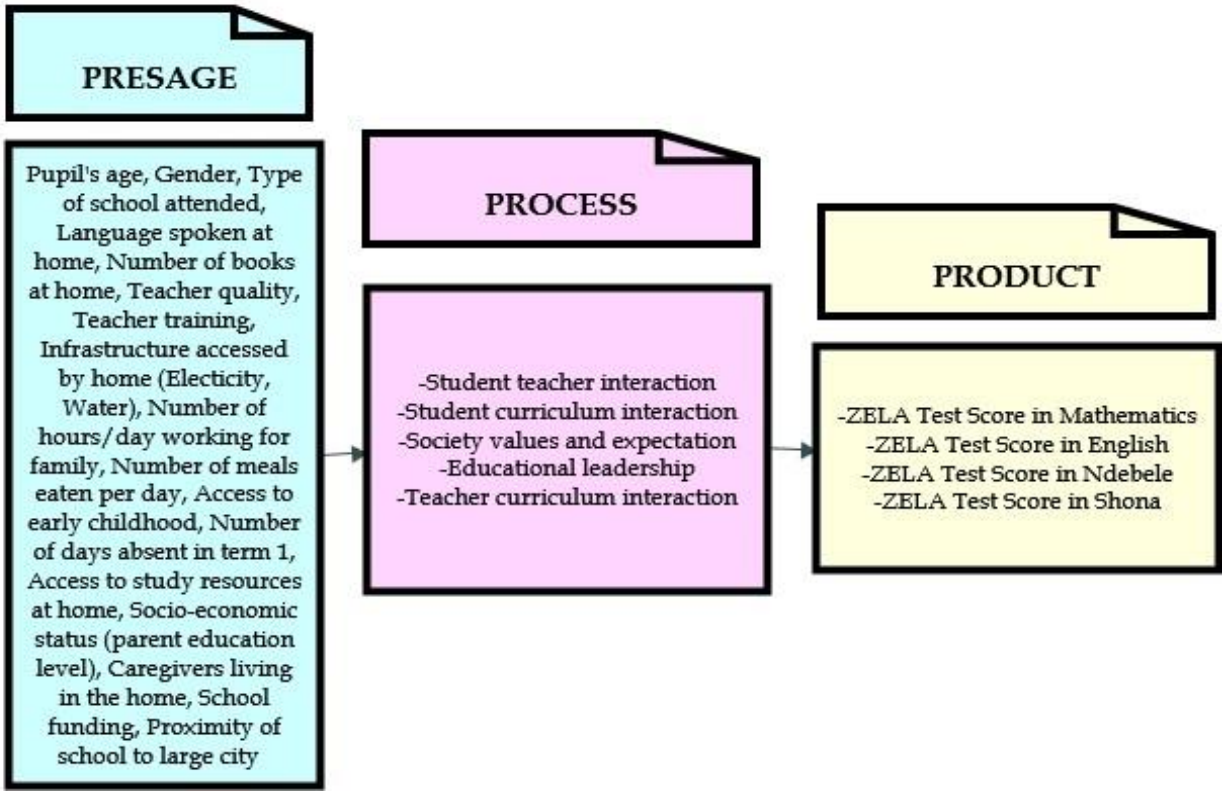


Figure 1.1: The 3P Model of Teaching and Learning (Biggs, 1985)

Biggs' model draws attention to two sets of presage factors: meta-contextual factors and those factors specific to the learner. In the adaptation of this model to datasets, the presage components are data about learners, teachers, and school organisation and resourcing. The Biggs model provides a structure to analyse influences upon learning opportunities where the purpose is to promote collaborative working; and as such, critical analysis of possibilities for better-targeted management of educational process (Biggs, 1993). This model is capable of generating predictions and associations that are relevant to this study and potential policy implications. Reading from top to bottom, from input through process to output, the diagram portrays the storyline for an individual learner or learner cohort.

Figure 1.1 provides an organisational framework to locate the data used in the ZELA research. The Background section of this report outlined the context of education in

Zimbabwe. ZELA has gathered data about funding, facilities and resources, teacher quality and teacher training, and learner backgrounds. Table 1.2 lists the data that were gathered as input for the input-process-output model described in Figure 1.1

Table 1.2: Datasets - input for ZELA

Learner level (background characteristics)	**Teacher level (teacher quality & training)**	**School level (Funding & facilities)**
Type of school attended	No. of teachers	Province
Age	Qualification of teachers	School type
Gender	Professional development (teachers)	District
Language spoken at home	Teacher absentee rate	Language of instruction in early years
No. of books in the home	Professional development attendance	Years of operation
Infrastructure accessed at home	Qualification of Head teacher	Proximity to a large city
No. of hours working for family		Student population - enrolled
No. of meals eaten per day		Grade 2 learner population-enrolled
Access to ECD class		Average class size
No. of days absent in term 1		Minutes per lesson
Access to resources to study at home		Sessions per day
Socio-economic status (parents)		No. of days of closure of school operations
Religion		School infrastructure

Learner level (background characteristics)	Teacher level (teacher quality & training)	School level (Funding & facilities)
Caregivers living in the home		WASH Facilities Orphans and vulnerable children (%) Funding Learners with chairs (%) Textbook Supply Textbook use Students in fee arrears (%) No. of students with disability School days lost (caring responsibility) Head Teacher professional development

1.5 Sample and Data Collection

A representative sample based on the first choice schools from the 2019 sample was used. The sample yielded 14930 learners in 435 primary schools across the 10 provinces of Zimbabwe. The target population was learners in term 3 of Grade 2. Students were sampled from registered and satellite schools. While Zimbabwe's land reform program has been implemented in phases since independence in 1980, there was a large increase in the number of satellite schools after the fast track phase of the land reform program in 2000 for children whose parents migrated to those areas (Mutema, 2014). Satellite schools are constructed through community and Government partnership (Munjanganja and Machawira, 2014). Satellite schools were established rapidly in order to provide access to children whose families had moved to redistributed farms. Registered schools are formally recognised by government as meeting nationally approved standards. These standards were established by Zimbabwe's Ministry of Education and Culture in 1991 and remain as the key reference for school registration in 2019. A school can only become registered when it has established the following: "one administration block and toilets; a minimum of

seven classrooms; a minimum of five teachers' houses; adequate toilet facilities as prescribed by official regulations; and a source of clean, portable water" (Ministry of Education and Culture, 1991). Satellite schools are formally attached to a registered school commonly referred to as a mother school. Satellite schools do not meet infrastructure and maintenance standards as defined by MoPSE (Munjanganja and Machawira, 2014).

Data collection included both cognitive test questions and questionnaire instruments for School Heads and Pupils. The questionnaires gathered school related and home background related data from Heads and Pupils respectively, for comparing with the different variables on how they influence learner performance. ZELA tests were administered in English, Mathematics and either one of the local languages over two days. A single scale aligning the abilities of learners with the difficulties of the items was constructed for each ZELA test after thorough test-by-test analyses. For each scale, the distribution abilities in ZELA 2012 was transformed to a scale with a mean of 300 and a standard deviation of 25. Link items from the 2016, 2017 and 2018 tests were used in the 2019 tests to ensure the 2012-2019 test results were comparable, bearing in mind the invert of the introduction of the Competency Based Curriculum.

ZELA used Item Response Theory (IRT) scaling methodology for creating proficiency scales for all subjects along which student performance was measured. The scales were divided into proficiency levels to report what students typically know and can do to each level. More technical details about the scaling process are included in the ZELA 2016 Technical report. ZELA reports general results for the population of Grade 2 learners, rather than results of individuals. The main statistics in this report include average performance of groups of Grade 2 learners and percentages of learners within grade levels (proficiency levels). Standard errors are used and reported to evaluate if differences between those averages or percentages are statistically significant. More information on interpreting statistical results included in this report is presented in the next section.

1.5.1 Interpreting reported statistics

Statistical significance, standard errors and effect sizes

When reporting and interpreting results the notion of statistical significance is essential. All reported statistics are estimated for the full population of Grade 2 learners in Zimbabwe. Not all, but only a selection of Grade 2 learners was tested to provide these estimates. Testing all learners would be too expensive and inefficient for the purpose of the survey. Basing population estimates on a sample of learners causes uncertainty in the estimates. Large samples that represent the population will result in smaller uncertainties than small samples.

In a similar way, it is not possible to assess learners' achievement with test items that cover all possible skills within a domain. Only a representative set of items is used to test learners' performance in English and Mathematics. If a different set of items had been chosen, learners' performance would be slightly different, again leading to slightly different population estimates.

These two sources of uncertainty, the sampling of learners and selection of items in a test, are expressed as standard errors. These standard errors are taken into account when mean performance or percentages at or above grade levels are compared across time or between groups of learners. Differences in mean scores or percentage could be caused by real differences in the population or by chance due to the two sources of uncertainties. Standard errors tell us the likelihood that the differences are just caused by chance due to sampling of students and selection of test items. The usual acceptable level of uncertainty in reporting significant results that are actually just caused by chance is five per cent. If the likelihood is more than five per cent, it is concluded that the two means or percentages do not differ from each other. If the likelihood is less than five percent, it is concluded that the two means or percentages are (significantly) different from each other. Throughout the report, standard errors are included in the tables and presented between brackets.

In other words, even two values that look different from each other are regarded as not different if we are five percent or more uncertain that this difference was caused by real differences in the population. Apparent differences are only interpreted as differences if they are statistically significant from each other; that is, if we are less than five per cent certain that the difference was caused by chance. Consider, for example, a hypothetical case where the average performance of girls is 324 and the average performance of boys is 322. While the mathematical difference is equal to four score points, it is in a statistical sense equal to zero (no difference) if we are more than five per cent certain that this difference was caused by chance. In this case, the conclusion would be that there is no difference in performance between girls and boys. Only if we are less than five per cent of this, it is concluded that girls perform better than boys. In summary;

a statistically significant difference	=	a difference
a statistically non-significant difference	=	no difference

If differences are significant, the size of the difference can be described by dividing the difference by the standard deviation (25 score points). Effect sizes between 0.1 and 0.3 are labelled in this report as small, between 0.3 and 0.5 as moderate, greater than 0.5 as large and greater than 1 as very large.

Nature of reported relationships

Most of the analyses conducted for this report involved comparisons of average achievement scores between groups of learners, for example, the difference in performance between learners in urban and rural areas. Whenever such a difference was statistically significant, it was concluded that the group variable was related to performance. However, this does not mean the relationship was necessary casual. That is, living in urban areas does not necessarily help students learn. This is because the relationship could be explained by other variables that were not taken into account when doing the comparison. For example, it is possible that a difference in socio-economic status explained the difference in performance between urban and rural

areas, or to other student background or school characteristics. Hence, when describing these relationships, no direction of the effects was assumed.

The end of the report describes a multivariate model which includes several important learner background and school characteristics. In such a model, the net effect is tested of each individual predictor while controlling for - or taking into account - differences in other predictors. If the predictors are carefully chosen, such a model allows for cautious interpretation of the direction of the effects; cautious, because it is not possible to take all other (measured and unmeasured) factors into account. For example, it was found that learners in schools that are further removed from the district centre performed on average less well than learners in schools closer to the district centre. Of course, this effect is confounded with the effect of living in urban or rural areas and could also be explained by differences in family socio-economic status. Including all three variables in one model would show the net effect of each of the three variables, while taking differences in the other variables into account. If the effect of the distance to the district centre is in the other two controlling for urban and rural locations and for socio-economic status, it can be concluded that additional factors, in excess of urban versus rural locations and family socio-economic status, negatively affect student performance in remote areas.

1.6 Questionnaires

Questionnaires were distributed to learners and to heads of schools (or their representative) during the annual ZELA administration. Learner questionnaires were designed to collect family background information while head of school questionnaires were designed to gather information on school context. Questionnaires were printed in English, but teachers were allowed to assist students in their local language and in filling out the questionnaire, if necessary. Information guides were developed and dispatched to District Schools Inspectors (DSIs), school heads, teachers and parents.

For the purpose of comparability, participation in a national research program required standardization of the assessment procedure across all schools. For this

reason, a Directions for Administration manual was developed and used to train test administrators regarding the specific details of the two-day administration of all questionnaires and tests. In addition, Test Monitoring Officers (TMOs) were trained to observe the test administration process in a random selection of 30 schools. The TMOs submitted reports on their field observations.

Test administrators adhered to strict security protocols. Test and questionnaire responses were returned to ZIMSEC and the Ministry of Primary and Secondary Education (MoPSE) district and provincial offices. Both completed and non-completed instruments were couriered to a central location in Zimbabwe where test forms and questionnaires were manually entered into an electronic format for analysis. Data analysis and report writing was conducted by ZIMSEC and the lead consultant.

1.7 Limitations of the study

The ZELA 2019 was administered to grade 2 children at the end of grade two while the previous ZELA cycles were targeting Grade 3 learners but testing them grade 2 content. This variation in practice is most likely to affect the comparability of the 2019 ZELA cycle results, considering the testing periods and the content tested.

Learners that were selected for the English and Mathematics assessments could choose to respond to their local language tests, but schools were not obliged to have students take the tests. The consequence of this self-selecting process is that the samples for local languages were not comparable across the assessment years. Therefore, trends are not reported for achievement in the local languages

1.8 Structure of the report

This report is divided into several chapters and these are organised as follows:

Chapter 1 - The Education Development Fund and Context of the ZELA program: This chapter introduces the ZELA programme, the background of the educational context in Zimbabwe and the problem statement.

Chapter 2 - Performance in Languages and Mathematics overall and by learner demographics and family background variables: Chapter two is focused on the performance in languages and Mathematics overall and by learner demographics and family background variables. The chapter describes trends in performance of Grade two learners in English and Mathematics from 2012 to 2019.

Chapter 3 - Socio-Economic Equity in Education in Zimbabwe: In the context of socio-economic equity, this chapter explores how Zimbabwe is providing education opportunities and achieving educational outcomes, which are an indication of equity in society as a whole.

Chapter 4 - Performance in English and Mathematics within the Zimbabwe Educational Context: Chapter four describes relationships found in the full population between learner performance, characteristics of the school and learning environment.

Chapter 5 - Conclusion, Policy implications and Future programming:
Chapter five presents the Conclusion, Policy implications and Future programming.

CHAPTER 2

PERFORMANCE IN LANGUAGES AND MATHEMATICS OVERALL & BY LEARNER DEMOGRAPHICS & FAMILY BACKGROUND VARIABLES

2.1 Introduction

This chapter presents the results of the ZELA 2019 analysis and makes comparisons to 2018 and 2019. Firstly, it describes the sample descriptives and secondly the trends in performance of grade 2 learners in English and Mathematics in Zimbabwe. This is achieved by analysing differences in performance between demographic and family background such as location, province, age, language spoken at home, time per day working for the family, meals per day, number of home possessions, number of home educational resources and highest parental education. Furthermore, the chapter presents the ZELA 2019 scale for English and Mathematics showing the proportion of learners below grade level, at grade level and above grade level.

2.2 Sample Characteristics

Learners that were selected for the English and Mathematics assessments could choose to respond to one of the local language tests, but were not obliged to. As a result, these language tests were not comparable across the assessment years. Therefore, trends are not reported for achievement in these tests; however, some results for 2019 are presented at the end of this chapter. In total 14 930 learners were assessed from 435 primary schools in Zimbabwe. The results in this chapter are reported overall and by learner demographic and family background variables.

Table 2.1.1 Sample descriptive by gender (2012, 2015, 2016, 2017, 2018 and 2019)

Variable	Options	2012	2015	2016	2017	2018	2019
Gender	Boys	50%	50%	50%	50%	44%	48%
	Girls	50%	50%	50 %	50%	56%	52%

Table 2.1.2 shows the sample descriptive by gender from the year 2012 to 2019. The results show that there has been an equal representation between boys and girls (50-50) between 2012 and 2017. In 2018 and 2019, girls constituted 56% and 52% of the sample respectively. These differences were purely random.

Table 2.1.2 Sample descriptive by location (2012, 2015, 2016, 2017, 2018 and 2019)

Variable	Options	2012	2015	2016	2017	2018	2019
Location	Urban	20%	22%	29%	13%	14%	14%
	Rural	80%	78%	71%	87%	86%	86%

Population descriptives based on the full samples from 2012, 2015, 2016, 2017, 2018 and 2019 are included in various tables. As shown in Table 2.1.2, urban schools constituted 14% of the sample in both 2018 and in 2019. There were no changes in the number of urban schools as a result of the stratified random sampling with proportional allocation technique used in sample selection. This resulted in 86% of the sampled schools being rural schools. Stratified random sampling with proportional allocation technique was used because of its ability to reduce selection bias by adequately representing the diversity in performance of the learners in each stratum. Furthermore, this technique enabled us to sample even the smallest and most inaccessible subgroups in the population. This meant that provinces with high school population were allocated high sample sizes within the provinces. For example, Manicaland and Masvingo provinces have the highest population of schools as compared to Bulawayo with the lowest population of 133 schools and therefore were allocated 13.4%, 16.35% and 21.59% in the sample respectively. However other variables may have contributed to the sampling outcome for example Mashonaland

West was allocated 14.0% even though the population of schools in this province is low.

Table 2.1.3 Sample descriptive by Province (2012, 2015, 2016, 2017, 2018 and 2019)

Variable	Options	2012	2015	2016	2017	2018	2019
Province	Bulawayo	4%	4%	11%	2%	2.5%	1.9%
	Harare	9%	10%	12%	5%	4.4%	5.3%
	Manicaland	15%	16%	10%	16%	15.2%	13.4%
	Mashonaland Central	10%	10%	10%	10%	8.8%	9.7%
	Mashonaland East	11%	11%	9%	13%	11.5%	11.0%
	Mashonaland West	12%	11%	9%	13%	12.2%	14.0%
	Masvingo	13%	14%	9%	8%	15.3%	16.5%
	Matabeleland North	7%	7%	10%	9%	8.6%	9.2%
	Matabeleland South	6%	5%	10%	8%	7.9%	6.7%
	Midlands	13%	13%	10%	16%	13.6%	12.3%

Masvingo, Manicaland and Mashonaland West provinces had the highest contribution in the 2019 sample. Table 2.1.3 shows that Masvingo, Manicaland and Mashonaland West had 16.5%, 13.4% and Mashonaland West 14% respectively of the sampled schools in the 2019 sample while Harare and Bulawayo had the lowest of 5.3% and 1.9% respectively. In terms of age, Table 2.1.4 shows that 42.6% of the learners who took the 2019 ZELA tests were aged 8 years as compared to 45.3% who were aged 9 years in 2018. This difference can be attributed to the change in ZELA test administrative cycle. There was also a significant increase in the number of learners

aged 7 years between 2017 , 2018, and 2019 with the opposite being observed for learners aged 9 years and 10 above.

Table 2.1.4 Sample descriptive by Age (2012, 2015, 2016, 2017, 2018 and 2019)

Variable	**Options**	**2012**	**2015**	**2016**	**2017**	**2018**	**2019**
Age (in years)	Aged below 7	1%	2%	0%	0%	0.4%	1.9%
	Aged 7	13%	13%	2%	1%	6.9%	29.8%
	Aged 8	39%	37%	22%	19%	31.6%	42.6%
	Aged 9	28%	27%	39%	48%	45.3%	18.5%
	Aged 10	12%	12%	25%	19%	10.5%	4.7%
	Aged 11	5%	4%	7%	7%	3.2%	1.6%
	Aged 12	2%	2%	3%	3%	1.1%	0.5%
	Aged 13	0%	2%	1%	2%	0.5%	0.2%
	Aged 14 and above	0%	1%	1%	1%	0.6%	0.2%

Table 2.1.5 Sample descriptive by Number of meals at home (2012, 2015, 2016, 2017, 2018 and 2019)

Variable	Options	2012	2015	2016	2017	2018	2019
Meals per day at home	1 meal	11%	10%	9%	10%	11.7%	10.8%
	2 meals	31%	33%	37%	36%	39.9%	38.4%
	3 or more meals	58%	57%	54%	54%	48.4%	50.9%

As shown in Table 2.1.5, the percentage of learners having 3 or more meals per day at home in 2019 was 50.9%, those having two meals per day were 38.4% and 10.8% had one meal per day. These results differ slightly to those obtained in 2018. In 2018 learners who were exposed to 3 or more meals at home per day were 48.4% against 50.9% in 2019. Learners who had one meal or 2 meals per day decreased in 2019.

Table 2.2.1: Sample descriptives by Language spoken at home (2012, 2015, 2016, 2017, 2018 and 2019)

Variable	Option	2012	2015	2016	2017	2018	2019
Language spoken at home	Shona	67%	73%	68%	73%	76.7%	74.8%
	Ndebele	14%	14%	20%	16%	14.1%	14%
	English	2%	4%	3%	3%	2.4%	1.5%
	Other	17%	9%	9%	8%	6.7%	9.7%

Table 2.2.1 shows the sample representation of pupils by language spoken at home. The results indicate that the majority of pupils speak Shona at home, followed by Ndebele, then other languages and finally English. This pattern has been observed from 2012 to 2019. The Other languages referred to in this case include: Nambya, Tonga, Venda, Shangaan, Kalanga, Chewa, Ndau, Chibarwe, etc. Their representation is too few to be presented on their own.

Table 2.2.2: Sample descriptives by Time spend working for family (2012, 2015, 2016, 2017, 2018 and 2019)

Variable	Option	2012	2015	2016	2017	2018	2019
Time spend working for family	Less than 1 hour a day	33%	33%	32%	32%	28.5%	32.5%
	1 or more but less than 2 hours a day	26%	27%	36%	30%	36.7%	37.9%
	2 or more but less than 3 hours a day	19%	19%	16%	18%	16.7%	17.0%
	3 hours or more a day	21%	20%	16%	20%	18.1%	12.7%

The percentage of learners who worked less than 1 hour a day increased from 28.5% in 2018 to 32.5% in 2019 (table 2.2.2), the percentage of learners who worked 1 or more hours but less than 2 hours a day increased from 36.7% in 2018 to 37.9% in 2019 while the percentage of those who worked 2 or more but less than 3 hours a day also increased from 16.7% in 2018 to 17.0% in 2019. However, there was a significant percentage decrease of those working for 3 or more hours at home from 18.1% in 2018 to 12.7% in 2019.

Table 2.2.3: Sample descriptives by Number of home possessions (2012, 2015, 2016, 2017, 2018 and 2019)

Variable	Option	2012	2015	2016	2017	2018	2019
Number of home possessions	Zero	12%	3%	7%	6%	5.7%	29%
	One	29%	35%	28%	31%	29.9%	28%
	Two	23%	24%	24%	30%	28.9%	23.6%
	Three	18%	20%	22%	19%	19.0%	19.0%
	Four or more	18%	17%	19%	14%	16.6%	0.4%

Number of home possessions, number of educational resources and the highest parental education are believed to influence learner performance. Descriptive statistics in Table 2.2.3 show that the percentage of learners with four or more home possessions (electricity, piped water, television, borehole and radio) decreased from

16.6% in 2018 to 0.4% in 2019. There was a significant increase in the percentage of learners who had no possessions in their homes. There is a slight percentage decrease of learners with, one and two a home possessions between 2018 and 2019.

Table 2.2.4: Sample descriptives by Number of educational resources (2012, 2015, 2016, 2017, 2018 and 2019)

Variable	Option	2012	2015	2016	2017	2018	2019
Number of educational resources	Zero	3%	1%	0%	1%	1.9%	2.4%
	One	39%	38%	17%	19%	20.2%	21.5%
	Two	23%	22%	21%	19%	15.7%	27.4%
	Three	14%	16%	28%	35%	35.7%	21.7%
	Four to six	12%	20%	34%	26%	26.5%	27.0%

Table 2.2.4 shows the sample descriptives by number of educational resources. The educational resources that were under study are pencil, school bag, pen, desk, computer and calculator. In 2012 and 2015, the majority of the learners (39% and 38% respectively) had one educational resource and in 2017 and 2018, the majority of the learners (35% and 35. 7% respectively) had three of the cited educational resources. In 2019 there was a decrease in the number of educational resources possessed by learners. However there was a significant percentage increase in the possession of educational resource in category 2.

Table 2.2.5: Sample descriptives by highest parental education (2012, 2015, 2016, 2017, 2018 and 2019)

Variable	Option	2012	2015	2016	2017	2018	2019
Highest parental education	Did not go to school	3%	3%	3%	3%	2.9%	1.9%
	Did primary education	16%	16%	15%	13%	10.9%	13.4%
	Did secondary education	71%	60%	56%	68%	67.2%	72.4%
	Did a tertiary course	10%	21%	19%	16%	19.0%	12.3%

For the highest parental education, Table 2.2.5 shows that there has been differences between 2018 and 2019 in all categories. There was a drop in the number of learners whose parents did not go to school and also those learners whose parents did a tertiary course categories that is, 2.9%in 2018 to 1.9% in 2019 and 19% in 2018 to 12.3% in 2019 respectively. However, there was an increase in the number of learners whose parents did primary and secondary education categories that is 10.9% in 2018 to 13.4% in 2019 and 67.2% in 2018 to 72.4% in 2019 respectively.

2.3 Item response theory

In Item response theory, student achievement is not directly measurable or observable by a single question such as a person's height or gender. Instead, tests are used to measure such unobservable attributes and a measurement scale needs to be constructed. Item response theory methodology is used to create such a scale. The responses of learners to the test items are used to place both the learners' achievements and the item difficulties on the same measurement scale. The English and Mathematics scales that were constructed for ZELA 2019 are presented in Figure 2.1 and Figure 2.2.

Figure 2.1: English Scale for 2019

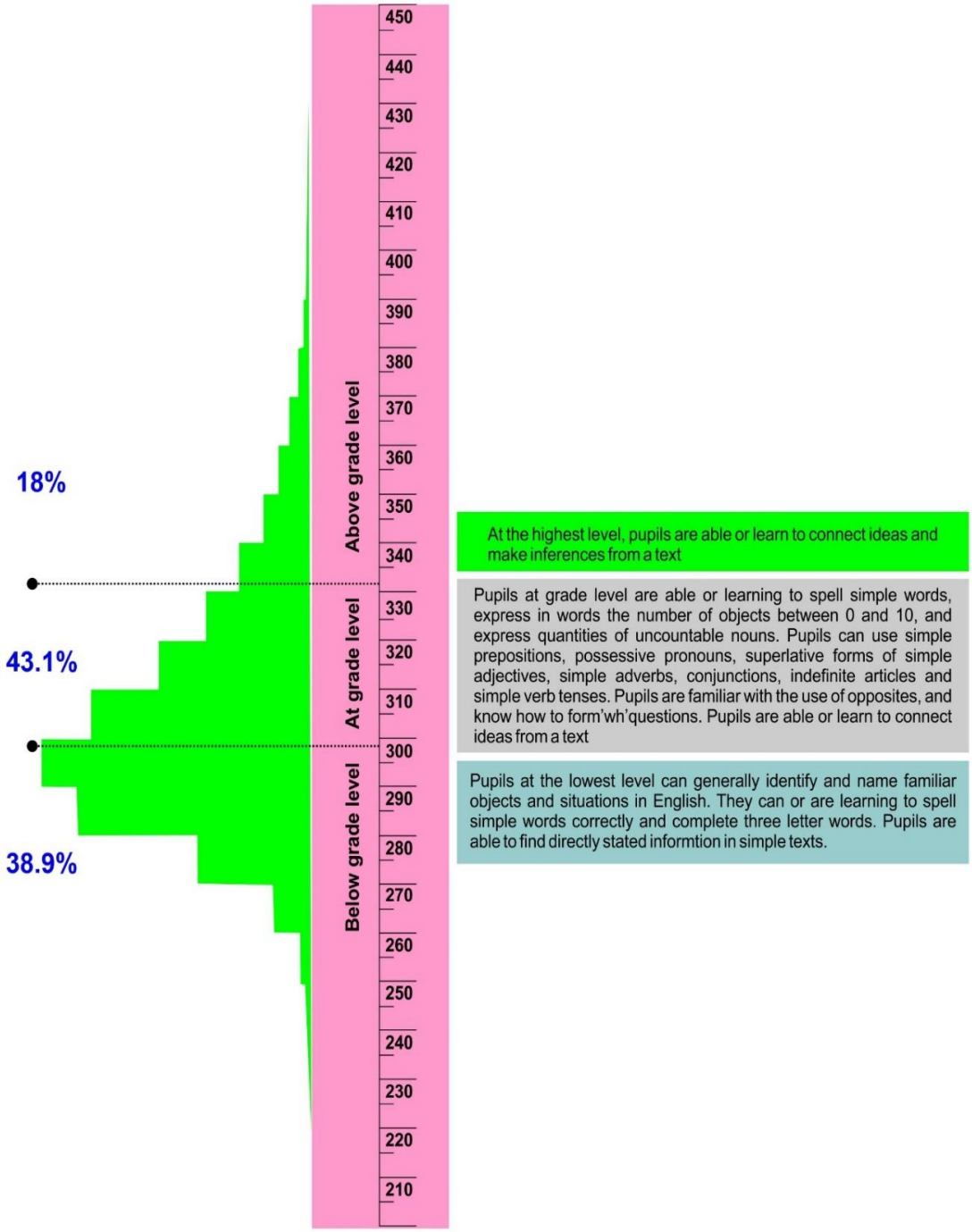
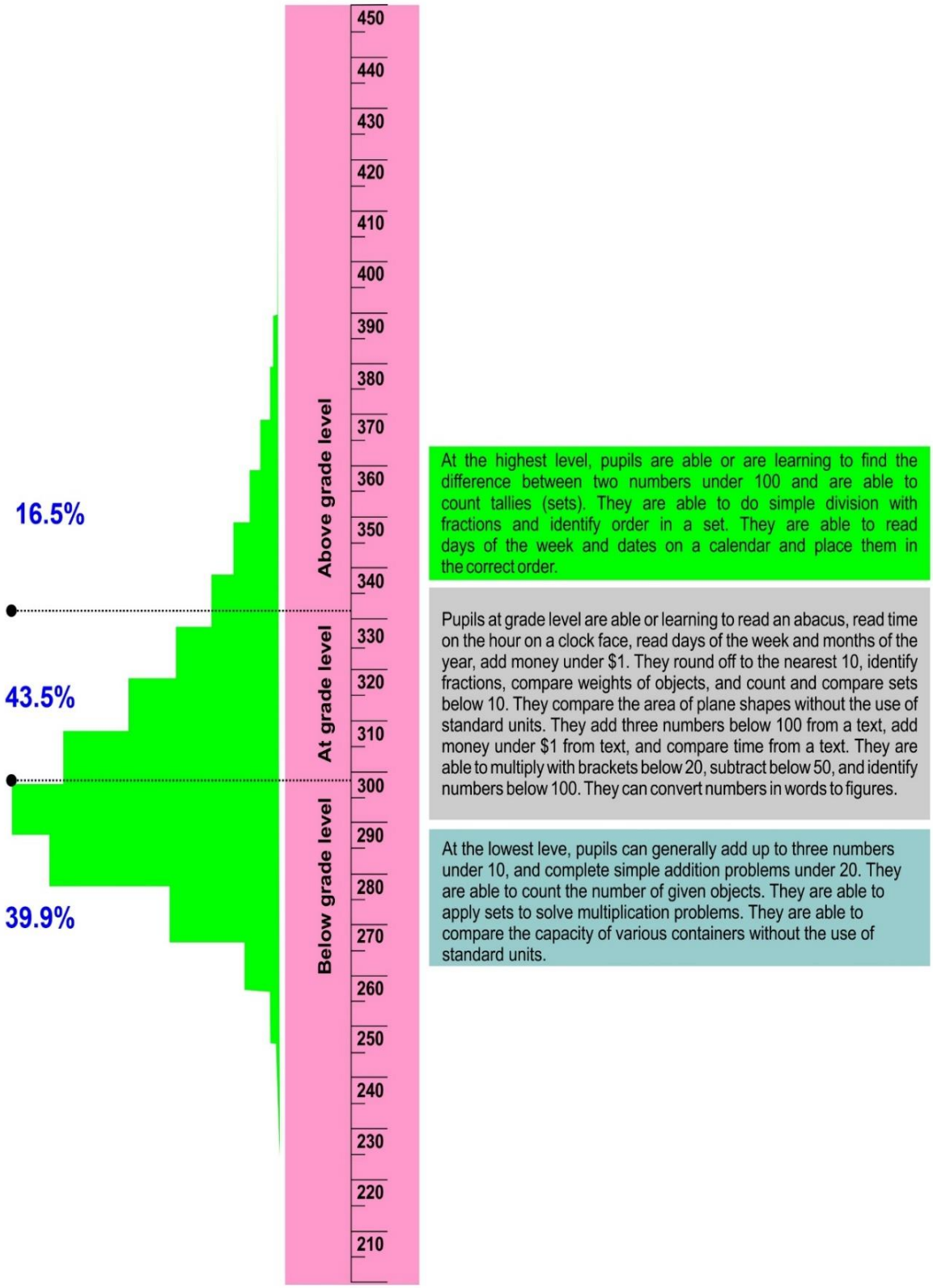


Figure 2.2: Mathematics Scale for 2019



The pink bars in the middle of the figures represent the scales and the units of measurement. In 2012 the mean performance in English and Mathematics was fixed at 300 and the standard deviation to 25. The horizontal bars on the left are frequencies

of learners at each location in this scale. Learners at the top of the scale are high achievers; learners at the bottom of the scale are low achievers. Items are placed on the same scale by their difficulty with difficult items at the top of the scale and easy items at the bottom of the scale. Learner achievement and item difficulty are matched on the scale in such a way that a learner with the same achievement score as the difficulty of item has 50 per cent chance of responding correctly to this item. Consequently, learners with an achievement score higher than an item difficulty have more than 50 per cent of responding correctly and similarly, learners with an achievement score lower that the difficulty of an item have less than 50 percent chance of responding correctly.

Placing items on the same scale as learners enables describing the skills of learners at each location on the scale and defining meaningful cut-off points such as below, at and above grade proficiency levels. Cut points between the proficiency levels are drawn in Figure 2.1 and Figure 2.2 on the left of the pink bar and descriptions of the skills that learners are learning to master at each level are included on the right of the pink bar. Figure 2.1 shows that in English, 18% of grade three population performed above grade level in 2019, 43.1% at grade level and 38.9% below grade level. The percentages for Mathematics were 16.5% above grade level, 43.5% at grade level and 39.9% below grade level.

2.4 Performance in English in 2019

Figure 2.3 shows the performance distribution of grade two learners in English in Zimbabwe. The results show that 18.0% of the learners were above grade level, 43.1% at grade level and 38.9% below grade level.

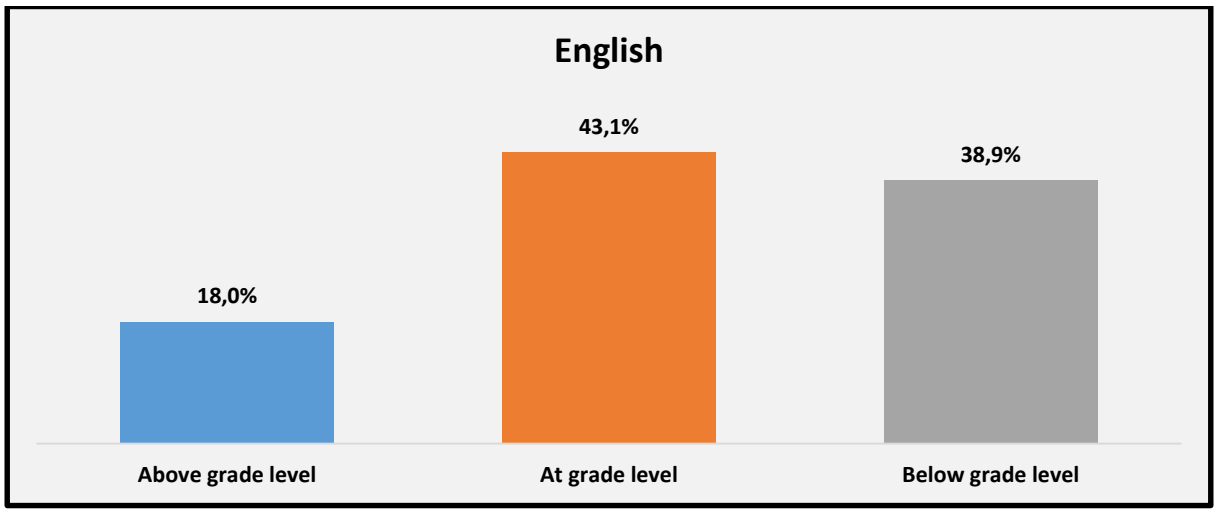


Figure 2.3: English Proficiency levels

At the highest level (above grade level), learners are able or learn to connect ideas and make inferences from text. Learners at grade level are able or learning to spell simple words, express in words the number of objects between 0 and 10, and express quantities of uncountable nouns. Learners can use simple prepositions, possessives pronouns, superlative forms of simple adjectives, simple adverbs, conjunctions, indefinite articles and simple verb tenses. Learners are familiar with use of opposites, and know how to form 'who' questions. Learners are able or learn to connect ideas from a text. Learners at the lowest level (below grade level) can generally identify and name familiar objects and situations in English. They can or are learning to spell simple words correctly and complete three letter words. Learners are able to find directly stated information in simple texts.

2.5 Performance in Mathematics in 2019

Figure 2.4 shows the performance distribution of grade two learners in Mathematics in Zimbabwe. The results show that 16.5% learners are above grade level, 43.5% at grade level and 39.9% below grade level.

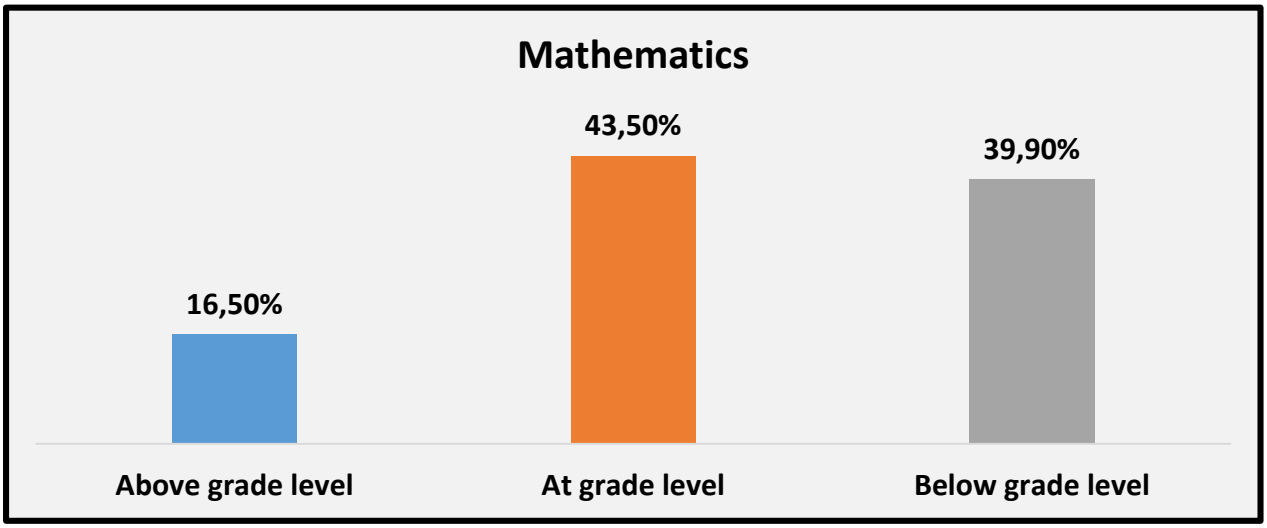


Figure 2.4: Mathematics Proficiency levels

At the highest level (above grade level), learners are able or are learning to find the difference between two numbers under 100 and are able to count tallies (sets). They are able to do simple division with fractions and identify order in a set. They are able to read days of the week and dates on a calendar and place them in the correct order.

Learners at grade level are able or learning to read an abacus, read time on the hour on a clock face, read days of the week and months of the year, add money under $1. They round off to the nearest 10, identify fractions, compare weights of objects and count and compare sets below 10. They compare the area of the plane shapes without the use of standard units. They add three numbers below 100 from a text, add money under $1 from text and compare time from a text. They are able to multiply with brackets below 20, subtract below 50, and identify numbers below 100. They can convert numbers in words to figures. At the lowest level (below grade level), learners can generally add up to three numbers under 10, and complete simple addition problems under 20. They are able to count the number of given objects. They are able to apply sets to solve multiplication problems. They are able to compare the capacity of various containers without the use of standard units.

2.6 Overall results in English and Mathematics since 2012

Table 2.3 shows the overall performance in English and Mathematics of grade two learners in 2012, 2018 and 2019. Performance in both English and Mathematics increased significantly between 2012 and 2019. English mean performance decreased slightly from 315.47 in 2018 to 310.17 in 2019. This resulted in 61.3% of the learners falling at and above grade level. This also resulted in an increase in the number of learners who performed below grade level in 2019. For Mathematics, the average mean performance decreased significantly from 316.67 in 2018 to 310.62 in 2019. This resulted in 60.0% of the learners falling at and above grade level and there was an increase in the number of learners who performed below grade level between 2018 and 2019.

Table 2.3: Overall performance in English and Mathematics in 2012, 2018 and 2019

English	**2012**		**2018**		**2019**	**2012-2019**
Mean Performance	300(1.00)	⇑	315.47(0.21)	⇓	310.17(0.20)	⇑
Mathematics	**2012**		**2018**		**2019**	**2012-2019**
Mean Performance	300(0.97)	⇑	316.67(0.18)	⇓	310.62(0.17)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease.
Standard errors are reported between brackets.

Figure 2.5 graphically presents the change in average performance in English and Mathematics from 2012 to 2019. A solid line indicates significant change while a dotted line indicates no significant change. The graph shows a significant decrease in both Mathematics and English performance from 2018 to 2019.

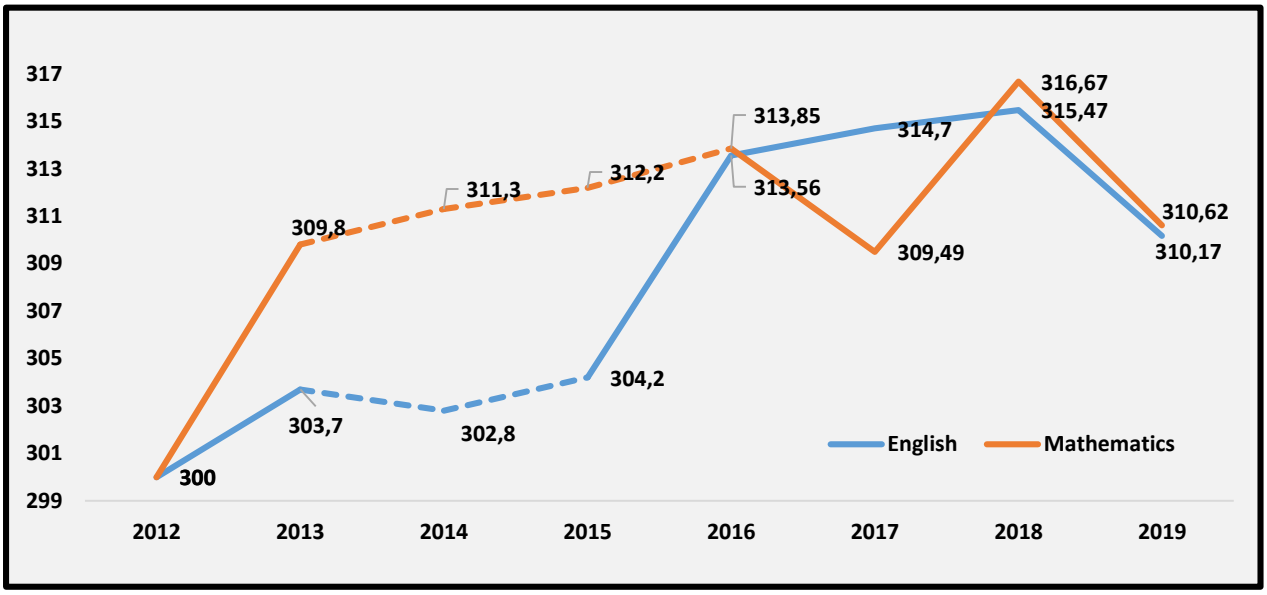


Figure 2.5: Mean performance in English and Mathematics (2012 – 2019)

Figure 2.6 shows the percentage of learners in each proficiency level from 2012 to 2019 for both English and Mathematics. While the change in these percentages cannot be tested for statistical significance for technical reasons, the results indicate that the percentage of learners in both the middle and the top proficiency levels has been increasing up to 2018. In 2019, the percentage of learners in the middle proficiency level for both English and Mathematics decreased and the percentage of learners in the bottom proficiency level increased.

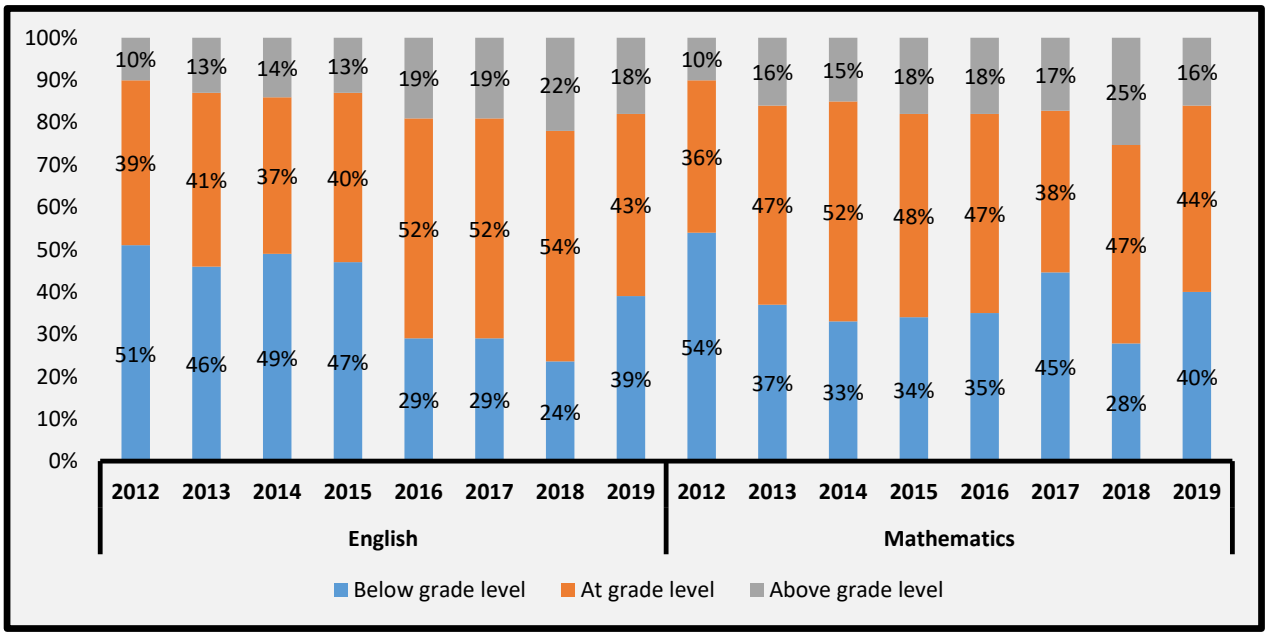


Figure 2.6: Percentages below, at and above grade level in English and Mathematics since 2012

2.7 Differences in performance by demographic and family background variables

Results in English and Mathematics are presented by the following demographic and family background variables: gender, location, province, age group, language spoken at home, time spent working for the family per day, number of home possessions, number of educational resources and highest parental education. Performance is presented as mean scale scores.

2.7.1 Gender

Mean performance was calculated for English and Mathematics with respect to gender. According to Table 2.4 and Figure 2.7, girls outperformed boys in English in 2012, 2017 2018, and 2019. In 2019, the mean performance in English was 307.24 for boys and 312.92 for girls. This difference was statistically significant at 5% level of significance. For Mathematics, the mean performance was 309.00 and 312.15 for boys and girls respectively. The difference was also statistically significant at 5% level. The difference in performance between boys and girls was smaller in Mathematics as compared to English across the cycles.

Table 2.4: Performance in English and Mathematics by Gender since 2012

English	**2012**		**2018**		**2019**	**2012-2019**
Boys	297.5(0.95)	⇑	313.56(0.30)	⇓	307.24(0.0.27)	⇑
Girls	302.6(1.12)	⇑	316.97(0.29)	⇓	312.92(0.28)	⇑
Difference (G-B)	⇑		⇑		⇑	
Mathematics	**2012**		**2018**		**2019**	**2012-2019**
Boys	298.3(0.97)	⇑	315.31(0.26)	⇓	309.00(0.24)	⇑
Girls	301.8(1.03)	⇑	317.74(0.24)	⇓	312.15(0.23)	⇑
Difference (G-B)	⇑		⇑		⇑	

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease.

Standard errors are reported between brackets.

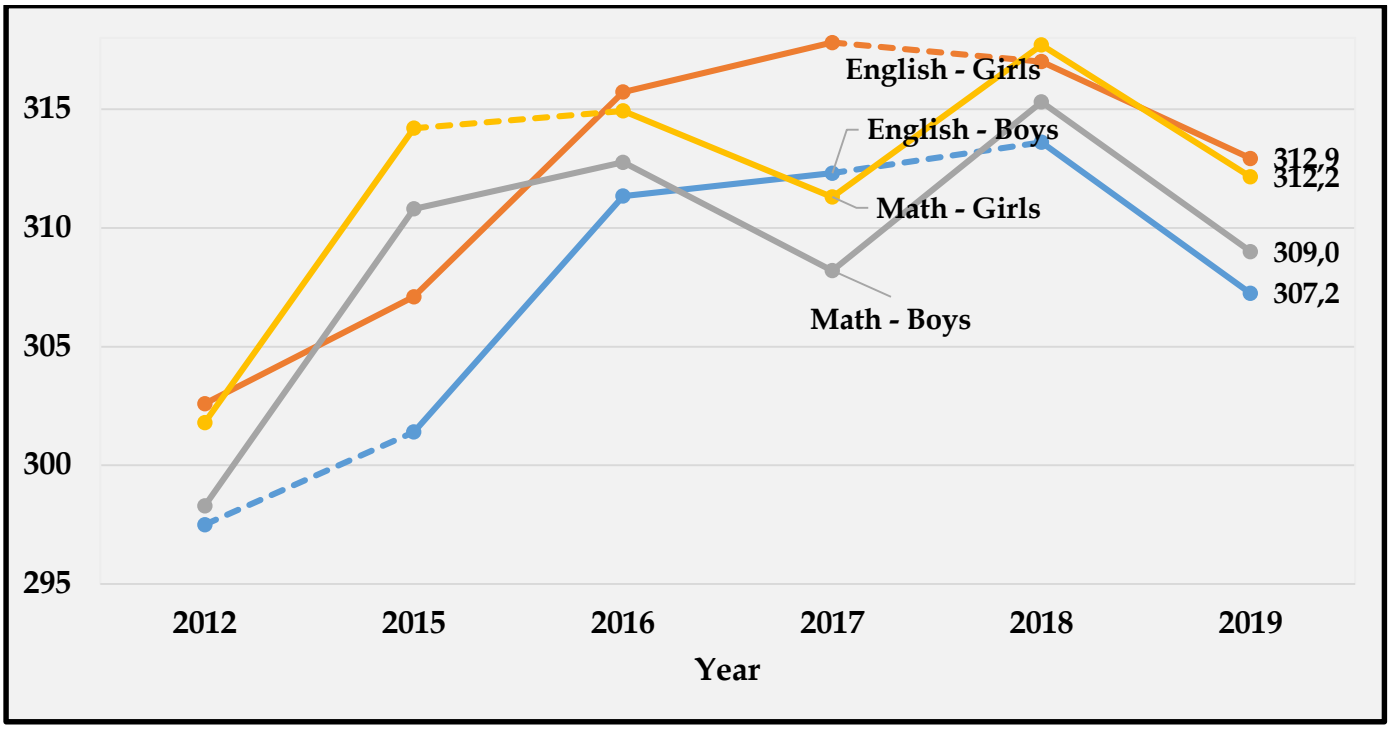


Figure 2.7: Mean performance in English and Mathematics by gender since 2012

Table 2.5 is a cross-tabulation of English and Mathematics proficiency levels and gender for 2019. The results indicate that 14.5% of the boys and 21.2% of the girls performed above grade level in English. At grade level, there is a noticeable difference in the percentage distribution of boys (41.2%) and girls (44.9%). Below grade level, there is a significant difference in the performance of boys 44.3% and girls 33.9%. In Mathematics 14.1% of the boys and 18.8% of the girls performed above grade level while 42.8% and 44.3% of boys and girls respectively performed at grade level. Below grade level there is a significant difference in the performance of boys (43.1%) boys and girls (36.9%). Overall, the percentage of boys performing at or above grade level in English was 55.7% and 66.1% for girls. In Mathematics, 56.9% of the boys performed at or above grade level and 63.1% of the girls also performed at or above grade level. The rest of the information is shown in Table 2.5 below.

Table 2.5: Cross-tabulation of Proficiency level and gender for 2019

Subject	Proficiency Level	Boy	Girl	Total
English	Above grade level	14.5%(1053)	21.2%(1634)	18.0%(2687)
	At grade level	41.2%(2983)	44.9%(3451)	43.1%(6434)
	Below grade level	44.3%(3202)	33.9%(2607)	38.9%(5809)
	Total	100%(7238)	100%(7692)	100%(14930)
Mathematics	Above grade level	14.1%(1022)	18.8%(1448)	16.5%(2470)
	At grade level	42.8%(3097)	44.3%(3405)	43.5%(6502)
	Below grade level	43.1%(3119)	36.9%(2839)	39.9%(5958)
	Total	100%(7238)	100.0%(7692)	100.0%(14930)

2.7.2 School Location

According to Table 2.6, learners from urban areas outperformed learners from rural areas in both English and Mathematics in 2012, 2018 and 2019. Table 2.6 below shows the English and Mathematics performance of learners from urban and rural schools.

Table 2.6: Performance in English and Mathematics by school location since 2012

English	**2012**		**2018**		**2019**	**2012-2019**
Urban	313.5(2.77)	⇑	340.0(0.63)	⇓	333.63(0.57)	⇑
Difference	⇓		⇓		⇓	
Rural	296.4(1.04)	⇑	311.5(0.20)	⇓	306.25(0.19)	⇑
Mathematics	**2012**		**2018**		**2019**	**2012-2019**
Urban	311.2(2.14)	⇑	332.80(0.51)	⇓	325.63(0.46)	⇑
Difference	⇓		⇓		⇓	
Rural	297.1(1.08)	⇑	314.05(0.18)	⇓	308.12(0.17)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

In English, learners from urban areas had a mean score of 333.63 as compared to learners from rural schools who had a mean score of 306.25 in 2019. This represents a difference of 27.38 score points. In Mathematics the difference in performance between learners from urban areas and learners from rural areas in 2019 was 17.51 score points. These results indicate that the difference in mean performance was large, especially in English. Of importance to note is the significant decrease in performance for both Mathematics and English in rural and urban learners between 2018 and 2019.

Figure 2.8 below shows that the difference in mean English performance between urban and rural areas grew larger over time (2012 – 2019) whilst that of Mathematics diminished between 2012 and 2016 and maintained between 2018 and 2019.

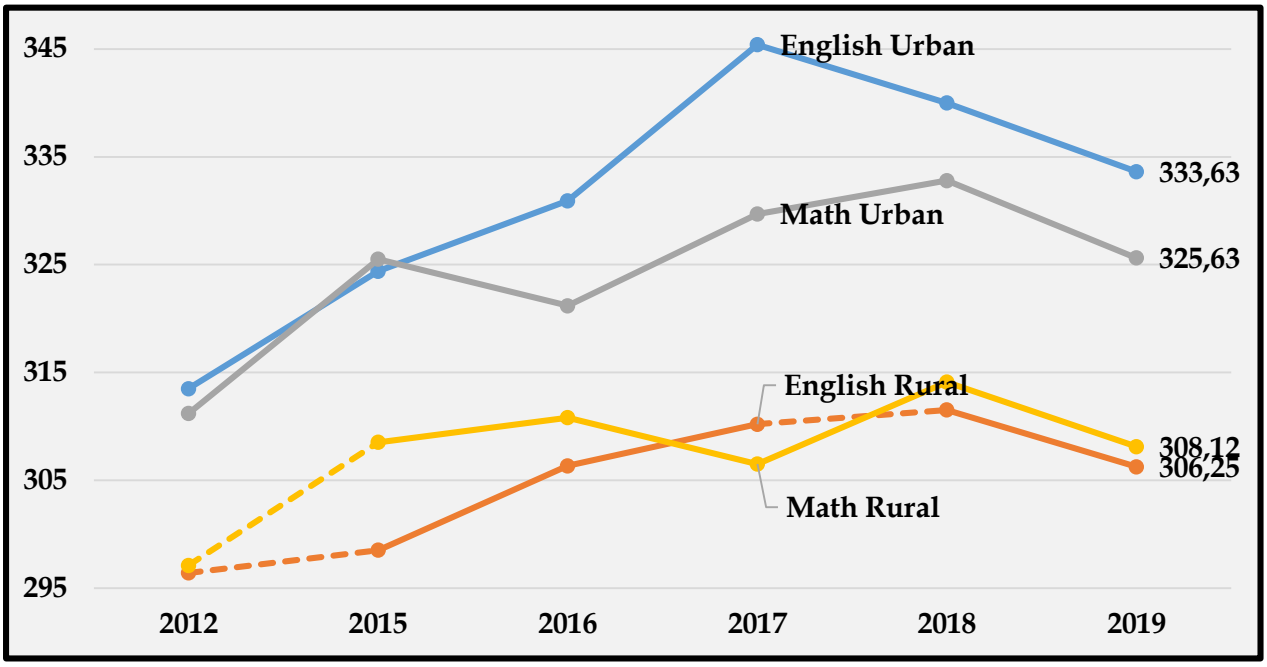


Figure 2.8: Mean performance in English and Mathematics by location since 2012

Figure 2.8 above shows a larger performance difference between English Urban and English Rural as compared to the difference between Mathematics Urban and Mathematics Rural. All the line graphs in Figure 2.8 depict an upward trend in both English and Mathematics performance from 2012 to 2018, in spite of a drop in performance between 2018 and 2019.

Table 2.7: Cross-tabulation of Proficiency level and location for 2019

Subject	Proficiency Level	Rural	Urban	Total

English	Above grade level	12.0%(1533)	54.1%(1154)	18.0%(2687)
	At grade level	44.6%(5707)	34.1%(727)	43.1%(6434)
	Below grade level	43.4%(5556)	11.9%(253)	38.9%(5809)
	Total	100%(12796)	100%(2134)	100%(14930)
Mathematics	Above grade level	12.1%(1550)	43.1%(920)	16.5%(2470)
	At grade level	44.0%(5625)	41.1%(877)	43.5%(6502)
	Below grade level	43.9%(5621)	15.8%(337)	39.9%(5958)
	Total	100%(12796)	100%(2134)	100%(14930)

Consistent with the reported trends in mean English performance, Table 2.7 shows that the percentage of learners at or above grade level was 88.2% for learners from urban areas whilst the corresponding percentage for learners from rural areas was 56.6%.For Mathematics performance, 84.2% and 56.1% of learners from urban and rural schools performed at or above grade level in 2019 respectively.

2.7.3 Province

Table 2.8: Performance in English by province since 2012

English	2012		2018		2019	2012-2019
Bulawayo	316.0(2.66)	⇑	338.8(1.49)	⇓	328.35(1.51)	⇑
Harare	321.1(5.24)	⇑	346.1(1.07)	⇓	334.90(0.91)	⇑
Manicaland	297.5(1.23)	⇑	315.4(0.47)	⇓	308.83(0.48)	⇑
Mashonaland Central	295.5(1.31)	⇑	308.7(0.63)	⇓	304.47(0.58)	⇑
Mashonaland East	296.9(2.27)	⇑	317.9(0.60)	⇓	312.24(0.62)	⇑
Mashonaland West	299.1(3.52)	⇑	306.3(0.60)	⇔	307.01(0.52)	⇑
Masvingo	299.3(1.03)	⇑	315.7(0.47)	⇓	309.04(0.43)	⇑
Matabeleland North	290.6(2.35)	⇑	308.4(0.66)	⇓	302.17(0.48)	⇑
Matabeleland South	294.0(5.66)	⇑	314.6(0.72)	⇓	307.75(0.71)	⇑
Midlands	297.1(4.05)	⇑	316.7(0.56)	⇓	313.29(0.57)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

Mean performances in English and Mathematics were compared over time and provinces were compared with each other. In achievement, learners from Bulawayo and Harare outperformed all the other provinces in 2018 and 2019 with higher mean performances in English and Mathematics whereas Mashonaland West, Mashonaland Central and Matabeleland North had the lowest mean performance. It needs to be noted that, from 2012 to 2018, all provinces recorded significant improvement in English as shown in Table 2.8 above with the exception of Mashonaland West and Central. However there was a drop in performance between 2018 and 2019 in all provinces.

For Mathematics, Table 2.9 shows that all provinces recorded significant performance increase between 2012 and 2018.It should be however be noted that there was a general decrease in performance for Mathematics in all provinces in 2019.

Table 2.9: Performance in Mathematics by province since 2012

Mathematics	2012		2018		2019	2012-2019
Bulawayo	314.8(1.69)	⇑	331.6(1.12)	⇓	320.80(1.15)	⇑
Harare	316.8(4.01)	⇑	337.5(0.88)	⇓	328.06(0.70)	⇑
Manicaland	297.4(1.24)	⇑	318.0(0.43)	⇓	307.44(0.43)	⇑
Mashonaland Central	296.4(1.13)	⇑	312.8(0.56)	⇓	307.33(0.54)	⇑
Mashonaland East	298.3(2.42)	⇑	317.7(0.50)	⇓	310.10(0.52)	⇑
Mashonaland West	300.9(4.25)	⇑	309.1(0.52)	⇔	307.69(0.43)	⇑
Masvingo	300.1(1.45)	⇑	318.1(0.42)	⇓	312.90(0.39)	⇑
Matabeleland North	290.6(2.71)	⇑	309.2(0.57)	⇓	304.81(0.46)	⇑
Matabeleland South	294.0(4.78)	⇑	315.9(0.62)	⇓	310.61(0.63)	⇑
Midlands	296.5(3.74)	⇑	317.6(0.47)	⇓	312.77(0.49)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

Between 2018 and 2019, all the provinces showed a significant decrease in English performance, with the exception of Mashonaland West which recorded a slight improvement in performance. In Mathematics, there were significant performance decreases in all other provinces except in Mashonaland West where there was a slight decrease in performance and the difference between 2018 and 2019 performance was not significant.

Table 2.10.1: Cross-tabulation of English Proficiency level and province for 2019

English	Above grade level	At grade level	Below grade level	Total
Manicaland	14.9%(298)	45.6%(914)	39.5%(792)	100%(2004)
Mashonaland West	14.3%(299)	40.8%(851)	44.9%(936)	100%(2086)
Matabeleland South	13.3%(133)	46.1%(422)	40.7%(408)	100%(1003)
Matabeleland North	6.1%(84)	43.9%(605)	50.0%(688)	100%(1377)
Masvingo	15.2%(374)	47.2%(1161)	37.7%(927)	100%(2462)
Midlands	22.3%(408)	44.1%(808)	33.6%(615)	100%(1831)
Mashonaland East	21.7%(356)	40.4%(663)	30.0%(624)	100%(1643)
Mashonaland Central	11.1%(162178)	40.8%(593)	48.1%699()	100%(1454)
Harare	56.5%(447)	33.0%(261)	10.5%(83)	100%(791)
Bulawayo	45.2%(126)	41.6%(116)	13.3%(37)	100%(279)
Total	18.0%(2687)	43.1%(6434)	38.9%(5809)	100%(14930)

Table 2.10.2: Cross-tabulation of Mathematics Proficiency level and province for 2019

Mathematics	Above grade level	At grade level	Below grade level	Total

Manicaland	11.7%(235)	42.4%(849)	45.9%(920)	100%(2004)
Mashonaland West	13.2%(275)	40.0%(835)	46.8%(976)	100%(2086)
Matabeleland South	14.6%(146)	44.2%(443)	41.3%(414)	100%(1003)
Matabeleland North	6.2%(86)	42.3%(582)	51.5%(709)	100%(1377)
Masvingo	17.8%(438)	48.3%(1190)	33.9%(834)	100%(2462)
Midlands	20.3%(371)	44.5%814()	35.23%(646)	100%(1831)
Mashonaland East	16.5%(271497)	44.1%(724)	39.4%(648)	100%(1643)
Mashonaland Central	11.8%(171)	42.5%(618)	45.7%(665)	100%(1454)
Harare	48.7%(385)	39.7%(314)	11.6%(92)	100%(791)
Bulawayo	33.0%(92)	47.7%(133)	19.4%(54)	100%(279)
Total	16.5%(2470)	43.5%(6502)	39.9%(5958)	100%(14930)

Percentages at or above grade level were computed for each of the 10 provinces and the results are shown in Table 2.10 above. The results indicate that Bulawayo and Harare had the highest percentages of students performing at or above grade level in both English and Mathematics. Bulawayo and Harare had 86.8% and 89.5% respectively of their learners performing at or above grade level in English in 2019. In Mathematics, 80.7% and 88.4% of learners from Bulawayo and Harare respectively performed at or above grade level. Mashonaland West, Mashonaland Central, Matabeleland North had the largest percentages of students performing below grade level in both English and Mathematics.

2.7.4 Age group

Mean performances for learners' age groups where computed and compared over time. In English, there was a significant increase in mean performance from 2012 to 2018 for all age groups. However in 2019 there was a significant decrease in mean performance for all age groups as shown by Table 2.11 below.

Table 2.11: Performance in English by age-group since 2012

English	2012		2018		2019	2012-2019
Aged 6 and below	298.2(3.08)	⇑	315.59(3.43)	⇓	308.42(1.50)	⇑
Age 7	305.7(1.90)	⇑	319.86(0.85)	⇓	310.68(0.37)	⇑
Age 8	303.0(1.32)	⇑	322.01(0.39)	⇓	311.15(0.30)	⇑
Age 9	296.7(0.92)	⇑	311.14(0.31)	⇓	308.16(0.43)	⇑
Age 10	294.7(1.00)	⇑	312.97(0.54)	⇓	308.44(0.81)	⇑
Age 11	295.3(1.03)	⇑	312.85(0.96)	⇓	305.68(1.16)	⇑
Age 12	293.9(1.52)	⇑	313.93(1.6)	⇓	310.12(2.29)	⇑
Age 13	292.7(3.68)	⇑	310.98(2.15)	⇓	304.73(4.15)	⇑
Age 14 or above	298.7(1.90)	⇑	312.15(2.46)	⇓	307.52(4.17)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

The Mathematics performance by age group is shown in Table 2.12. The table shows that there was a significant decrease in Mathematics performance for all age groups.

Table 2.12: Performance in Mathematics by age-group since 2012

Mathematics	2012		2018		2019	2012-2019

Aged 6 and below	295.8(3.22)	⇑	317.96(3.2)	⇓	307.95(1.12)	⇑
Age 7	303.5(1.49)	⇑	319.3(0.69)	⇓	309.58(0.32)	⇑
Age 8	302.2(1.23)	⇑	321.31(0.31)	⇓	311.62(0.25)	⇑
Age 9	297.7(1.01)	⇑	313.23(0.27)	⇓	310.12(0.38)	⇑
Age 10	296.0(1.07)	⇑	315.64(0.47)	⇓	311.17(0.73)	⇑
Age 11	297.2(1.19)	⇑	315.43(0.89)	⇓	309.84(1.18)	⇑
Age 12	297.0(1.73)	⇑	321.02(1.47)	⇓	313.21(2.32)	⇑
Age 13	297.0(4.02)	⇑	316.87(2.28)	⇓	311.69(3.57)	⇑
Age 14 or above	304.6(2.26)	⇔	317.48(2.13)	⇓	312.56(4.02)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

2.7.5 Language spoken at home

Language spoken at home had four groups; Shona, Ndebele, English and Others. The other languages included Venda, Tonga, Shangani, Kalanga, Sotho, Ndau and Nambya. Descriptive statistics shown in Table 2.2 above indicate that in 2019, 74.8% of the learners spoke Shona at home, 14.0% spoke Ndebele, 1.5% spoke English and 9.7% spoke other languages. Mean performances for learners by languages spoken at home were computed and compared over time. The results in Table 2.13 show the performance in English and Mathematics by language spoken at home since 2012.

Table 2.13: Performance in English and Mathematics by language spoken at home since 2012

English	**2012**		**2018**		**2019**	**2012-2019**

Shona	300.8(0.99)	⇑	314.87(0.24)	⇓	310.59(0.23)	⇑
Ndebele	297.2(1.73)	⇑	316.7(0.55)	⇓	309.86(0.52)	⇑
English	331.5(7.30)	⇑	338.83(1.68)	⇔	339.24(1.93)	⇑
Other	291.4(1.70)	⇑	311.21(0.69)	⇓	302.91(0.472)	⇑
Mathematics	**2012**		**2018**		**2019**	**2012-2019**
Shona	300.8(1.00)	⇑	316.38(0.2)	⇓	310.90(0.20)	⇑
Ndebele	297.4(1.73)	⇑	317.27(0.46)	⇓	311.16(0.44)	⇑
English	322.1(5.36)	⇑	331.53(1.35)	⇓	325.83(1.44)	⇑
Other	292.3(2.17)	⇑	313.3(0.6)	⇓	305.41(0.44)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

Between 2012 and 2018, results show a significant increase in both English and Mathematics performance for learners who speak Shona, Ndebele and Other Languages at home. However, in 2019 there was a general decrease in performance in English and Mathematics for learners who speak Shona, Ndebele and Other Languages. Learners who speak English at home have always outperformed learners who do not speak English at home since 2012, as their performance has changed significantly between 2012 and 2018 in both English and Mathematics. Between 2018 and 2019, the results show that there is no significant change in English performance for learners who speak English at home and a significant decrease in Mathematics performance for those who speak English at home. Learners who speak Ndebele, Shona and other languages at home registered a significant decrease in their English and Mathematics performance. In achievement, learners who speak English at home achieved the highest scores in English and Mathematics, whereas those speaking other languages obtained the lowest scores in both subjects. Long term improvements in the mean English performance were observed for learners who speak Ndebele at home between 2012 and 2018(Long term improvements are indicated by long solid

lines in Figure 2.9) However there is a slight decrease in English performance for the learners who speak Ndebele between 2018 and 2019.

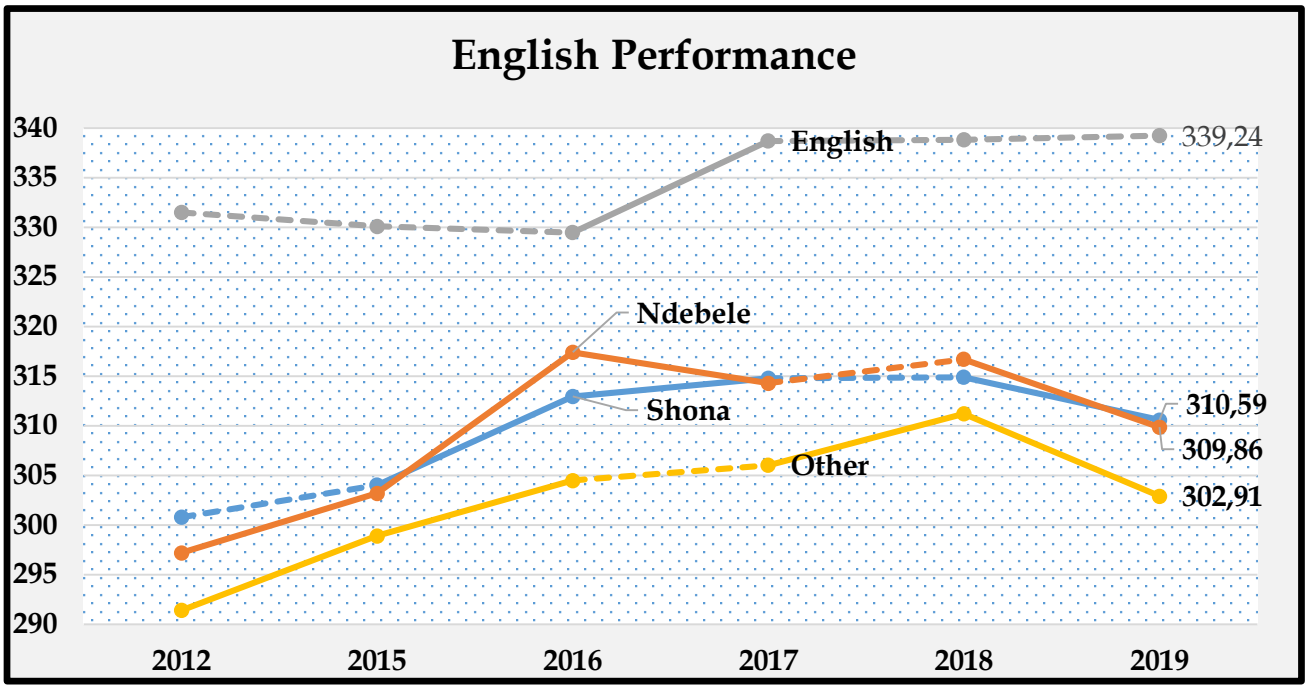


Figure 2.9: Mean performance in English by language spoken at home since 2012

Figure 2.9 above shows that the English performance of learners who speak English at home was generally higher than of those who speak indigenous languages. The graph further shows there is no significant change in English performance between 2018 and 2019 for learners who speak English. The English performance of learners who speak Ndebele at home increased significantly between 2012 and 2016. However it decreased significantly between 2016 and 2017, increased slightly from 2017 to 2018 and decreased again in 2019.

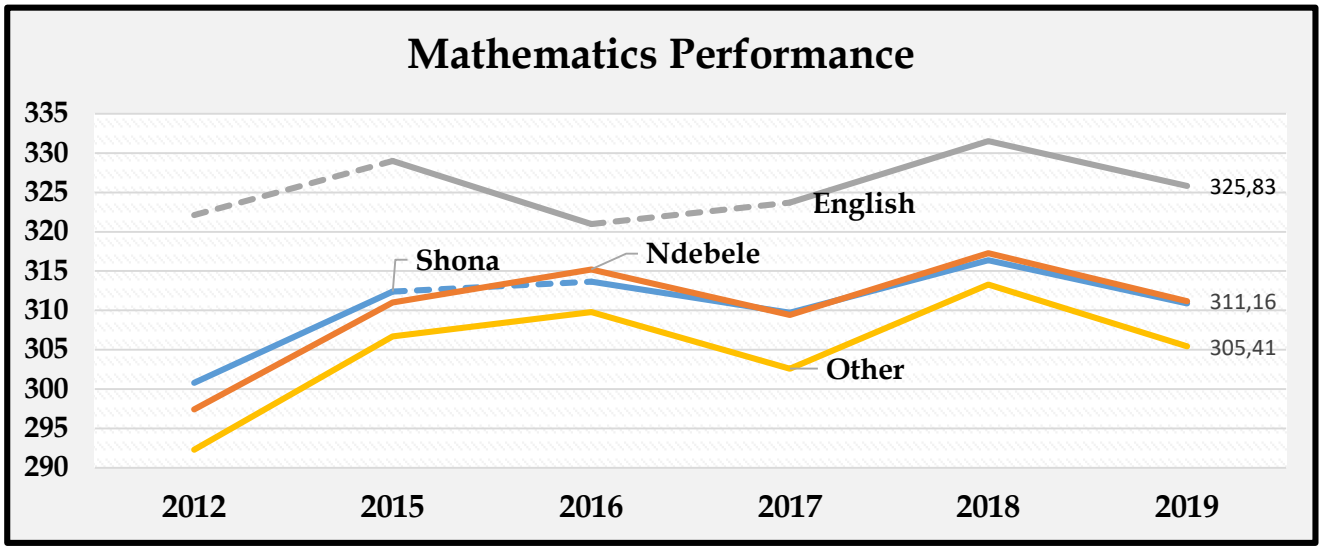


Figure 2.10: Mean performance in Mathematics by language spoken at home since 2012

Figure 2.10 and Figure 2.9 are similar in that learners who speak Ndebele and Other languages at home have shown long term significant improvement in English and Mathematics between 2012 and 2016.However, there has been a decrease in English and Mathematics performance between 2016 and 2017 for learners who speak Ndebele at home. For Mathematics, learners who speak English at home have always outperformed those who speak indigenous languages. Table 2.14 is a cross-tabulation of proficiency levels and language spoken at home for 2019. The majority (63.7%) of learners who speak English at home performed above grade level in English test whilst 41.7% of learners who speak English at home performed above grade level in Mathematics test. Learners who speak other languages at home had the highest representation in the at grade level category, contributing 46.7% in English. In Mathematics they had the least representation contributing 42.0%.

Table 2.14: Cross-tabulation of Proficiency level and language spoken at home for 2019

Proficiency Level	Shona	Ndebele	English	Other	Total
English					
Above grade level	18.7%(2087)	17.8%(371)	63.7%(142)	6.0%(87)	18.0%(2687)
At grade level	43.0%(4799)	43.0%(898)	26.0%(58)	46.7%679)	43.1%(6434)
Below grade level	38.3%(4280)	39.2%(817)	10.3%(23)	47.4%(689)	38.9%(5809)
Total	100%(11166)	100%(2086)	100%(223)	100%(1455)	100%(14930)
Mathematics					
Above grade level	17.3%(1934)	16.4%(342)	41.7%(93)	6.9%(101)	16.5%(2470)
At grade level	43.6%(4869)	44.4%(926)	43.0%(96)	42.0%(611)	43.5%(6502)
Below grade level	39.1%(4363)	39.2%(818)	15.2%(34)	51.1%(743)	39.9%(5958)
Total	100%(11166)	100%(2086)	100%(223)	100%(1455)	100%(14930)

2.7.6 Time per day working for the family

According to Table 2.15, learners that worked less than an hour per day for their families performed better than those that worked one hour or more in both English and Mathematics over the years from 2012 to 2018, except for Mathematics performance for 2012. However in 2019 there was no significant difference between learners that worked less than 1 hour and those who worked for more than 1 hour. In 2018, learners that worked less than an hour per day for their families had a mean of 319.09 score points in English as compared to 311.05 score points in 2019 and this difference of 8.04 score points is not statistically significant. For Mathematics, there was no significant change in performance between 2018and 2019 for the two categories of the variable.

Table 2.15: Performance in English and Mathematics by time spent per day working for the family since 2012

English	**2012**		**2018**		**2019**	**2012-2019**
Less than 1 hour	302.1(1.30)	⇑	319.09(0.39)	⇓	311.05(0.35)	⇑
Difference	⇑		⇑		⇔	
1 hour or more	299.7(1.07)	⇑	314.03(0.25)	⇓	309.74(0.23)	⇑
Mathematics	**2012**		**2018**			**2012-2019**
Less than 1 hour	301.3(1.22)	⇑	319.32(0.33)	⇓	311.15(0.30)	⇑
Difference	⇔		⇑		⇔	
1 hour or more	299.9(1.03)	⇑	315.61(0.21)	⇓	309.99(0.20)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Difference(Φ)*=Less than 1 hour - 1 hour or more. Standard errors are reported between brackets.*

In 2018, the differences in performance between learners that worked less than an hour per day for their families and learners that worked one hour or more were 15.06 score points in English and 3.71 score points in Mathematics and these were both statistically significant. In 2019, these differences decreased to 1.31 and 1.16 score points respectively for English and Mathematics and the differences were not statistically significant. Figure 2.11 shows the mean performance in English and Mathematics by time per day spent working for the family from 2012 to 2019. The results indicate a long term significant increase in English performance from 2012 to 2016 for learners that worked less than an hour per day. However, between 2016 and 2017 the results show no significant change in performance. For Mathematics, the performance for learners that worked less than an hour per day increased significantly between2012 and 2015 but remained stable between 2015 and 2016. Between 2016 and 2017, the Mathematics performance decreased significantly. In 2018, there were significant increases in performance for both groups in both English and Mathematics, although performance for learners who worked less than an hour was higher than those who worked for 1 hour or more for the family. In 2019 there was a general decrease in the performance of learners who worked less than 1 hour and those who worked for 1 hour or more in both English and Mathematics.

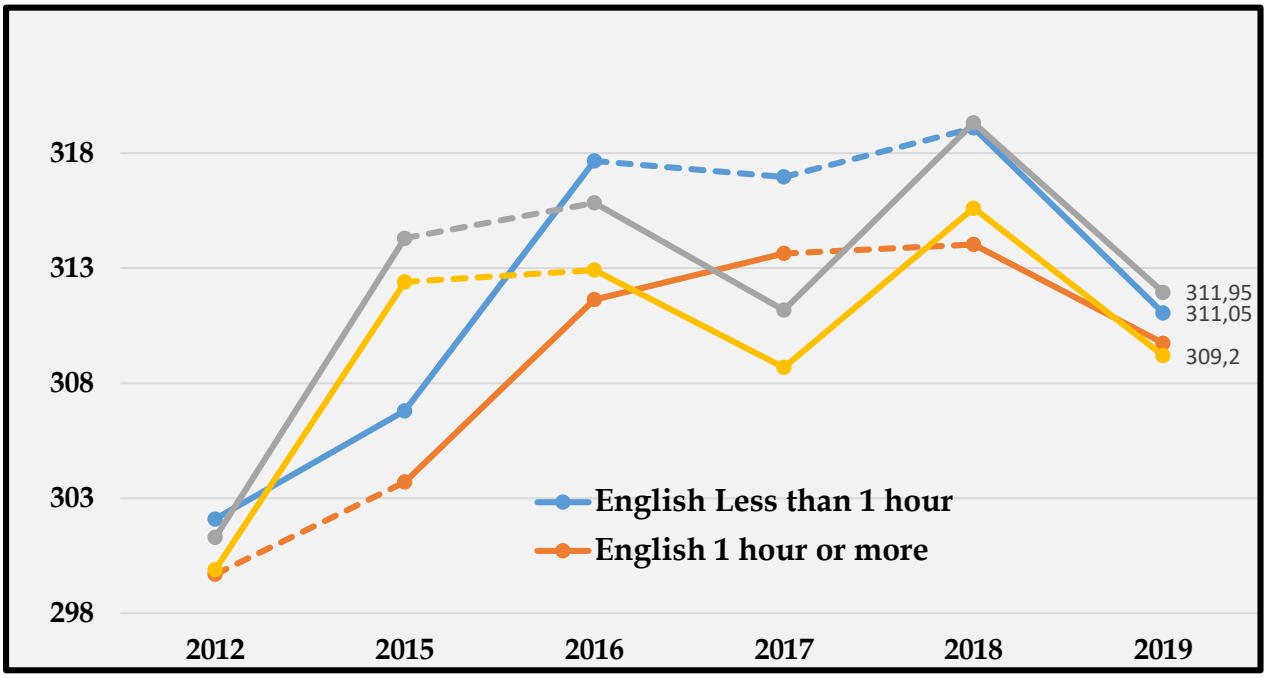


Figure 2.11: Mean performance in English and Mathematics by time per day spent working for the family since 2012.

Table 2.16 is a cross-tabulation of proficiency levels and time spend working for the family for 2019. The results show that 63.2% of the learners that worked less than an hour per day performed at or above grade level in English whilst 60.5 % of learners that worked for one hour or more per day performed at or above grade level. In Mathematics, 61.9% of learners that worked less than an hour per day performed at or above grade level and 59.2% of those that worked for one hour or more per day performed at or above grade level. These differences could be attributed to the fact that learners who spent less time working for the family have more time to study as compared to those who work for more hours.

Table 2.16: Cross-tabulation of Proficiency level and Time spent working for family for 2019

Proficiency Level	Less than 1 hour	1 hour or more	Total

English			
Above grade level	19.3%(934)	17.4%(1753)	18.0%(2687)
At grade level	43.0%(2085)	43.1%(4349)	43.1%(6434)
Below grade level	37.7%(1829)	39.5%(3980)	38.9%(5809)
Total	100%(4848)	100%(10082)	100%(14930)
Mathematics			
Above grade level	18.3%(889)	15.7%(1581)	16.5%(2470)
At grade level	43.6%(2114)	43.5%(4388)	43.5%(6502)
Below grade level	38.1%(1845)	40.8%(4113)	39.9%(5958)
Total	100%(4848)	100%(10082))	100%(14930)

Table 2.17 below shows the differences in learner performance by time spent working for the family in both English and Mathematics. The results presented in Table 2.17 are different from the results presented in Table 2.15 in that the results presented below (Table 2.17) have been further split into four groups. This was done in order to improve variability and comparability. However, these results shown in Table 2.17 are not comparable to results from 2012 to 2015 since they were not split in the same manner.

Table 2.17: Performance in English and Mathematics by time spent per day working for the family for 2016, 2018 and 2019

Category	**2016**		**2018**		**2019**
ENGLISH					

Less than 1 hour	317.66(0.36)	⇔	319.09(0.39)	⇓	311.05(0.35)
Difference	⇑		⇑		⇔
1 hour and more but less than 2 hours	310.84(0.32)	⇑	311.32(0.36)	⇔	309.58(0.31)
Difference	⇓		⇓		⇔
2 hours and more but less than 3 hours	312.16(0.41)	⇑	316.09(0.47)	⇔	309.55(0.46)
Difference	⇔		⇔		⇔
3 hours or more	312.93(0.46)	⇔	317.6(0.48)	⇓	310.47(0.56)
MATHEMATICS					
Less than 1 hour	315.83(0.28)	⇓	319.32(0.33)	⇓	311.95(0.30)
Difference	⇑		⇑		⇔
1 hour and more but less than 2 hours	312.28(0.28)	⇓	313.42(0.31)	⇓	309.73(0.28)
Difference	⇔		⇓		⇔
2 hours and more but less than 3 hours	313.14(0.35)	⇓	317.9(0.4)	⇓	309.70(0.38)
Difference	⇔		⇔		⇔
3 hours or more	314.15(0.40)	⇓	317.94(0.39)	⇓	311.13(0.47)

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease.

Table 2.17 shows that learners who worked less than 1 hour for their families obtained a mean score of 311.05, 1 hour and more but less than 2 hours had a mean score 309.58, 2 hours and more but less than 3 hours scored 309.55 and those who worked 3 hours or more had a mean score of 310.47 in English. For Mathematics learners who worked less than 1 hour for their families obtained a mean score of 311.95,1 hour and more but less than 2 hours had a mean score 309.73, 2 hours and more but less than 3 hours

scored 309.70 and those who worked 3 hours or more had a mean score of 311.13. However, the differences in these mean scores is not statistically significant in both English and Mathematics.

2.7.7 Meals per day

Learners were asked how many meals per day they usually had at home. A meal referred to eating meat, vegetables and/or starch. Descriptive statistics (Table 2.1) for 2018 indicate that 10.8% had one meal per day, 38.4% had two meals per day and 50.9% had three or more meals per day. As shown in Table 2.18, learners having three or more meals per day outperformed learners eating two meals per day in both English and Mathematics in 2018 and 2019. The difference in performance between these two groups was statistically significant from 2012 to 2019. The results also indicate no significant difference in English performance between learners having two meals and learners having one meal in 2012 and 2019. In Mathematics, there is a significant difference in performance between learners having one and two meals and learners having three and more meals in 2012 and 2019. In 2019, there is no significant difference in performance between learners who had two meals per day and those who had one meal in both English and Mathematics.

Table 2.18: Performance in English and Mathematics by meals per day since 2012

English	**2012**		**2018**		**2019**	**2012-2019**
Three or more meals	303.5(1.28)	⇑	321.26(0.3)	⇓	313.77(0.29)	⇑
Difference	⇑		⇑		⇓	

Two meals	296.3(1.06)	⇑	309.56(0.32)	⇓	306.51(0.28)	⇑
Difference	⇔		⇔		⇔	
One meal	294.8(1.34)	⇑	311.69(0.54)	⇓	306.20(0.59)	⇑
Mathematics	**2012**		**2018**		**2019**	**2012-2019**
Three or more meals	303.3(1.12)	⇑	321.58(0.25)	⇓	313.54(0.23)	⇑
Difference	⇑		⇑		⇑	
Two meals	296.9(1.06)	⇑	311.91(0.28)	⇓	307.71(0.263)	⇑
Difference	⇑		⇔		⇔	
One meal	293.3(1.58)	⇑	312.64(0.49)	⇓	307.27(0.52)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

Across the years, there was no significant difference in English performance between 2012 and 2015 for learners eating three or more meals. The same applies for learners eating one meal. However, learners eating three or more meals and learners eating one meal showed short-term improvements in English between 2015 and 2016 and an insignificant change between 2016 and 2017as shown in Figure 2.12. Learners eating two meals showed long term improvement in English performance between 2012 and 2018.However there is a significant drop in performance between 2018 and 2019. In 2019, learners having three meals outperformed those with one meal by 7.57 score points in English. This difference is statistically significant. In 2019, there was a general decrease in performance among the three groups of learners and the decrease is statistically significant as reflected in table 2.18 and shown in figure 2.12.

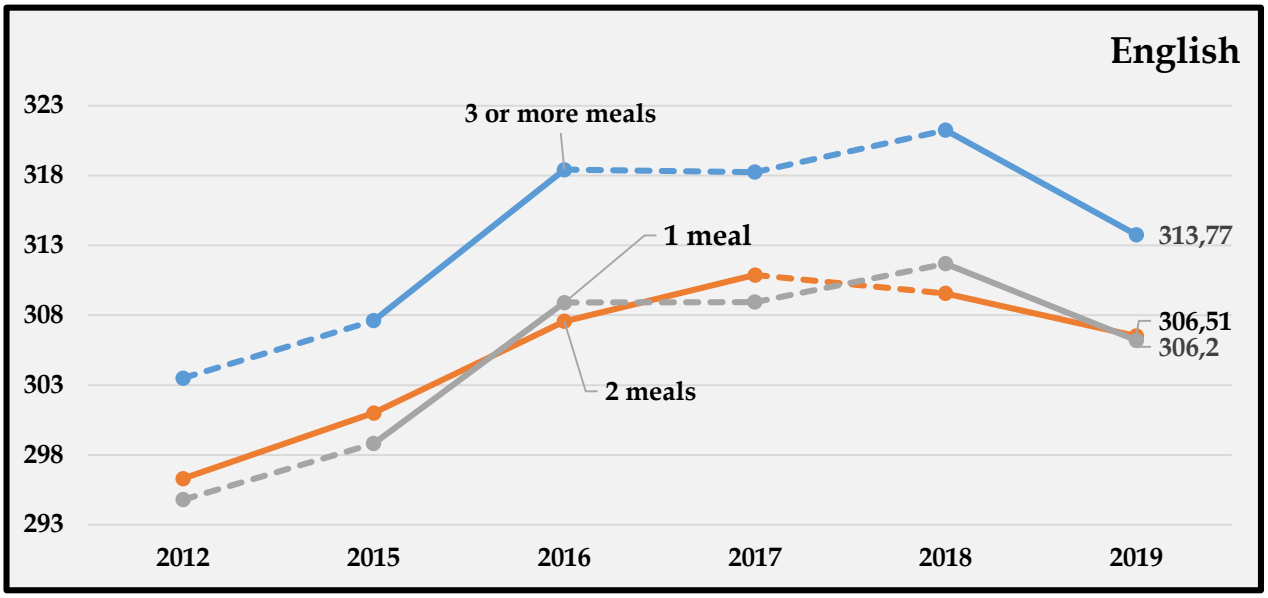


Figure 2.12: Mean performance in English by number of meals per day since 2012

Figure 2.13 shows the mean performance in Mathematics by number of meals per day since 2012. Similar to the results for English above, learners eating three or more meals per day outperformed learners eating two meals in Mathematics in 2012, 2015, 2016, 2017 ,2018 and 2019. The difference between learners eating three or more meals per day and learners eating two meals was moderate and stable over time. Learners eating three or more meals per day and learners eating only one meal per day showed long term improvements from 2012 to 2016 in Mathematics and a short term decrease between 2016 and 2017. There was however, a significant increase in performance in Mathematics between 2017 and 2018 for the three groups of learners. There was however a decrease in performance for learners in these categories in 2019.

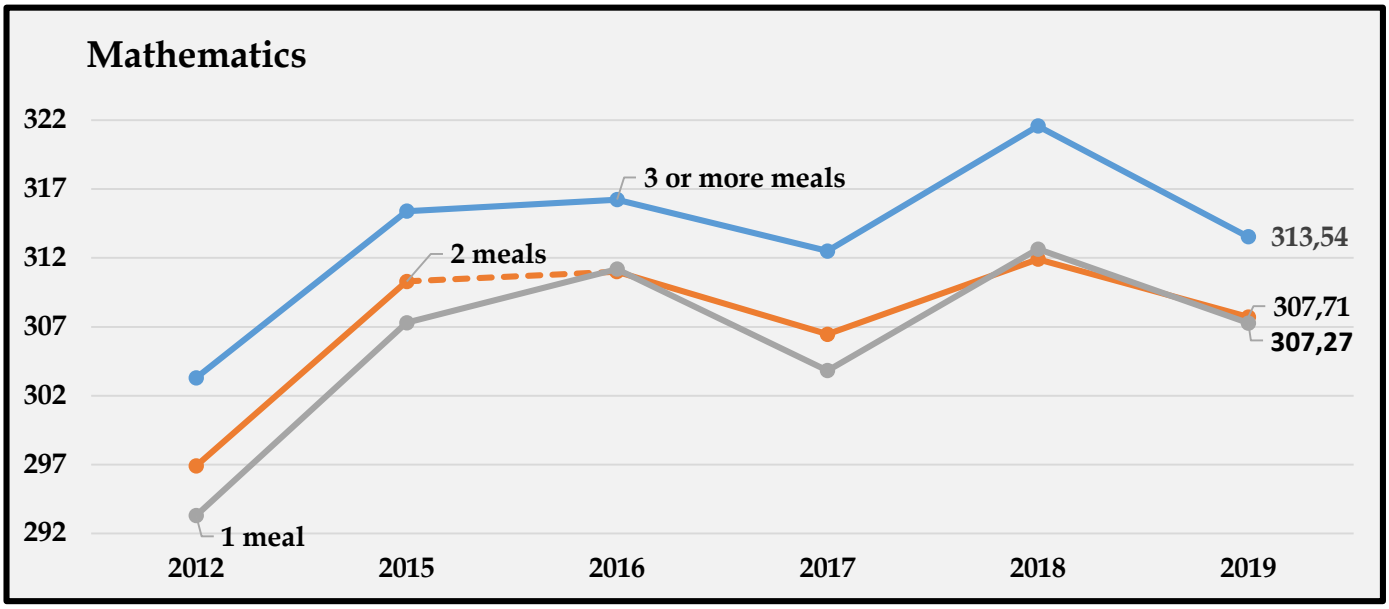


Figure 2.13: Mean performance in Mathematics by number of meals per day since 2012

As shown in Table 2.19, 66.7% of the learners eating 3 or more meals performed at or above grade level in English. The percentages of learners performing at or above grade level for learners eating two meals was 55.9% whilst that for learners eating one meal was 53.2%. These results indicate that as the number of meals per day increases, the number of learners performing at or above grade level increases. For Mathematics, the percentages of learners performing at or above grade level for learners eating 3 or more meals was 65.2%, 55.4% for learners eating 2 meals and 53% for learners eating one meal. The same conclusion can be drawn for Mathematics, that as the number of meals per day increases, learner performance increases accordingly.

Table 2.19: Cross-tabulation of Proficiency level and number of meals per day for 2019

Proficiency Level	One meal	Two meals	3 or more meals	Total
English				
Above grade level	14.0%(225)	13.0%(743)	22.6%(1719)	18%(2687)
At grade level	39.2%(629)	42.9%(2459)	44.1%(3346)	43.1%(6434)
Below grade level	46.8%(752)	44.1%(2530)	33.3%(2527)	38.9%(5809)
Total	100%(1606)	100%(5732)	100%(7592)	100%(14930)
Mathematics				
Above grade level	12.6%(203)	12.7%(729)	20.3%(1538)	16.5%(2470)
At grade level	40.4%(649)	42.7%(2446)	44.9%(3407)	43.5%(6502)
Below grade level	46.9%(754)	44.6%(2557)	34.9%(2647)	39.9%(5958)
Total	100%(1606)	100%(5732)	100%(7592)	100%(14930)

2.7.8 Number of home possessions

Learners were asked which of the following home possessions they had at their home: electricity, piped water, television, borehole and radio. Descriptive statistics were computed on the total number of items, in the list, they had at their home. 29% had none of the items, 28% had one, 23.6% had two, 19.0% had three, whilst 0.4% had four or more home possessions. Results with combined groups are shown in Table 2.20 and results with split groups are shown in Table 2.22. In 2018, learners with four or more home possessions outperformed those with two or three home possessions who in-turn outperformed learners with one or less home possessions in English as shown in Table 2.20. The differences between the four or more and the two or more category groups is significant as shown by the arrows. However the difference in performance for the two or three and the one or less category is not significant. In Mathematics, the same trend is observed for all three groups. In 2019, the same trend is observed for both English and Mathematics but the difference is only significant for learners with four or more and two or three possessions. The difference is not statistically significant for learners with two or three and those with one or less possessions in both English and Mathematics.

Table 2.20: Performance in English and Mathematics by number of home possessions since 2012

English	**2012**		**2018**		**2019**	**2012-2019**
Four or more	316.6(2.32)	⇑	326.29(0.57)	⇓	317.26(0,49)	⇑
Difference	⇑		⇑		⇑	
Two or three	298.8(0.92)	⇑	313.79(0.3)	⇓	309.14(0.26)	⇑
Difference	⇑		⇔		⇔	
One or less	294.4(1.02)	⇑	312.69(0.32)	⇓	307.26(0.35)	⇑
Mathematics	**2012**		**2018**			**2012-2019**
Four or more	314.2(1.98)	⇑	324.33(0.45)	⇓	315.48(0.39)	⇑
Difference	⇑		⇑		⇑	
Two or three	299.5(0.92)	⇑	315.6(0.26)	⇓	309.81(0.23)	⇑
Difference	⇑		⇔		⇔	
One or less	294.3(0.99)	⇑	314.54(0.29)	⇑	308.84(0.30)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

The difference in English performance between learners with four or more home possessions and learners with two or three possessions was consistently large across all the assessment years as shown in Figure 2.14. On the other hand, the difference in English performance between learners with two or three possessions and learners with one or less possession was small. Learners with one or less possessions at home showed a long term significant improvement in English between 2012 and 2018 but there was a drop in performance in 2019. In comparison, other groups showed short-term improvement between 2015 and 2018 in English performance and there was also a drop in the 2019 cycle.

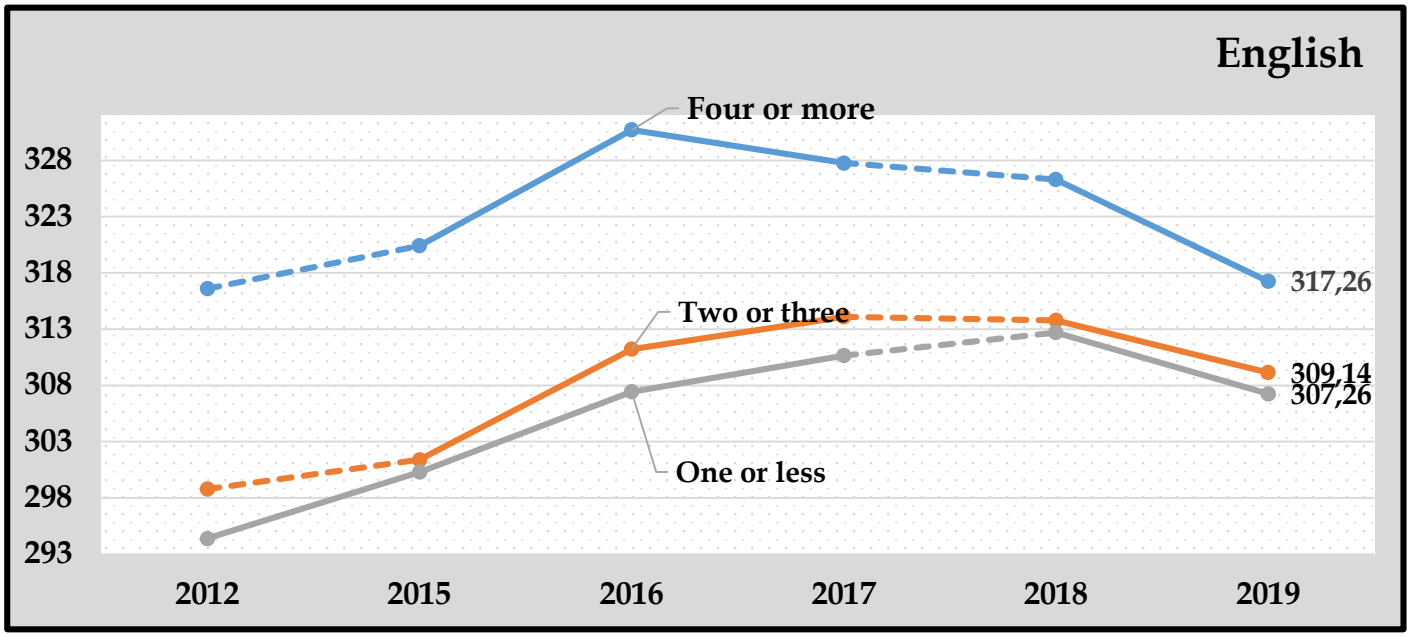


Figure 2.14: Mean performance in English by number of home possessions since 2012

For Mathematics, learners with two or three home possessions showed long-term improvement between 2012 and 2016. However, a significant decrease was observed from 2016 to 2017 and thereafter an increase in performance from 2017 to 2018. The learner performance for those with two or three home possessions decreased again in 2019. The other groups showed significant improvement in performance between 2012 and 2015 only as shown in Figure 2.15 below but decreased significantly in performance from 2016 to 2017, and increased significantly from 2017 to 2018. Learner performance for this category decreased again in 2019.

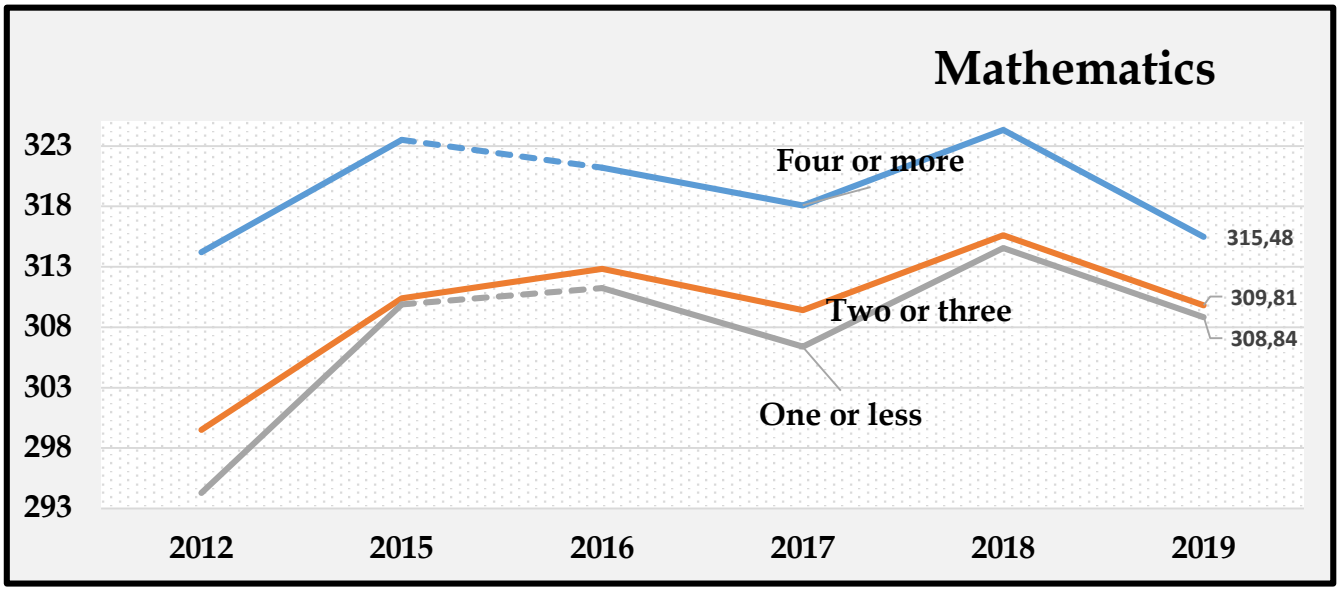


Figure 2.15: Mean performance in Mathematics by number of home possessions since 2012

Table 2.21 is a cross-tabulation of proficiency levels and number of home possessions for 2019. The majority (80.5%) of learners with four or more home possessions performed at or above grade level in English and 71.9% of learners with four or more home possessions in Mathematics. Learners with a higher number of home possessions outperformed those with a lower number of home possessions. This is true for all groups as there are 46.8%, 41.9% and 26.4% of learners below grade level for one or less, two or three and four or more home possessions groups respectively in English and 49.3%, 41.8% and 28.2% for one or less, two or three and four or more home possessions groups in Mathematics respectively. The percentage of learners within the below grade level decreases as the number of home possessions increases.

Table 2.21: Cross-tabulation of Proficiency levels and number of home possessions for 2019

Proficiency Level	One or less	Two or three	Four or more	Total
English				
Above grade level	12.1% (433)	13.9%(1017)	30.6%(1237)	18%(2687)
At grade level	41.1(1466)	44.2%(3234)	49.9%(1734)	43.1%(6434)
Below grade level	46.8(1671)	41.9%(3071)	26.4%(1067)	38.9%(5809)
Total	100%(3570)	100%(7322)	100%(4038)	100%(14930)
Mathematics				
Above grade level	12.2%(435)	13.4%(983)	26.1%(1052)	16.5%(2470)
At grade level	38.5%(1376)	44.8%(3278)	45.8%(1848)	43.5%(6502)
Below grade level	49.3%(1759)	41.8%(3061)	28.2%(1138)	39.9%(5958)
Total	100%(3570)	100%(7322)	100%(4038)	100%(14930)

Table 2.22 below is similar to Table 2.20 above. The only difference is that in 2016, learners with none of the home possessions were separated from the one or less group as shown in Table 2.22. Also, learners with two home possessions were separated from the two or three group. This was done to improve comparability among individual groups. Splitting the groups this way has enabled comparability of the results in Table 2.22 to the previous years' results because the groups are synonymous

Results in Table 2.22 indicate that learners with three home possessions (electricity, piped water, television, borehole and radio) outperformed learners with zero, one, two and four or more home possessions and the difference was statistically significant in both English and Mathematics There was however no significant difference in performance between learners with zero and one possession in the English in 2019. In Mathematics, there was no difference in performance for learners with zero, one, and

four or more possessions. The pattern of performance in both English and Mathematics have a different pattern from all the previous years.

Table 2.22: Performance in English and Mathematics by number of home possessions for 2016, 2018 and 2019

Category	**2016**		**2018**		**2019**
English					
None	304.19(0.53)	⇓	300.04(0.82)	⇑	307.26(0.35)
Difference	⇓		⇓		⇔
One	308.29(0.29)	⇑	315.1(0.34)	⇓	306.67(0.33)
Difference	⇔		⇔		⇓
Two	308.05(0.33)	⇑	311.11(0.39)	⇔	312.07(0.40)
Difference	⇓		⇓		⇓
Three	314.73(0.42)	⇑	317.88(0.46)	⇔	317.35(0.49)
Difference	⇓		⇓		⇑
Four or more	330.70(0.48)	⇓	326.29(0.57)	⇓	313.12(3.56)
Mathematics					
None	308.73(0.58)	⇓	303.46(0.75)	⇑	308.84(0.30)
Difference	⇓		⇓		⇔
One	311.93(0.29)	⇓	316.65(0.3)	⇑	307.77(0.31)
Difference	⇔		⇔		⇓
Two	311.60(0.33)	⇓	313.61(0.34)	⇔	312.24(0.34)
Difference	⇓		⇓		⇓
Three	314.18(0.34)	⇓	318.64(0.39)	⇓	315.60(0.39)
Difference	⇓		⇓		⇑
Four or more	321.19(0.35)	⇓	324.33(0.45)	⇓	309.83(3.14)

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease.

2.7.9 Number of home educational resources

Learners were asked which of the following home educational resources they had at their home; pencil, school bag, pen, desk, computer and calculator. Descriptive statistics were computed on the total number of items in the list they had at their home. 2.4% of the learners had none, 21.5% had one, 27.4% had two, 21.7% had three, and 27.0% had four to six home educational resources. Learners were classified into three groups, which are: One or less, Two or three and Four or more.

Table 2.23: Performance in English and Mathematics by number of home educational resources since 2012

English	**2012**		**2018**		**2019**	**2012-2019**
Four or more	315.7(2.38)	⇑	324.56(0.43)	⇓	319.26(0.41)	⇑
Difference	⇑		⇑		⇑	
Two or three	303.3(1.10)	⇑	312.09(0.28)	⇓	307.51(0.25)	⇑
Difference	⇑		⇔		⇔	
One or less	292.9(1.02)	⇑	312.45(0.43)	⇓	305.32(0.37)	⇑
Mathematics	**2012**		**2018**		**2019**	**2012-2019**
Four or more	313.1(1.83)	⇑	323.25(0.35)	⇓	317.08(0.32)	⇑
Difference	⇑		⇑		⇑	
Two or three	303.6(1.12)	⇑	314.35(0.24)	⇑⇓	309.05(0.23)	⇑
Difference	⇑		⇔		⇔	
One or less	293.0(1.02)	⇑	314.16(0.38)	⇑⇓	306.55(0.34)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

As shown in Table 2.23, there has been a significant improvement in English and Mathematics performance for all the three groups from 2012 to 2018. In 2019 however,

there was a general decrease in English and Mathematics performance for all the three groups. In 2019, learners possessing four or more home educational resources had a significantly higher mean performance than learners with two or three educational resources in both English and Mathematics. There were no significant differences in English and Mathematics performance between learners possessing two or three home educational resources and learners possessing one or less home educational resources in 2019. The same trends were observed in 2018.

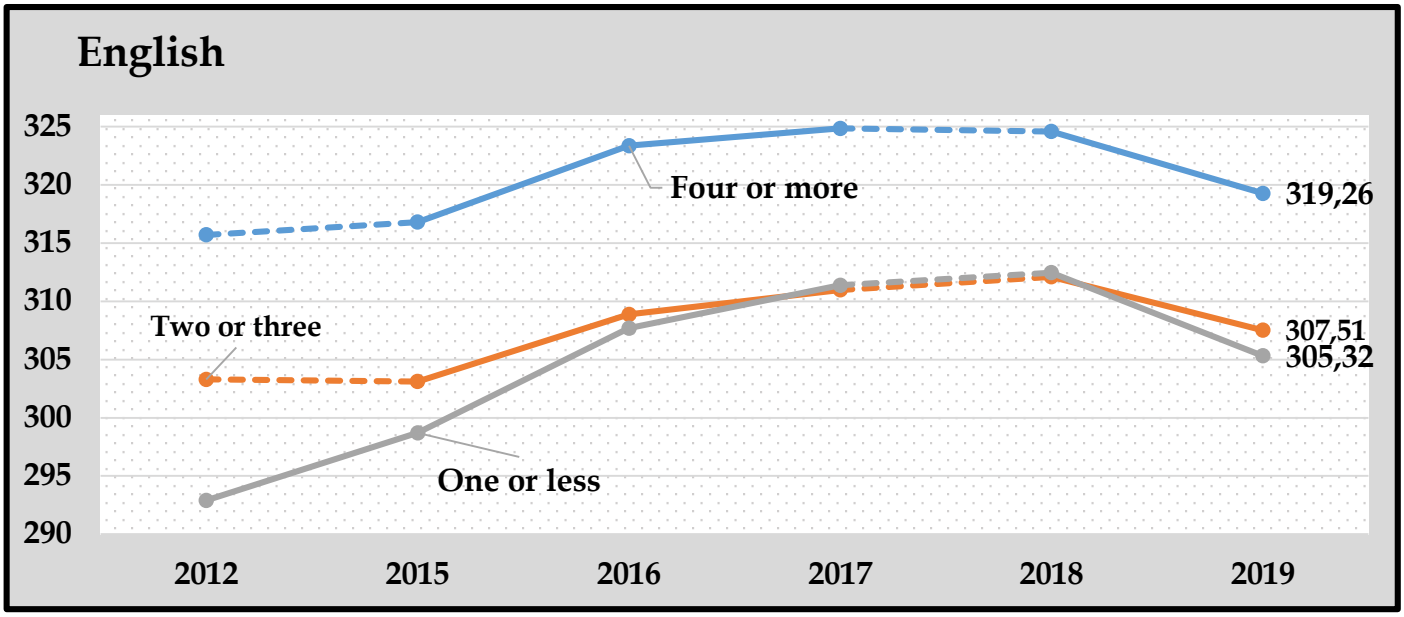


Figure 2.16: Mean performance in English by number of home educational resources since 2012

Figure 2.16 above is a line graph showing mean performance in English by number of home educational resources since 2012. The pattern of findings shown for the number of home educational resources is somewhat similar to that of the number of home possessions shown in subsection 2.7.8 above. Learners possessing one or less home educational resources showed a long term improvement in English performance between 2012 and 2018. In 2012, these learners had mean score of 292.9, which increased significantly to 298.7 in 2015, then to 307.69 in 2016 and to 311.37 in 2017 and finally increased to 312.45 in 2018. However there was a general decrease in performance by learners with one or less educational resources in 2019. The other groups experienced medium term (two years) improvement from 2015 to 2018. Figure 2.17 is showing the mean performance in Mathematics by number of home

educational resources since 2012. Learners possessing four or more of home educational resources performed better than the other groups. The difference in performance appeared to be decreasing with time. There was however a general decrease in English and Mathematics performance for all groups in 2019.

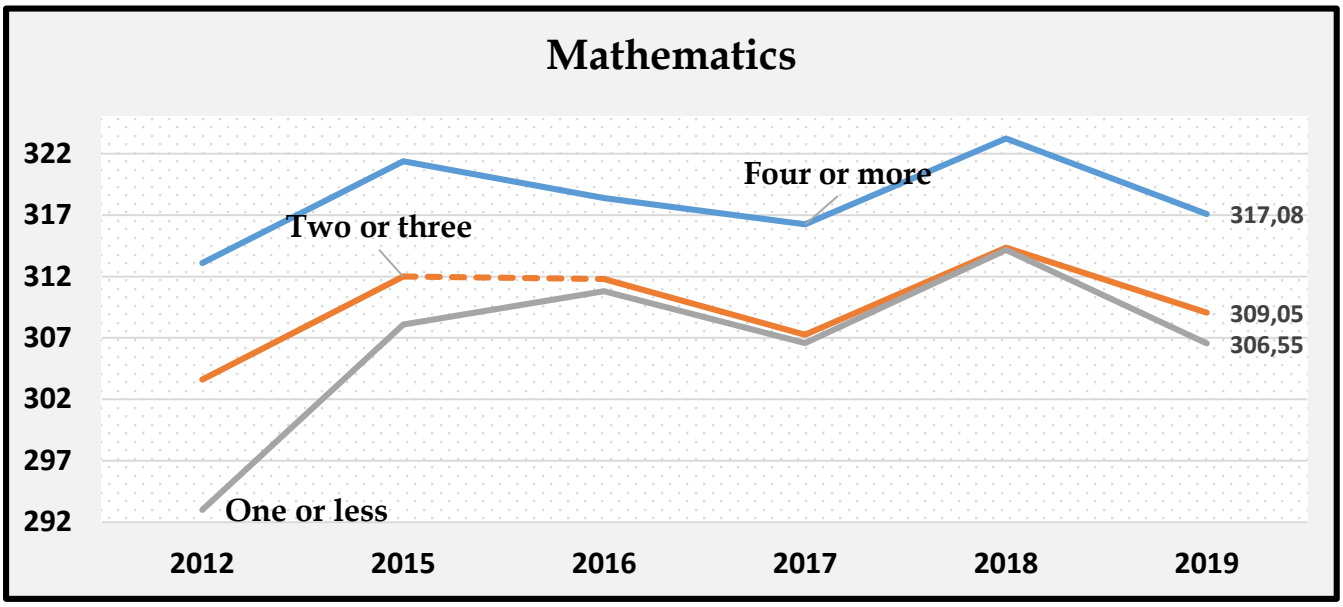


Figure 2.17: Mean performance in Mathematics by number of home educational resources since 2012

The proficiency levels for the number of home educational resources for 2019 are shown in Table 2.24. For both English and Mathematics, the results indicate that as the number of home educational resources per learner increases, the percentage of students performing at or above grade level also increases. Put differently, as the number of home educational resources per learner increases, the percentage of students performing below grade level decreases.

Table 2.24: Cross-tabulation of Proficiency level and number of home educational resources for 2019

Proficiency Level	One or less	Two or three	Four or more	Total
English				

Above grade level	12.1%(433)	13.9%(1017	30.6%(12.37)	18.0%(2687)
At grade level	41.1%(1466)	42.2%(3234)	42.9%(1734)	43.1%(6434)
Below grade level	46.8%(1671)	41.9%(3071)	26.4%(1067)	38.9%(5809)
Total	100%(3970)	100%(7322)	100%(4038)	100%(14930)
Mathematics				
Above grade level	12.2%(435)	13.4%(983)	26.1%(1052)	16.5%(2470)
At grade level	38.5%(1376)	44.8%(3278)	45.8%(1848)	43.5%(6502)
Below grade level	49.3%(1759)	41.8%(3061)	28.2%(1138)	39.9%(5958)
Total	100%(3570)	100%(7322)	100%(4038)	100%(14930)

In Table 2.24, learners with four or more educational resources had the highest percentage of learners performing above grade level with 30.6% and 26.1% in English and Mathematics respectively. Learners with higher home educational resources outperformed those with lower home educational resources. The obvious reason for this difference is that learners with higher home educational resources have an opportunity to use those resources for study purposes at home than those without.

2.7.10 Highest parental education

Learners were asked to record the highest level of education completed by each of their parents or guardians. The variable used for the analysis was the higher level of education attained by the two parents or guardians. As shown in Table 2.25, learners with a parent or guardian who completed a tertiary education outperformed learners with a parent or guardian who completed secondary school in both English and Mathematics in 2012, 2018 and 2019. In 201, the mean score for learners with a parent or guardian who completed a tertiary education was 328.27 in English while the corresponding score for learners with a parent or guardian who completed secondary school was 323.03. The difference was large and statistically significant. Overall, all the groups experienced significant increases in both English and Mathematics performance between 2012 and 2018. Between 2018 and 2019, there was no significant

change in the performance of learners whose parents or guardians completed a tertiary course. There was however an overall decrease in performance by learners whose parents or guardians fell in the other three categories.

Table 2.25: Performance in English and Mathematics by highest parental education since 2012

English	**2012**		**2018**		**2019**	**2012-2019**
Completed a tertiary course	325.8(2.93)	⇑	329.68(0.53)	⇔	328.27(0.65)	⇑
Difference	⇑		⇑		⇑	
Completed secondary school	300.5(0.94)	⇑	313.07(0.24)	⇓	308.78(0.21)	⇑
Difference	⇑		⇑		⇑	
Completed primary school	296.0(1.02)	⇑	308.5(0.52)	⇓	302.63(0.46)	⇑
Difference	⇑		⇑		⇑	
Did not go to school	293.2(1.52)	⇑	304.09(0.98)	⇓	299.04(1.08)	⇑
Mathematics	**2012**		**2018**		**2019**	**2012-2018**
Completed a tertiary course	321.4(2.02)	⇑	327.34(0.43)	⇓	323.03(0.50)	⇑
Difference	⇑		⇑		⇑	
Completed secondary school	301.0(0.90)	⇑	315.08(0.21)	⇓	309.76(0.19)	⇑
Difference	⇑		⇑		⇑	
Completed primary school	296.3(1.13)	⇑	311.01(0.47)	⇓	305.22(0.41)	⇑
Difference	⇑		⇑		⇑	
Did not complete a school	292.7(1.67)	⇑	304.73(0.9)	⇓	301.26(1.01)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

For all the groups, Figure 2.18 shows that there were no significant changes in English performance between 2012 and 2015. However, all groups improved significantly between 2015 and 2016 as shown by the solid lines. Between 2016 and 2017, only learners with a parent or guardian who completed secondary education decreased

significantly, whilst the rest of the groups remained stable. Figure 2.18 further reflects that between 2017 and 2018 there were no significant changes in English performance for all the groups of learners. In 2019 there was no significant change in the performance of learners whose parents completed a tertiary course. However, the performance of learners whose parents belonged to the other three groups decreased significantly. There is also a positive correlation between learners' performance and highest parental education in English as depicted by figure 2.18.

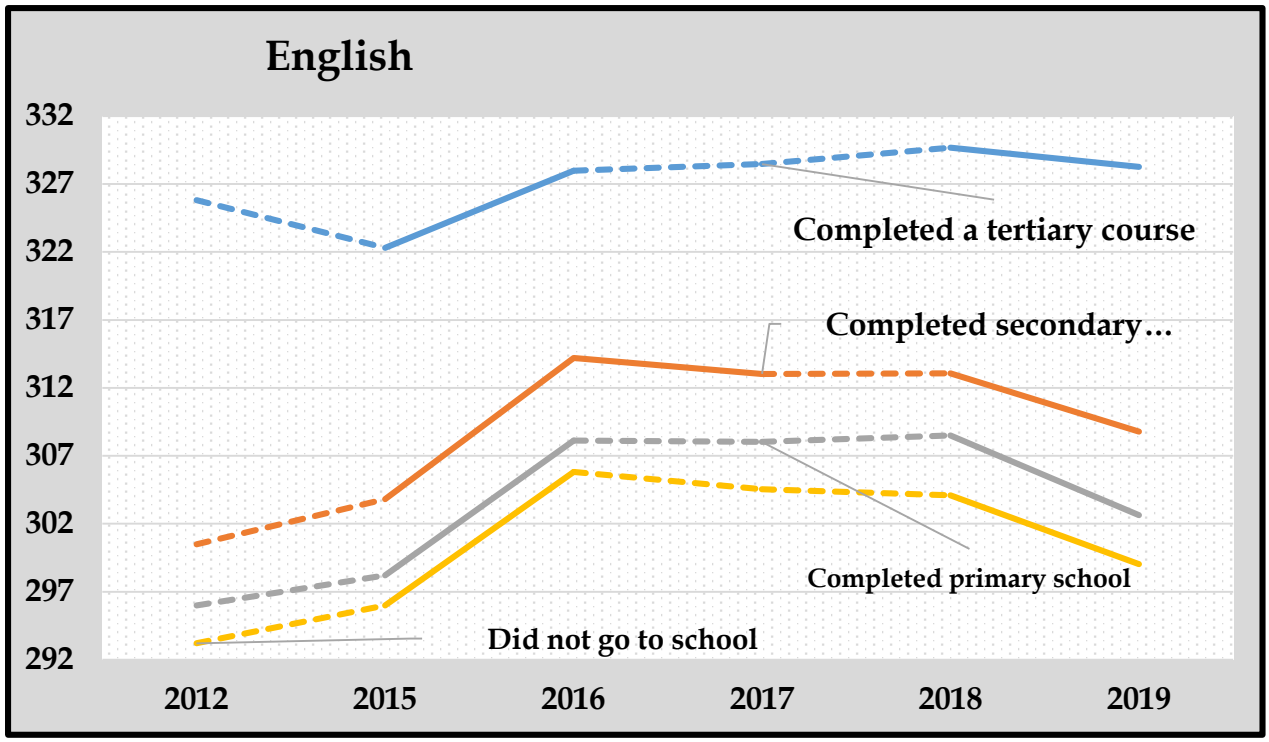


Figure 2.18: Mean performance in English by highest parental education since 2012

As shown in Figure 2.19, learners with a parent or guardian who completed a tertiary education outperformed all other groups in Mathematics. The difference was large between learners with parents who completed a tertiary course and learners with parents who completed secondary school. This difference appeared to be decreasing over time. Learners with parents who completed secondary school, learners with parents who completed primary school and learners with parents who did not go to school showed long term improvement in Mathematics between 2012 and 2016 but decreased significantly between 2016 and 2017, and finally increased significantly between 2017 and 2018. It is noted on the same graph that in 2019 the performance of learners with parents in all four categories decreased significantly.

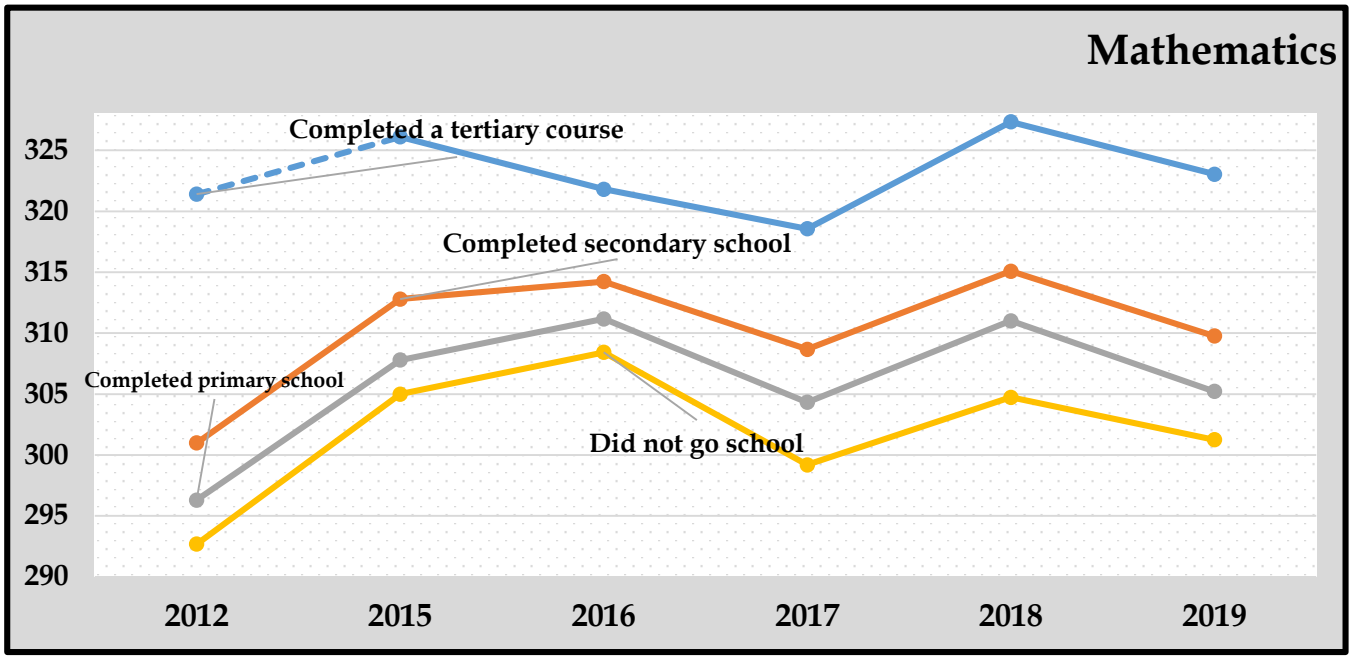


Figure 2.19: Mean performance in Mathematics by highest parental education since 2012

2.8 Learner Performance in Local Languages in 2019

Schools and learners were given the opportunity to select an local language test to respond to among Shona, Ndebele, Nambya, Tshivenda, Kalanga, Xichangana and Tonga. Tests were developed for these local languages. Among the sampled schools, tests were administered in the seven local languages. However Tshivenda was excluded on the analysis for 2019 because it had too few respondents and an optional solution could not be found for convergence. No weights were applied in analysing these language tests since these tests were self-selected by the schools and learners according to the local language taught at infant level. In addition, these results are also not comparable over time meaning no comparable analysis was done from all the assessment years but just for 2019.

Table 2.26: Mean performance of learners responding to Ndebele, Shona, Tonga, Xichangana, Kalanga and Nambya

Variable	Options	Ndebele	Shona	Tonga	Xichangana	Kalanga	Nambya
Gender	Boy	299.55	297.51	300.04	299.98	299.97	299.96
	Girl	300.5	302.5	299.99	299.83	300.04	300
School type	Registered	300.23	300.84	300.01	299.89	300.06	299.99
	Satellite	298.98	295.73	300.02	299.96	299.65	299.92
Location	Urban	302.53	309.72	300.24	300.07	300.31	299.85
	Rural	299.63	298.47	299.98	299.87	299.95	300

Province	Bulawayo	308.49	300.39	299.75			
	Harare		310.11				
	Manicaland		297.29				
	Mashonaland Central		296.22				
	Mashonaland East		300.52				
	Mashonaland West	299.79	296.23	300.01	299.93		299.87
	Masvingo		302.6				
	Matabeleland North	295.12		300.36	299.91	300.22	300.67
	Matabeleland South	300.98			299.4	300.03	299.77
	Midlands	299.98	301.35				

The mean performance of learners that responded to the Shona, Ndebele, Tonga, Xichangana, Nambya and Kalanga tests for 2019 are recorded in Table 2.26 for each of the subgroups of gender, school type, school location and province. Girls performed better than boys in Shona and the difference in mean performance was significant. There was no significant differences in performance of boys and girls in the other local languages. Learners learning at registered schools performed better than those at satellite schools in Shona. In the other languages the differences in performance between registered and satellite schools was statistically insignificant. Learners from urban schools outperformed those from rural areas in Shona and Ndebele as shown in Table 2.26. There are no significant differences in performance between urban and rural learners in the other indigenous languages. Harare, Masvingo and Midlands outperformed the other provinces in Shona, while Bulawayo and Matabeleland South provinces were the best performers in Ndebele. There were no significant Performance differences in Xichangana, Tonga, Nambya and Kalanga in all the provinces.

CHAPTER 3

SOCIO-ECONOMIC EQUITY IN EDUCATION IN ZIMBABWE

3.0 Introduction

Equity in education means that personal or social circumstances such as gender, location, ethnic origin or family background, are not obstacles to achieving

educational potential (fairness) and that all individuals reach at least a basic minimum level of skills (inclusion). In these education systems, the vast majority of students have the opportunity to attain high level skills, regardless of their own personal and socio-economic circumstances. According to OECD (2013b), the highest performing education systems are those that combine equity with quality and they give all children opportunities for a good quality education.

In analysing the ZELA 2019 results, we explore how Zimbabwe is providing education opportunities and achieving educational outcomes, which are an indication of equity in society as a whole. The index of Socio-Economic Status (SES) was estimated for each student from highest parental education, number of books at home, number of home possessions (electricity, piped water, borehole, television and radio), number of meals per day and number of home educational resources. Students were classified into three main categories (High SES, Medium SES and Low SES) depending on these five components. The rationale for using these five components was that socio-economic status is usually based on education, occupational status and income.

3.1 Performance and Socio-economic status

One instinctive way to analyse the relationship between learners' performance and SES is to estimate the percentage of learners achieving at, above and below grade level of SES. Figure 3.1 below is a bar graph showing percentages of learners below, at and above grade level for English by SES in 2012, 2018 and 2019. In 2012, 2% of the learners in the Low SES category achieved above grade level while 13% in the Low SES category achieved above grade level in 2018, while 10% of these learners were above grade level in 2019. The percentage of learners in the Low SES category achieving above grade level rose from 2% in 2012 to 13% in 2018 and decreased to 10% in 2019. The results are similar for Medium SES and High SES categories for English performance. These results indicate that there is general improvement in performance between 2012 and 2018 for learners in all SES groups. There is however a general decrease in English performance for learners in all categories in 2019. The results also show a widening gap in performance between learners from low SES and learners from high SES.

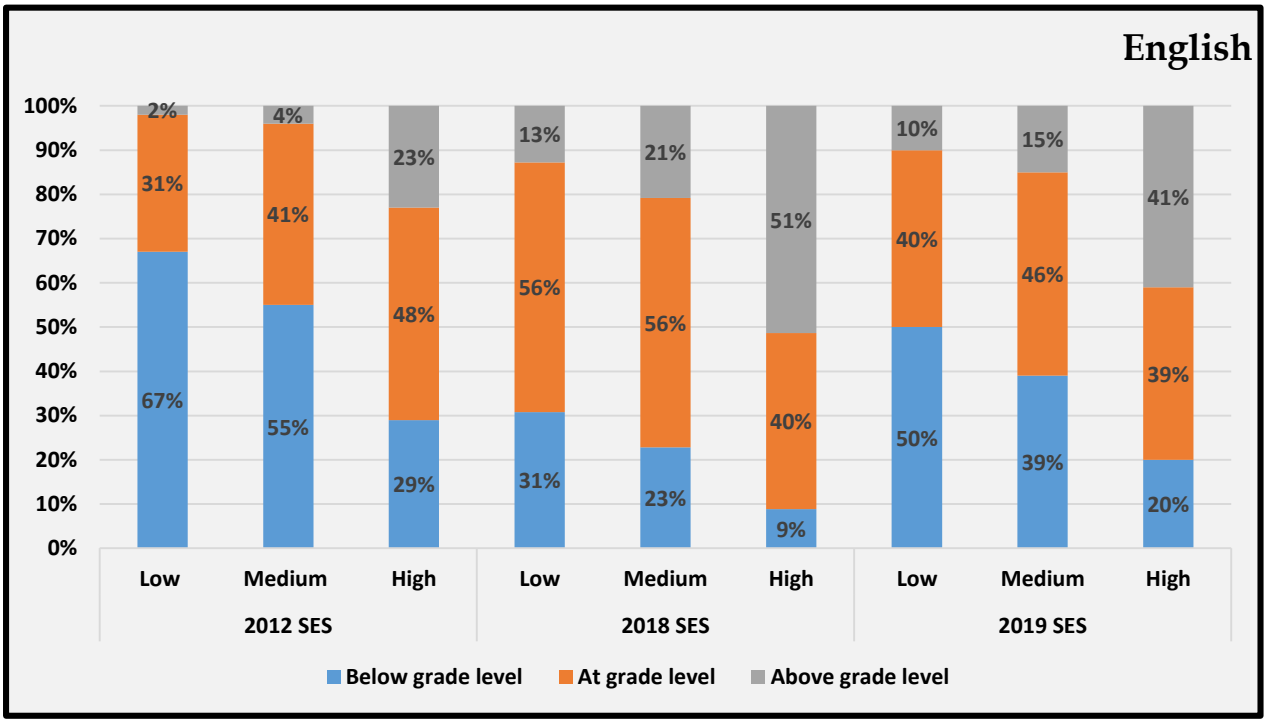


Figure 3.1: Percentage of learners below, at and above grade level for English by SES in 2012, 2018 and 2019

The percentage of learners achieving at or above grade level increases with increasing SES and the percentage of learners achieving below grade level decreases with increasing SES in both English and Mathematics. Figure 3.2 shows the percentage of learners below, at and above grade level for Mathematics by SES in 2012, 2018 and 2019. These Mathematics results portray a similar pattern to those of English. For Mathematics, the percentage of learners performing below grade level in 2018 was 37% in the Low SES group, 27% in the medium SES group and 12% in the High SES group. In 2019, the percentage of learners performing below grade level rose to 51% for low SES while the percentage of learners performing below grade level for medium SES and High SES also increased to 39% and 21% respectively. These findings show inequity in education in Zimbabwe, since most of the good performers are from the high SES category.

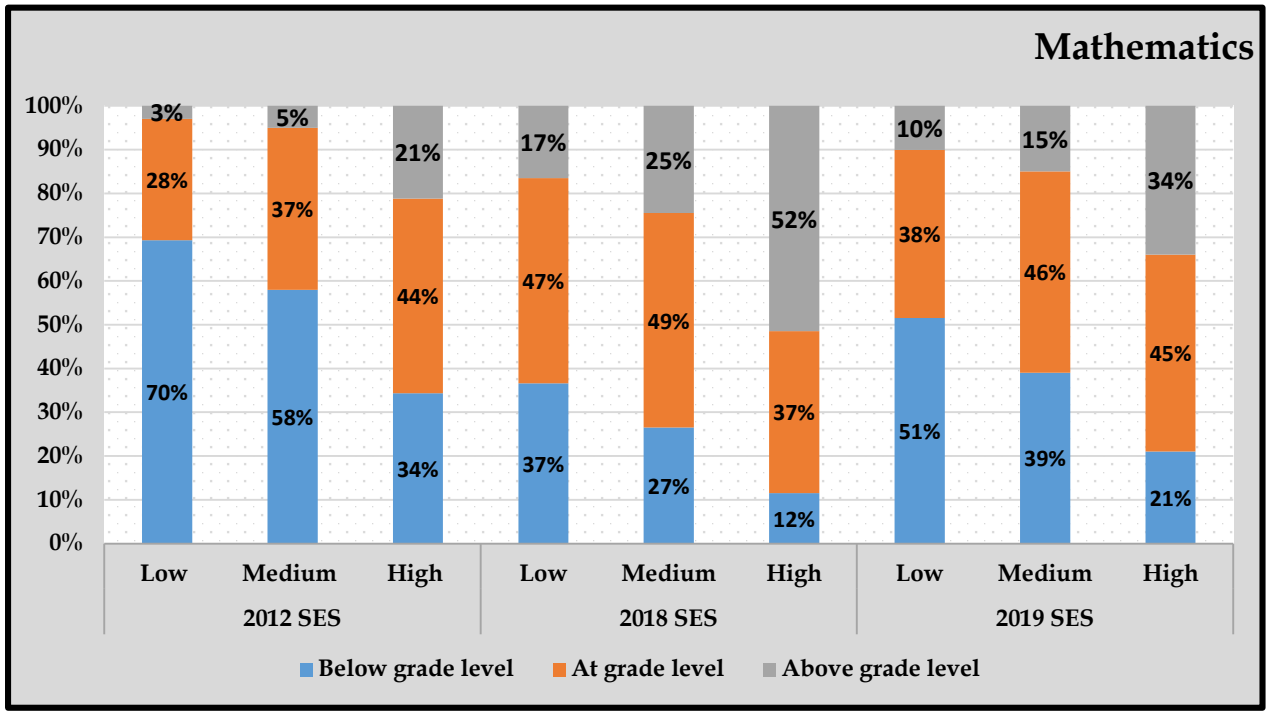


Figure 3.2: Percentage of learners below, at and above grade level for Mathematics by SES in2012, 2018 and 2019.

3.2 Socio-economic equity since 2012

Comparison of equity levels between assessments was done through comparisons of mean performance scores of SES groups. There has been a positive trend in learners' performance since 2012 in both English and Mathematics as shown in Table 3.1. Although the ZELA results indicate a significant improvement in performance across the years, socio-economic status (SES) is still a strong predictor of performance and is associated with large differences in performance. Results shown in Table 3.1 below indicate that on average, learners with High SES outperform those with medium SES who in-turn outperform learners with low SES.

Table 3.1: Performance in English and Mathematics by socio-economic equity in 2012, 2018 and 2019

English	**2012**		**2018**		**2019**	**2012-2019**
Low SES	290.4(0.84)	⇑	309.11(0.33)	⇓	303.59(0.31)	⇑
Difference	⇓		⇓		⇓	
Medium SES	296.7(0.77)	⇑	314.74(0.27)	⇓	308.97(0.25)	⇑

Difference	⇓		⇓		⇓	
High SES	313.5(1.83)	⇑	335.07(0.68)	⇓	325.50(0.54)	⇑
Mathematics	**2012**		**2018**		2019	**2012-2019**
Low SES	290.4(0.98)	⇑	311.4(0.3)	⇓	305.55(0.29)	⇑
Difference	⇓		⇓		⇓	
Medium SES	297.6(0.79)	⇑	316.55(0.23)	⇓	310.10(0.22)	⇑
Difference	⇓		⇓		⇓	
High SES	312.1(1.52)	⇑	330.61(0.54)	⇓	321.19(0.41)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

For 2019, learners from low socio-economic status (Low SES) had a mean performance of 303.59 score points, whilst those from medium socio-economic status (Medium SES) and high socio-economic status (High SES) had 308.97and 325.50 score points respectively in English. For Mathematics, students from Low SES had a mean of 305.55 those from medium SES had 310.10 and those from High SES had a mean of 321.19 score points. These statistically significant differences suggest that learners' personal or social circumstances are obstacles to achieving their educational potential. The results indicate lack of fairness and lack of inclusion. Performance differences between socio-economically advantaged and disadvantaged learners indicate the degree to which an education system is equitable. Disparities in education based on socio-economic status can create a significant drag on economic growth and development. Table 3.2 below is a cross tabulation for proficiency levels and socio-economic status for 2018.

Table 3.2: Cross-tabulation of Proficiency level and socio-economic status for 2019

Proficiency Level	**Low SES**	**Medium SES**	**High SES**	**Total**
English				

Above grade level	10.2%(452)	15.0%(1195)	41.1%(1040)	18.0%(2687)
At grade level	40.0%(1778)	46.3%(3678)	38.7%(978)	43.1%(6434)
Below grade level	49.9%(2219)	38.7%(3079)	20.2%(511)	38.9%(5809)
Total	100%(4449)	100%(7952)	100%(2529)	100%(14930)
Mathematics				
Above grade level	10.2%(455)	14.7%(1166)	33.6%(849)	16.5%(2470)
At grade level	38.3%(1705)	46.0%(3657)	45.1%(1140)	43.5%(6502)
Below grade level	51.4%(2289)	39.3%(3129)	21.4%(540)	39.9%(5958)
Total	100%(4449)	100%(7952)	100%(2529)	100%(14930)

For English, results in Table 3.2 show that 50.2% of the learners from low SES achieved at or above grade level, whilst 61.3% of the learners from medium SES achieved at or above grade level and 79.8% of learners from high SES achieved at or above the grade level. This means the percentage of learners achieving at or above grade level increases with increasing SES and the percentage of learners achieving below grade level decreases with increasing SES. The performance of learners in English and Mathematics was almost the same in 2019, and both subjects have a similar pattern or trend. For Mathematics, the results are showing that 48.5% of the students from low SES achieved at or above grade level whilst 60.7% from medium SES and 78.7% from high SES achieved at or above grade level. The results presented in this chapter indicate an improvement in learners' performance and existence of inequity in education in both English and Mathematics between 2012 and 2018. However, the results for 2019 show a decrease in learner performance and disparities in educational attainment. What is clearer is the increase in performance with increasing socio-economic status.

3.3 Differences between and within schools

A different method for analysing socio-economic equity is to focus on the degree in which schools vary from each other in performance, relative to the degree in which

learners vary from each other within schools and to relate these disparities with SES at the school and learner levels. Average performance differs between educational systems or countries. Similarly, the performance scores of individual learners within an educational system differ from the average. In some educational systems, these differences between learners are larger than in other ones. A mathematical way to describe this amount of dispersion or variation is the variance. Both the average and variance in performance differ between educational systems and can change over time. In a similar way, schools differ from each other in average performance and learners perform differently from each other within each school. The balance of these two forms of variation differs between educational systems. In some countries, schools are on average quite similar to each other in performance but learners within those schools vary considerably. In other words, the total variance can be delineated into between-school variance and within-school variance so that the sum of the between-school variance and the within-school variance is equal to the total variance.

In Zimbabwe, the total variance was 613.22 in English performance in 2019, where the between school variance was 33% and the within school variance, 67%. From 2012 to 2019, there was a decrease in the between school variance from 41% to 33%. However, for the within school variance, it increased from 59% in 2012 to 67% in 2019. From 2015 to 2016, the between school variance decreased from 51% to 47% whilst the within school variance increased from 50% to 53%. In 2012, 2015, 2016 and 2017, the unexplained variance was larger than the explained variance. In 2019, the same trend is observed, as the unexplained variance is larger in both between school and within school variances as shown in Figure 3.3 below.

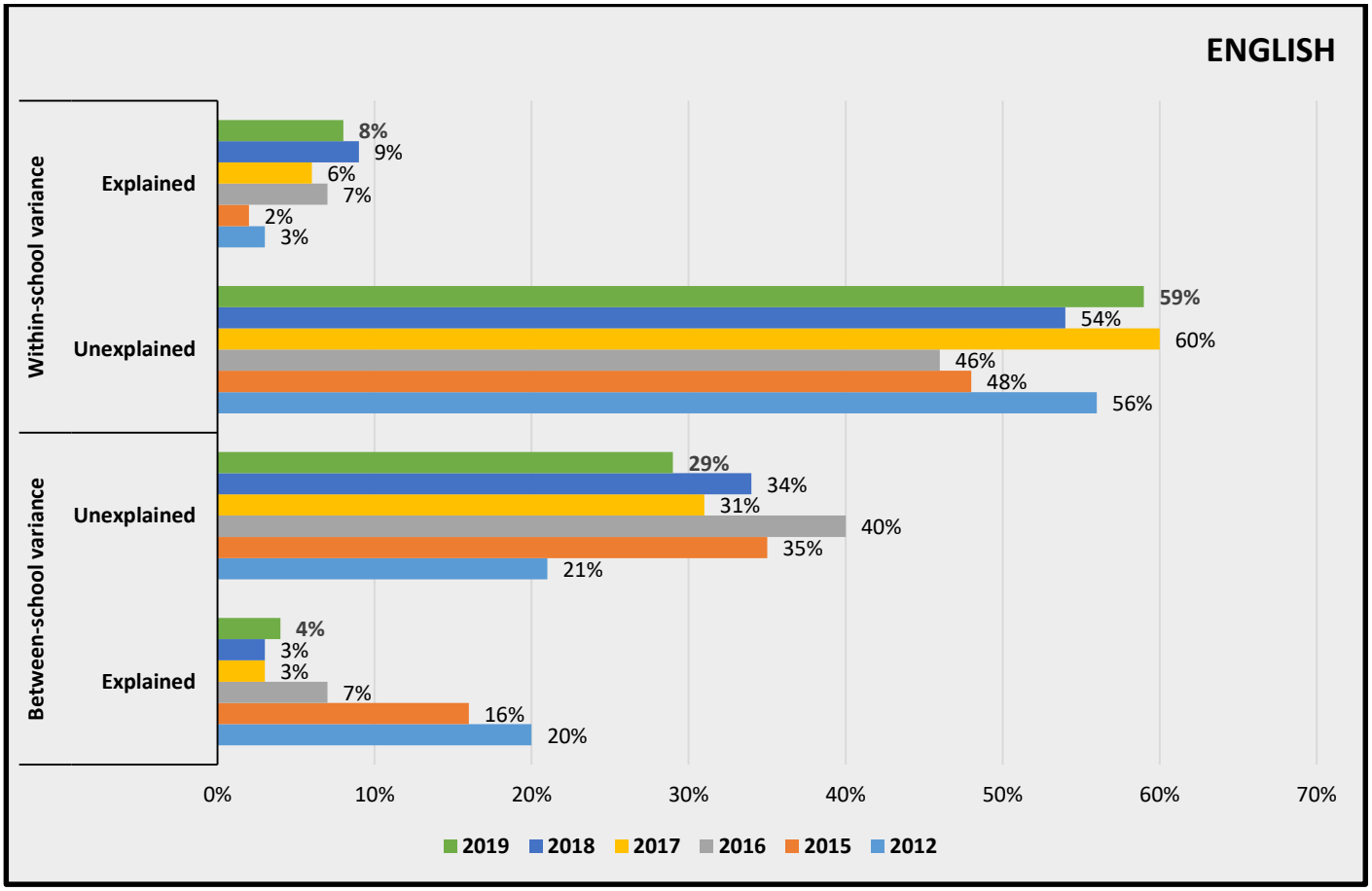


Figure 3.3: Between and within school variance in English performance, explained and unexplained by SES in 2012, 2015, 2016, 2017, 2018 and 2019.

For Mathematics performance, in 2019, the total variance was 500.23 where the between school variance was 40% and the within school variance 60%. From 2012 to 2019, there was an increase in the between school variance from 35% to 40%. However, for the within school variance, it decreased from 65% in 2012 to 60% in 2019. From 2018 to 2019, the between school variance decreased from 45% to 40% whilst the within school variance increased from 55% to 60% over the same period. In 2012, 2015, 2016, 2017 and 2018, the unexplained variance was larger than the explained variance. In 2019, the same trend was observed as the unexplained variance was larger in the within school variance.

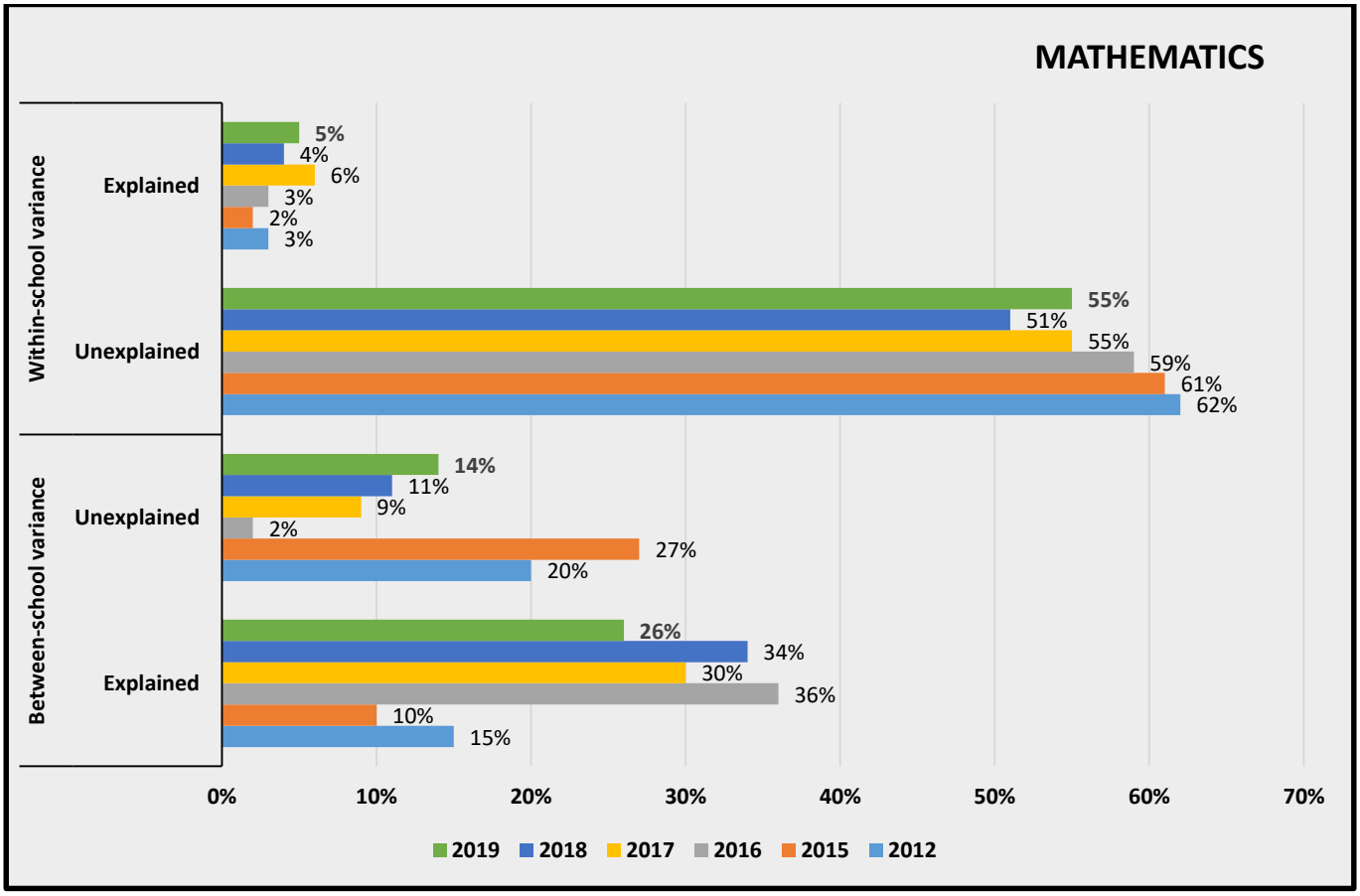


Figure 3.4: Between and within school variance in Mathematics performance, explained and unexplained by SES in 2012, 2015, 2016, 2017, 2018 and 2019.

Since the SES of a learner is a strong predictor of performance, SES explains a relatively large percentage of the total variance in performance. SES can also be used to explain variance between and within schools. The figures above show how much of the total variance was between schools and within schools and how much of these variance components were explained by the school's average SES and a student's personal SES since 2012.

The between variance is split by explained and not explained by school mean SES. The within schools variance is split by explained and not explained by family SES and the between schools was explained by difference in mean school SES. This means that the average socio-economic background of the families attending a school largely determined the level of performance in the school. This finding suggests a low level of equity. However, when comparing over time in English, the percentage explained by school level SES decreased somewhat from 20 in 2012 to 4 in 2019 and the

percentage not explained by SES increased from 21 to 29. This result suggests an increase in equity, because the degree in which schools differ in performance, has become less strongly associated with SES. However, in Mathematics, the percentage explained by school level SES increased somewhat from 15 in 2012 to 26 in 2019 and the percentage not explained by SES decreased from 20 in 2012 to 14 in 2019. However, the explained variance for 2019 increased to 26%.

3.4 Conclusion

Socio-economic equity in education is defined as providing all students, regardless of SES, with similar opportunities to benefit from education. Less equitable educational systems show stronger relationships between performance and SES. The first section in this chapter confirmed that there is a strong relationship between learners' performance and their socio-economic background. These results also align with the Biggs model used as the methodological framework for this study by highlighting the input-process-output model of interactive learning.

Generally, educational systems with lower socio-economic equity consist of schools that differ more from each other in average performance than educational systems with higher socio-economic equity. In other words, in educational systems, higher performing students attend similar schools together, while lower performing students attend other schools. In addition, the variation in average school performance is associated with the average SES of the families attending the schools. The divide can be caused by factors such as urban versus rural areas, locations of schools within expensive living areas versus cheaper areas and differences in school fees.

The disparity between high and low performing schools was for a large part explained by the average socio-economic background of the families attending the schools. However, the proportion of this disparity that was explained by SES appeared to decrease from 2012 to 2019, indicating growing socio-economic equity in education.

CHAPTER 4

PERFORMANCE IN ENGLISH AND MATHEMATICS WITHIN THE ZIMBABWE EDUCATIONAL CONTEXT

4.0 Introduction

This chapter describes relationships found in the full population between learner performance, characteristics of the school and learning environment. The way in which statistics are presented are pretty much similar to the presentation in chapter three. All reported results in this chapter are based on learner-level analysis. That is, learners were the unit of analysis, even for variables that were collected at school-level.

4.1 School Characteristics

Some descriptions of school characteristics were collected in the school head questionnaire. The characteristics that were collected and related to performance for this chapter are:

i. School type (Registered versus Satellite)
ii. School facilities (Electricity and Water)
iii. School budget (The total budget divided by school size)

4.1.1 School type

In Zimbabwe, there are two school types; registered and satellite schools. These school types differ in school facilities, infrastructure and resources. Satellite schools do not have adequate school facilities, infrastructure and resources as registered schools. Table 4.1 shows the performance in English and Mathematics by school type in 2012, 2018 and 2019. Across the years, the results indicate a significant improvement in English and Mathematics performance from 2012 to 2019 in spite of the 2019 performance decrease for both Mathematics and English for both Registered and Satellite schools. Between the groups, the results indicate that registered schools outperformed Satellite schools in both English and Mathematics in 2012, 2018 and

2019. The difference in 2018 performance between registered and satellite school was 9.91 (316.98 - 307.07) score points for English and 6.69 (317.69 - 311) score points for Mathematics. In 2019, the difference between registered and satellite schools was 7.53 score points for English (311.29 - 303.76) and 5.26 score points (311.41 - 306.15) for Mathematics. These differences are both significant. This shows that the difference in English performance between Registered and Satellite schools was larger than that of Mathematics. In addition, the gap in performance between registered and satellite schools narrowed between 2018 and 2019 in both English and Mathematics.

Table 4.1: Performance in English and Mathematics by school type in 2012, 2018 and 2019

English	**2012**		**2018**		**2019**	**2012-2019**
Registered	300.8(1.09)	⇑	316.98(0.23)	⇓	311.29(0.21)	⇑
Difference	⇑		⇑		⇑	
Satellite	291.4(0.85)	⇑	307.07(0.44)	⇓	303.76(0.45)	⇑
Mathematics	**2012**		**2018**		**2019**	**2012-2019**
Registered	300.6(1.06)	⇑	317.69(0.19)	⇓	311.41(0.18)	⇑
Difference	⇑		⇑		⇑	
Satellite	293.4(1.05)	⇑	311(0.42)	⇓	306.15(0.89)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

As shown in Figure 4.1 there was a significant gap between the performances of learners in registered schools as compared to satellite schools in both English and Mathematics. Learners in registered schools outperformed learners in satellite schools.

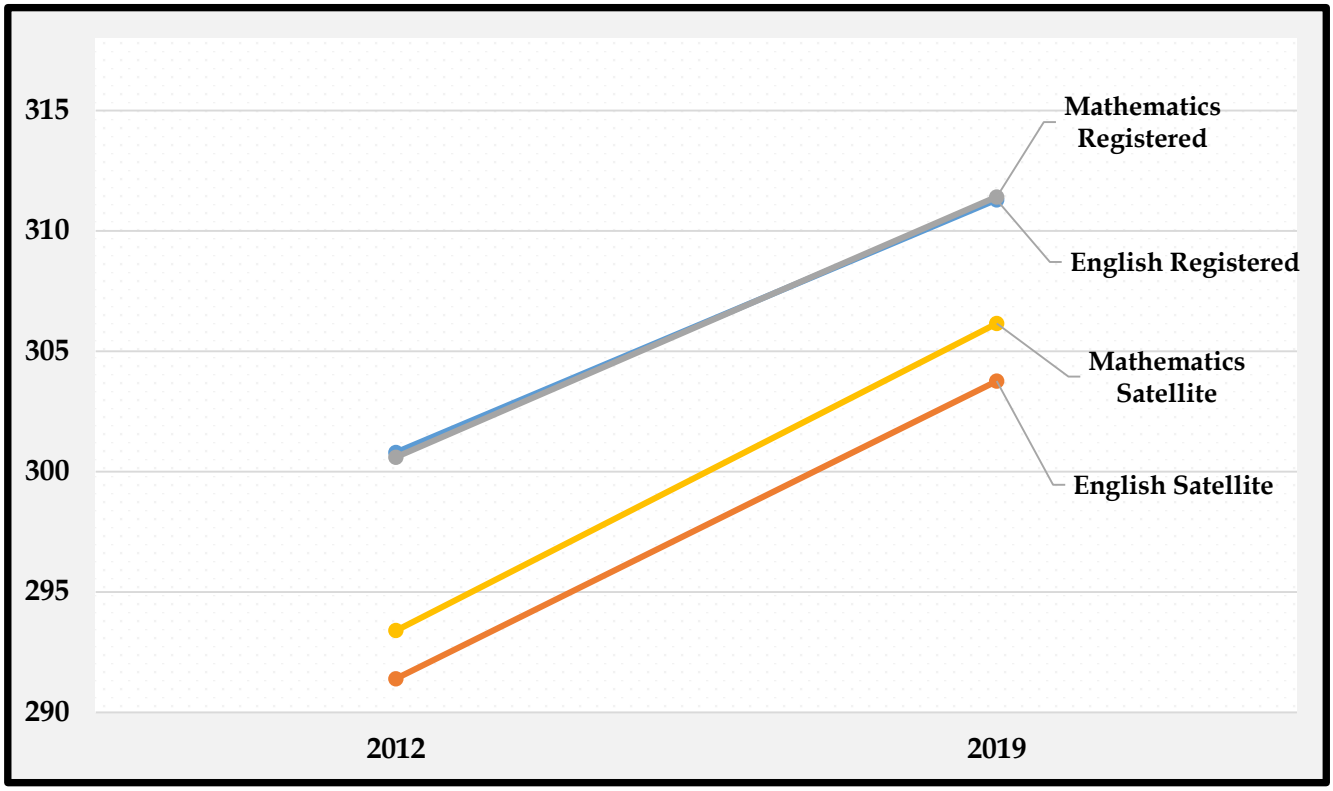


Figure 4.1: Mean performance in English and Mathematics by school type since 2012

Table 4.2 is a cross-tabulation of proficiency levels and school type for 2019. The results indicate that 62.7% of learners from registered schools performed at or above grade level in English whilst 51.6% of learners from satellite schools performed at or above grade level in 2018. For Mathematics, 61.7% of learners from registered schools performed at or above grade level whilst 51.1% of learners from Satellite schools performed at or above grade level in 2018. These results indicate that learners from registered schools performed better than learners from satellite schools. A plausible explanation is that registered schools have better school facilities, infrastructure and resources, therefore, are more likely to afford educational resources for learners and attract better qualified teachers, hence producing better test results.

Table 4.2: Cross-tabulation of Proficiency level and school type for 2019

Proficiency Level	Registered	Satellite	Total
English			
Above grade level	19.4%(2468)	9.9%(219)	18.0%(2687)
At grade level	43.3%(5509)	41.7%(925)	43.1%(6434)
Below grade level	37.2%(4733)	48.5%(1076)	38.9%(5809)
Total	100%(12710)	100%(2220)	100%(14930)
Mathematics			
Above grade level	17.8%(2264)	9.3%(206)	16.5%(2470)
At grade level	43.9%(5574)	41.8%(928)	43.5%(6502)
Below grade level	38.3%(4872)	48.9%(1086)	39.9%(5958)
Total	100%(12710)	100%(2220)	100%(14930)

4.1.2 School facilities

Electricity and Water

School heads were asked if their schools had the following items; water (piped, tank or spring) and electricity (mains, generator or solar). Descriptive statistics were computed on the total number of items, in the list, they had at the school, on whether they had both electricity and water, either of the two, or none. The results indicate that 28.9% had neither electricity nor water, 39.6% had either electricity or water (but not both) and 31.5% had both electricity and water. English and Mathematics performance based on these three groups are presented in Table 4.3 below.

Table 4.3: Performance in English and Mathematics in schools with and without electricity and water in 2012, 2018 and 2019

English	**2012**		**2018**		**2019**	**2012-2019**
Electricity and water	308.1(2.64)	⇑	323.33(0.34)	⇓	320.05(0.38)	⇑
Difference	⇑		⇑		⇑	
Either electricity or water	295.0(1.18)	⇑	309.78(0.27)	⇔	307.66(0.29)	⇑
Difference	⇑		⇑		⇑	
No electricity and no water	291.3(1.33)	⇑	306.54(0.59)	⇓	302.82(0.29)	⇑
Mathematics	**2012**		**2018**			**2012-2019**
Electricity and water	306.6(2.27)	⇑	322.38(0.28)	⇓	317.77(0.31)	⇑
Difference	⇑		⇑		⇑	
Either electricity or water	296.2(1.45)	⇑	312.4(0.24)	⇓	307.59(0.25)	⇑
Difference	⇑		⇔		⇔	
No electricity and no water	292.6(1.68)	⇓	310.86(0.55)	⇓	306.99(0.28)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

In Table 4.3, results show a significant increase in performance in both English and Mathematics in 2018 from schools with both electricity and water. The other two groups of learners showed a significant decrease in performance in English while the same groups of learners registered no significant change in performance in Mathematics. In 2019 there was overall decrease in performance by learners in both English and Mathematics in all the three categories. In English, there was no significant change in performance for learners with water or electricity in their homes.

Figure 4.2 below is a column graph showing that learners performed better in 2019 than 2012 in both English and Mathematics. In 2012, learners from schools with both water and electricity performed better than learners from schools with either electricity or water who in-turn performed better than learners from schools without electricity and water in both English and Mathematics. The graph shows clear differences in height for both English and Mathematics performance in 2019. This means that the performance differences among the groups in 2019 were large.

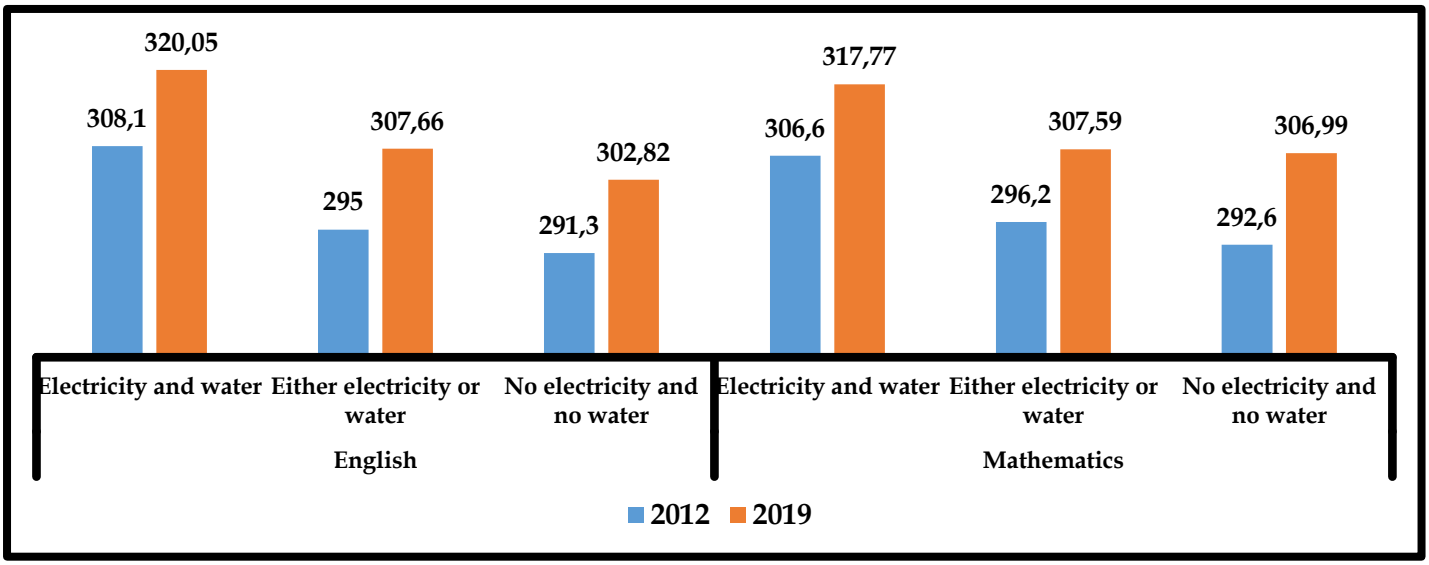


Figure 4.2: Mean performance in English and Mathematics by availability of water and electricity since 2012

Consistent with the results above, 74.4% of learners from schools with water and electricity performed at or above grade level in English and 57.7% and 51.2% from schools with either electricity or water and schools with neither of the two performed at or above grade level respectively, as shown in Table 4.4 below. For Mathematics, 72.9% of learners from schools with water and electricity performed at or above grade level and 54.5% and 53.7% from schools with either electricity or water and schools with neither of the two performed at or above grade level respectively.

Table 4.4: Cross-tabulation of Proficiency level and availability of water and electricity for 2019

Proficiency Level	No electricity, No water	Either electricity or water	Electricity and water	Total
English				
Above grade level	7.6%(326)	14.4%(851)	32.1%(1510)	18.0%(2687)
At grade level	43.6%(1881)	43.3%(2562)	42.3%(1991)	43.1%(6434)
Below grade level	48.8%(2107)	42.3%(2500)	25.6%(1202)	38.9%(5809)
Total	100%(4314)	100%(5913)	100%(4703)	100%(14930)
Mathematics				
Above grade level	10.0%(433)	11.8%(697)	28.5%(1340)	16.5%(2470)
At grade level	43.7%(1885)	42.7%(2527)	44.4%(2090)	43.5%(6502)
Below grade level	46.3%(1996)	45.5%(2689)	27.1%(1273)	39.9%(5958)
Total	100%(4314)	100%(5913)	100%(4703)	100%(14930)

4.1.3 School Budget

One question in the school head questionnaire asked for the total annual budget for the school for the current financial year. The instruction was included that the total annual budget referred to all of the funds received by the school throughout the financial year, including government funding, grants, school fees and any other funds received to fund the operations of the school. In order to make the budget comparable across schools, the total budget was divided by the school size to create an index for the size of the budget per learner.

By exploring the distribution of this index and consulting with the ZIMSEC research team, three groups were created: schools with more than US$60 per learner (large budget), schools with US$30 to US$60 per learner (medium budget) and schools with less than US$30 per learner (small budget). Table 4.6 shows the relationship between

mean performance and budget per learner within urban and rural areas in 2012, 2018 and 2019.

Table 4.6: Relationship between mean performance and budget per learner within urban and rural areas in 2012, 2018 and 2019

URBAN AREAS	**2012**		**2018**		**2019**	**2012-2019**
English						
Less than $30	308.4(3.7)	⇑	337.73(1.37)	⇓	332.95(0.59)	⇑
Difference	⇑		⇑		⇔	
Between $30 and $60	296.5(4.61)	⇑	330.37(1.87)	⇑	333.25(2.81)	⇑
Difference	⇓		⇓		⇓	
More than $60	318.2(4.81)	⇑	342.71(0.75)	⇑	348.56(2.56)	⇑
Mathematics						
Less than $30	306.9(4.46)	⇑	327.75(1.12)	⇔	325.11(0.48)	⇑
Difference	⇔		⇔		⇔	
Between $30 and $60	298.3(4.93)	⇑	325.21(1.35)	⇔	325.28(2.30)	⇑
Difference	⇓		⇓		⇓	
More than $60	315.7(3.55)	⇔	336.11(0.62)	⇔	337.33(2.22)	⇑
RURAL AREAS	**2012**		**2018**		**2019**	**2012-2019**
English						
Less than $30	293.2(1.27)	⇑	309.83(0.33)	⇓	306.20(0.19)	⇑
Difference	⇔		⇔			

Between $30 and $60	293.6(1.68)	⇑	311.85(0.31)		____	
Difference	⇓		⇔			
More than $60	305.2(3.15)	⇔	313.09(0.45)	⇓	308.76(1.26)	⇑
Mathematics						
Less than $30	293.7(1.71)	⇑	312.87(0.3)	⇓	308.00(0.17)	⇑
Difference	⇔		⇔			
Between $30 and $60	294.8(1.37)	⇑	314.06(0.28)		_____	
Difference	⇓		⇔			
More than $60	306.0(2.62)	⇔	315.61(0.38)	⇔	313.94(1.20)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

In 2019, in Mathematics and English learners in urban schools with a budget of more than $60 outperformed learners in urban schools with a budget of between $30 and $60, and the difference was significant. There was however no significant differences between the performance of learners in urban schools with a budget of between $30 and $60 and less than $30 in English and Mathematics. Between 2018 and 2019, there was an increase in the performance of learners in English in urban schools with a budget of more than $60 and those with a budget of between $30 and $60. There was however a decrease in the less than $30 category in English in the performance of learners in urban schools. In Mathematics, there was no significant change in the performance of learners from urban schools in the three budget categories. In rural schools, there was a decrease in learner performance in the first and third budget categories. There was no significant changes in the English and Mathematics performance of learners in rural schools with a budget of more than $60, and there was a decrease in the performance of learners in rural schools in the less than $30

budget category between 2018 and 2019. It emerged that for the 2019 ZELA cycle, no schools in rural areas had a budget between $30 and $60.

Figure 4.3 and Figure 4.4 are graphically displaying the average performance in English and Mathematics for each of the groups in 2012 and 2019.

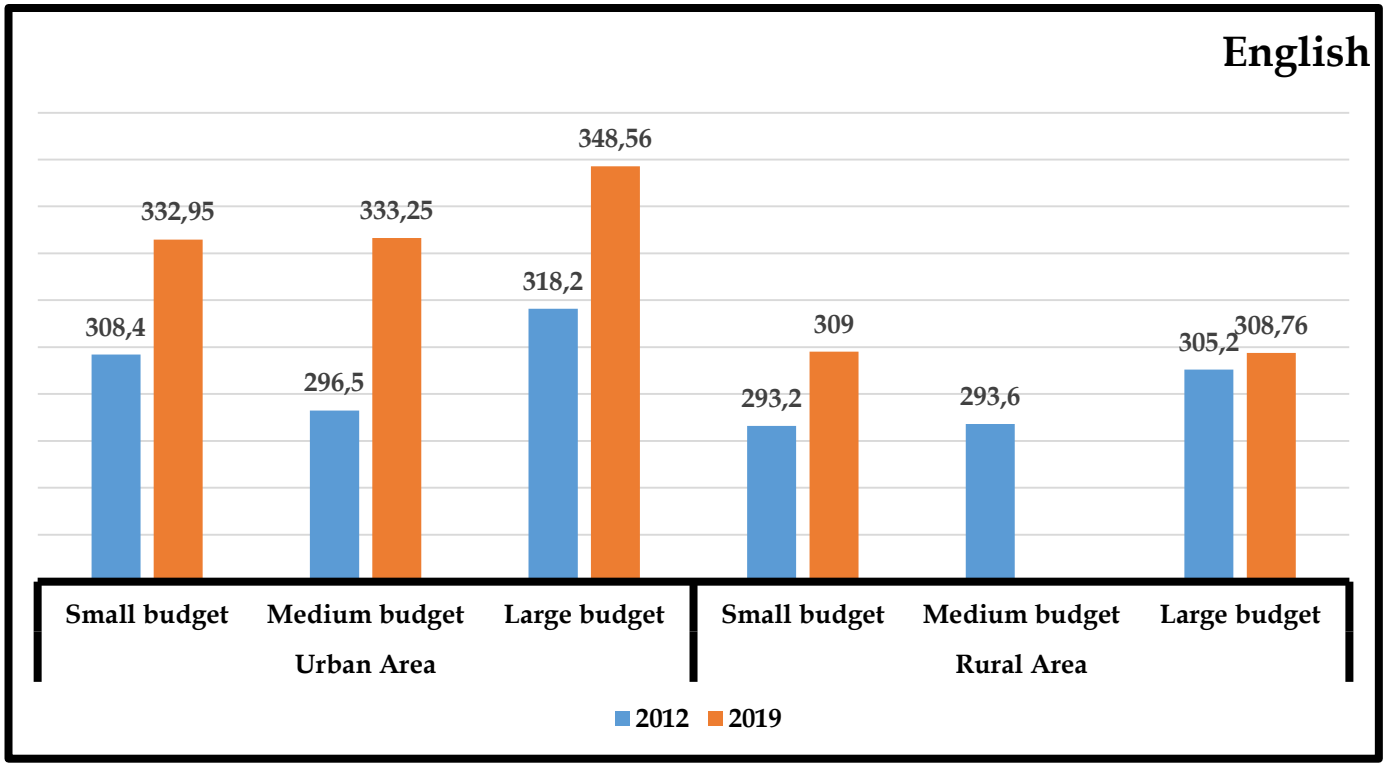


Figure 4.3: Relationship between mean English performance and budget per learner within urban and rural areas in 2012 and 2019

Figure 4.3 above shows that learners from urban schools performed better than learners from rural schools at every budget level in 2019 in both English and Mathematics. In 2019, figure 4.3 shows that, in both English and Mathematics, schools with large budgets outperformed those with medium and small budgets. There was no significant difference in the performance of learners in urban areas for schools with medium and small budgets. In both English and Mathematics. It also emerged that for rural areas, no school had medium budget ($30 to $60).

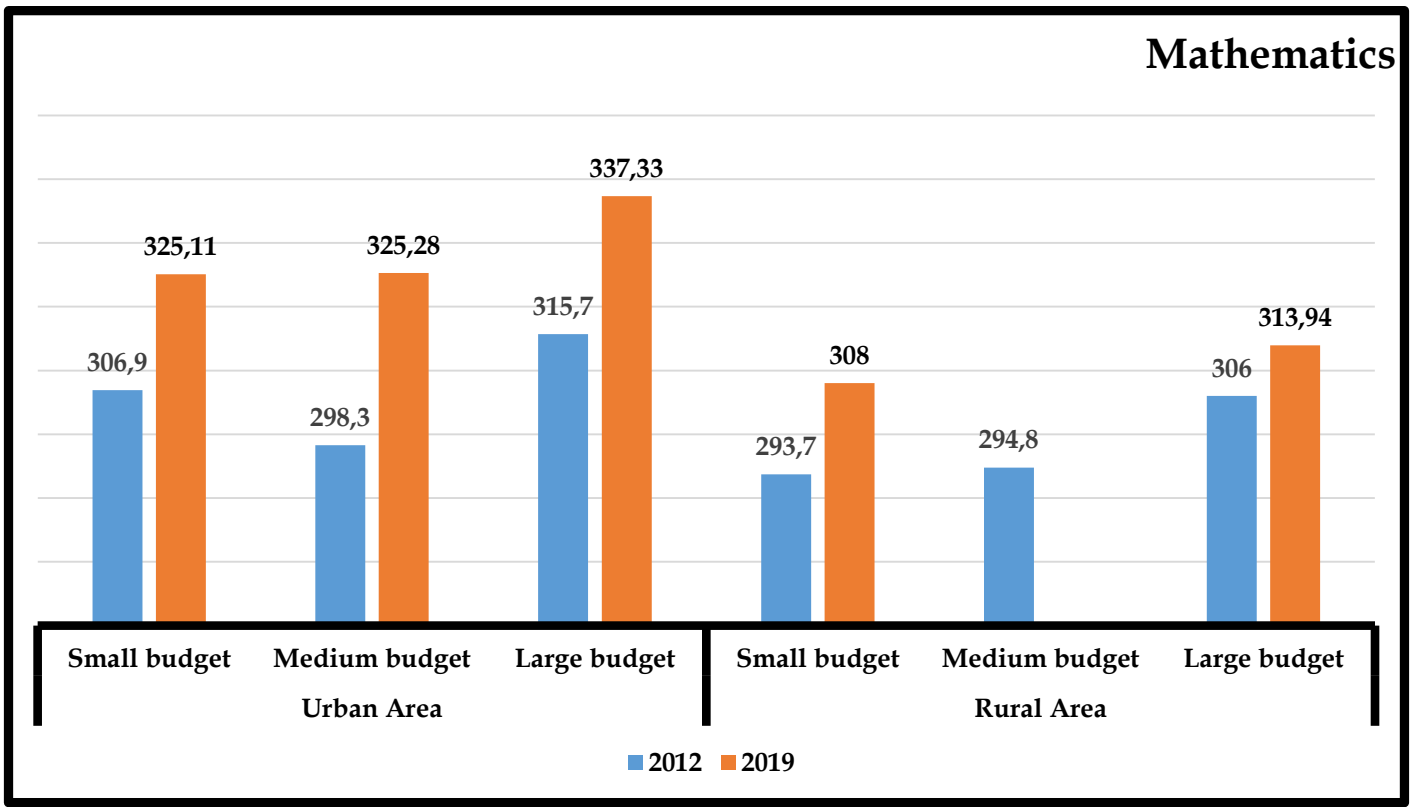


Figure 4.4: Relationship between mean Mathematics performance and budget per learner within urban and rural areas in 2012 and 2019

4.2 Teaching and learning opportunities

4.2.1 Days absent by learners

Learners were asked to respond on the number of days they had been absent in the term of the year in which the assessment took place. The results shown in Table 4.9 show a significant increase in performance in both English and Mathematics between 2012 and 2018. In 2019 however, there was a decrease in the performance of learners in both English and Mathematics. Learners with no days absent outperformed all other learners who had been absent for at least one day in both English and Mathematics as shown by the significant group differences.

Table 4.7: Relationship between learner performance and number of days absent by learner in 2012, 2018 and 2019

English	**2012**		**2018**		**2019**	**2012-2019**
No days	306.6(1.41)	⇑	322.69(0.36)	⇓	315.04(0.37)	⇑
Difference	⇓		⇓		⇑	
1-2 days	298.0(0.99)	⇑	312.64(0.32)	⇔	309.87(0.31)	⇑
Difference	⇓		⇔		⇑	
3 or more days	294.2(0.94)	⇑	309.39(0.4)	⇓	305.35(0.31)	⇑
Mathematics	**2012**		**2018**		**2019**	**2012-2019**
No days	305.3(1.28)	⇑	322.54(0.3)	⇓	314.38(0.31)	⇑
Difference	⇑		⇑		⇑	
1-2 days	298.4(0.95)	⇑	314.31(0.27)	⇓	310.42(0.27)	⇑
Difference	⇑		⇔		⇑	
3 or more days	294.8(1.04)	⇑	311.82(0.35)	⇓	306.88(0.28)	⇑

Where {⇑} indicate a significant increase, {⇔} no change and {⇓} significant decrease. Standard errors are reported between brackets.

Learners who had not been absent from school performed better than learners who had been absent for one or two days. In turn, learners who had been absent for one or two days performed better than learners who had been absent for three days or more in both English and Mathematics in 2019. In 2019, there was a general decrease in the performance of learners in all the categories of attendance. Table 4.10 is a cross-tabulation of proficiency levels and number of days absent by learner for 2019. In English, 68.2% of learners who had no days absent performed at or above grade level. In Mathematics, 67.5% of learners who had no days absent performed at or above grade level. In general, learners who attend school more often have more

opportunities to learn. Absenteeism is a strong predictor of undesirable outcomes in learners and many factors can contribute to learner absenteeism.

Table 4.8: Cross-tabulation of Proficiency level and number of days absent by learner for 2018

Proficiency Level	**No days**	**One - two days**	**Three or more days**	**Total**
English				
Above grade level	25.2%(1217)	17.1%(948)	11.5%(522)	18.0%(2687)
At grade level	43.0%(2079)	44.6%(2468)	41.4%(1887)	43.1%(6434)
Below grade level	31.9%(1542)	38.3%(2120)	47.1%(2147)	38.9%(5809)
Total	100%(4838)	100%(5536)	100%(4556)	100%(14930)
Mathematics				
Above grade level	23.0%(1115)	15.5%(859)	10.9%(496)	16.5%(2470)
At grade level	44.5%(2155)	44.8%(2482)	40.9%(1865)	43.5%(6502)
Below grade level	32.4%(1568)	39.6%(2195)	48.2%(2195)	39.9%(5958)
Total	100%(4838)	100%(5536)	100%(4556)	100%(14930)

4.3 Explaining variance and change in performance

Multivariate analyses were undertaken to examine the combined effects of most important learner and school variables on performance and, in addition, to test if any changes in these variables in 2019 could explain the change in performance. As explained in Chapter 1, section 1.51, statistical relationships in this report cannot be interpreted as causal relationships, however, if we analyse multiple variables at the same time, we take the effect of other important variables into account when testing the relationship between one variable and performance. Therefore, relationships analysed within a multivariate model are more likely to reflect causal effects.

A multiple regression model was chosen to explain variance in English and Mathematics performance. The English and Mathematics performances were used as dependent variables separately. Four variables were included as indicators for socio-economic status (number of home possessions, number of meals per day, parental education, number of home educational resources); two for other learner background variables (gender and number of hours of work for the family per day); location variable (urban versus rural); teaching and learning variables (satellite versus registered schools, school budget per learner per year, number of days absent in the current term, number of meals at school).

Table 4.9: Results of multiple regression analysis explaining variance and trend in English performance

		MODEL 1	MODEL 2	MODEL 3	MODEL 4
	R-SQUARED	**0.162**	**0.212**	**0.222**	**0.235**
	CONSTANT	**361.01(0.96)**	**312.42(1.45)**	**314.79(1.66)**	**318.05(0.78)**
Location	URBAN	**-27.38(0.51)**	**-23.44(0.23)**	**-23.39 (0.77)**	**-22.06(0.64)**
Socio-economic	HOMEPOS		*0.43(0.22)*	*0.54(0.30)*	*0.21(0.32)*
	MEALSHOME		**2.62(0.33)**	**2.54(0.26)**	**2.30(0.46)**
	PARED		**6.35(0.21)**	**6.34(0.32)**	**6.02(0.11)**
	HEDRES		**3.38(0.25)**	**3.23(0.25)**	**2.94(0.19)**
Background	GENDER			**4.93(0.19)**	**4.82(0.43)**
	WORK			***-1.67(0.33)***	***-1.02(0.49)***
Teaching and Learning	SATELITE				**-3.92(0.48)**
	BUDGET				**1.69(0.55)**
	ABSENT				**-2.21(0.22)**
	MEALSCHOOL				**3.03(0.36)**

Note: Statistically significant effects are in **bold** and non-significant effects are in *italics.*

Table 4.11 above shows the results of a multiple regression analysis explaining variance and trends in English performance. In the first model, only one component of the location variable (URBAN) was included as the predictor. The URBAN variable

predicts English performance significantly. The results indicate that in 2019, learners in urban areas performed on average 27.38 score points higher than learners in rural areas. The R-squared was 16.2%, meaning that the URBAN variable is only explaining 16.2% of the amount of variation in English performance.

In model 2, the socio-economic background variables (HOMEPOS, MEALS, PARED, HEDRES) were added to the model. The results indicate that all socio-economic variables except HOMEPOS significantly predict English performance. Every additional meal at home was associated with an increase of 2.62 score points while every additional parental school level (no school, primary school, secondary school and tertiary education) with 6.35 score points and every additional home education resources with 3.38 score points. When adding the socio-economic variables to the model, the difference in performance between urban and rural areas decreased from 27.38 to 23.44 score points. Together, the location variable and the socio-economic variables explain 21.2% of the amount of variation in English performance.

In model 3, two background variables are included that are not components of socio-economic status: gender (GENDER) and the number of hours working for the family per day (WORK). The results indicate that only GENDER predicted English performance significantly. The number of hours spent by learners working for their families at home was insignificant. This means the variable WORK did not explain any of the previously described relationships. Together, the location variables, the socio-economic variables and the two background variables (GENDER and WORK) explained 22.2% of the amount of variation in English performance. The results also indicate that girls perform better in English than boys by 4.93 score points

In model 4, variables related to teaching and learning (SATELLITE, BUDGET, ABSENT and MEALSCHOOL) were included. Adding these variables to the model decreased the difference in performance between urban and rural areas from 23.39 to 22.06 score points in English performance. In other words, when taking into account the number of satellite schools, the number of days a learner was absent and the number of number of meals at school (MEALSCHOOL), the difference in English

performance between urban and rural areas decreased significantly. Of all the socio-economic variables, the number of home possessions (HOMEPOS), number of hours working at home (WORK) did not predict English performance significantly. Taking the effects of teaching and learning variables into account slightly reduced the effects of socio-economic status in the model. Together, the location variables, the socio-economic variables, the background variables and the teaching and learning variables explain 23.5% of the amount of variation in English performance. Furthermore, learners in satellite schools performed 3.93 score points lower than learners in registered schools, whilst every meal at school was associated with 3.03 score points increase in English performance.

Table 4.10: Results of multiple regression analysis explaining variance and trend in Mathematics performance

		MODEL 1	MODEL 2	MODEL 3	MODEL 4
	R-SQUARED	**0.09**	**0.136**	**0.149**	**0.163**
	CONSTANT	**343.14(0.86)**	**313.10(1.46)**	**310.89(1.61)**	**311.07(1.85)**
Location	URBAN	**-17.51(0.46)**	**-14.56(0.46)**	**-14.42(0.46)**	**-13.17(0.46)**
Socio-economic	HOMEPOS		**-0.53(0.25)**	**2.65(0.23)**	*1.32(0.34)*
	MEALSHOME		**2.39(0.24)**	**2.31(0.24)**	**2.11(0.23)**
	PARED		**4.67(0.29)**	**4.62(0.29)**	**4.33(0.28)**
	HEDRES		**2.98(0.25)**	**2.65(0.23)**	**2.41(0.23)**
Background	GENDER			**2.57(0.31)**	**2.44(0.38)**
	WORK			**-1.15(0.33)**	**-1.17(.33)**
Teaching and Learning	SATELITE				**-2.63(0.44)**
	BUDGET				**2.84(0.49)**
	ABSENT				**-1.98(0.20)**
	MEALSCHOOL				**2.90(0.32)**

Note: Statistically significant effects are in **bold** and non-significant effects are in *italics*

Table 4.12 above shows the results of a multiple regression analysis explaining variance and trends in Mathematics performance for the year 2019. In the first model, only one component of the location variable (URBAN) was included as the predictor.

The urban variable predicts Mathematics performance significantly. The results indicate that in 2019, learners in urban areas performed on average 17.51 score points higher than learners in rural areas in Mathematics. The R-squared was 9%, meaning that the URBAN variable is only explaining 9% of the amount of the variation in Mathematics performance.

In model 2, the socio-economic background variables (HOMEPOS, MEALS, PARED, HEDRES) were added to the model. The results indicate that all socio-economic variables significantly predicted Mathematics performance. Every additional meal at home was associated with 2.39 score points increase in Mathematics performance, every additional parental school level (no school, primary school, secondary school and tertiary education) with 4.67 score points and every additional home education resources with 2.98 score points. When adding the socio-economic variables to the model, the difference in performance between urban and rural areas decreased from 17.51 to 14.56 score points in Mathematics performance. Together, the location variables and the socio-economic variables explain 13.6% of the amount of variation in Mathematics performance.

In model 3, two background variables are included that are not components of socio-economic status: gender (GENDER) and the number of hours working for the family per day (WORK). Similar to the English results above, the Mathematics results indicate that the background variables did not change significantly the effects of the variables that were added in the previous models, meaning that they do not explain much of the previously described relationships. Together, the location variables, the socio-economic variables and the two background variables (GENDER and WORK) explain 14.9% of the amount of variation in Mathematics performance. The results also indicate that girls perform better in Mathematics than boys by 2.57 score points. Every additional hour that learners worked for their families was associated with a decrease of 1.15 score points in Mathematics.

In model 4, variables related to teaching and learning (SATELLITE, BUDGET, ABSENT and MEALSCHOOL) were included. Adding these variables to the model

decreased the difference in performance between urban and rural areas from 14.42 to 13.17 score points. In other words, when taking the number of satellite schools, budget, the number of meals at school and the number of days a learner was absent into account, the difference in Mathematics performance between urban and rural areas decreased significantly. Together, the location variables, the socio-economic variables, the background variables and the teaching and learning variables explain 16.3% of the amount of variation in Mathematics performance. Learners in satellite schools performed 2.63 score points lower than learners in registered schools.

CHAPTER 5

CONCLUSION, POLICY IMPLICATIONS AND FUTURE PROGRAMMING

5.1 Summary

The 2019 Zimbabwe Early Learning Assessment was the fourth cycle to be conducted by MOPSE and ZIMSEC after the expiry of ACER contract and provides an in-depth analysis of three major research questions. These include analysis of how Grade 2 Zimbabwean learners performed in 2019 on literacy and numeracy tests. Another question explored the relationships of a range of variables that may impact on learner performance on literacy and numeracy. The last question was on the extent to which improvement in literacy and numeracy performance could be attributed to EDF and Partners funding as well as to other Ministry interventions that included but not limited to programmes such as the Early Reading Initiative, provision and supply of ECD kits, establishment of inclusive and child friendly outdoor ECD Play Centres among others. . Presented in the next section are the key findings of the 2019 research questions.

5.2 Key findings

Early learning assessments provide keystone indicators for assessing system performance. This study presents the following key findings.

1. Overall, the percentage of learners performing at or above grade level was 61.1% and 60% for English and Mathematics respectively in 2019. The 2019 results indicate a decrease from 2018 in the number of learners who performed at and above grade level in both English and Mathematics. In 2018, 76.4% of the learners performed at or above grade level in English and 72.2 % in Mathematics. This means that learner performance in English and Mathematics dropped significantly between 2018 and 2019.

2. Performance in English decreased between 2018 and 2019. English performance decreased from 315.47 score points in 2018 to 310.17 score points in 2019 and this represents a decrease of 5.3 score points. For Mathematics, the average mean performance decreased significantly from 316.67 in 2018 to 310.62 in 2019 and this represents a decrease of 6.05 score points. There was a distinct decline in learner performance in Mathematics and English.

3. Analysis by gender revealed that in 2019, girls out-performed their male counterparts in both English and Mathematics. In 2019, boys and girls had a mean of 307.24 and 312.92 respectively in English while in Mathematics they had 309.00 and 312.15 respectively. The differences in performance between boys and girls in both English and Mathematics were statistically significant. In 2019, 55.7% of the boys performed at or above grade level, whilst 66.1% of the girls performed at or above grade level in English. For Mathematics, 56.9% and 63.1% of the boys and girls respectively performed at or above grade level.

4. The 2019 results indicate that urban schools outperformed rural schools by 27.38 score points in English and 17.51 score points in Mathematics. These performance differences were statistically significant for both English and Mathematics. In 2018, the performance differences between urban and rural schools were greater than those in 2019with 34.50%score points in English and 18.75% score points in Mathematics. The 2019 results also show that 88.2% of urban learners performed at or above grade level in English as compared to 56.6% of rural learners. In Mathematics, 84.2% of the urban learners performed at or above grade level. Only

   Analysis by province revealed that Bulawayo and Harare learners outperformed learners from all other provinces in both English and Mathematics in 2019. The reason could be that the provinces are predominantly urban and therefore better resourced as observed above. Learners from Matabeleland North performed the least in both English and Mathematics in 2019. For Mathematics and English, the results show that all the provinces recorded significant decreases in performance between 2018and 2019 with the exception of Mashonaland West which recorded a slight improvement in English and a slight decrease in Mathematics, and the differences in performance in both causes are not significant.

5. In terms of age, the 2019results indicate that learners aged 8 performed the best in English and in Mathematics, learners aged 12 had the highest performance. Learners aged 13 years performed the worst in English while those aged 6 were the worst in Mathematics. The 2019 results show a decrease in performance across all age groups in both English and Mathematics.

6. Language spoken at home had four groups; Shona, Ndebele, English and Others. The other languages included Tshivenda, Tonga, Xichangana, Kalanga, Sesotho, Ndau, Sign, Chewa, Chibarwe, Khoisan, Tswana, Xhosa and Nambya. Descriptive statistics show that most of the learners speak Shona (74.8%) at home, followed by Ndebele (14%), other languages (9.7%) and English (1.5%). 2019 results show that learners who speak English at home outperformed those who speak Shona, Ndebele and Other languages in both English and Mathematics. However scientific evidence shows that learners who learn in their mother tongue perform well and the Early Learning Policy for Zimbabwe emphasises on the teaching of Early Grades in their local languages. There may be need for further researches this and review the whole process of item development and any other related gaps. There were no significant differences in English and Mathematics performance between learners who speak Shona and Ndebele at home in 2019.Learners who spoke other languages had the least mean performance scores in both English and Mathematics and the differences were statistically significant. The 2019 results further show that 89.7% of learners who speak English at home, 61.7% who speak Shona at home, 60.85% who speak Ndebele at home and 52.7% who speak other languages at home performed at or above grade level in English. In Mathematics, the percentage of learners who performed at or above grade level in 2019 were; 84.7%, 60.9%, 60.8% and 48.9% for learners who speak English, Shona, Ndebele and Other languages respectively at home.

7. Analysis was done based on the number of hours learners worked at home. The analysis was done in two phases where learners were classified into two categories of less than one hour and one hour or more. In the second phase

learners were classified into 4 non-overlapping groups: less than 1 hour, 1 hour and more but less than 2 hours, 2 hours and more but less than 3 hours and 3 hours or more. The 2019 results reveal that learners who worked for one hour performed slightly better than learners who worked for one hour or more in English and Mathematics. There was however no significant differences in the performance of learners in these two categories in both subjects. A further analysis of learner performance in English and Maths was done in the four categories stated above and the results show no distinct pattern. While those who worked for less than one hour performed slightly better than learners in the other three categories, the difference in performance among the four categories is not significant.

8. The number of meals the learners take per day had a bearing on their performance in English and Mathematics. The 2019 results indicate that learners who had three or more meals per day outperformed those with two meals, and the difference in performance between learners who had three meals and those who had two meals is statistically significant. This trend was similar to that of 2012 and 2018. Unlike in 2012 and 2018 where the difference in performance between learners with two meals and those with one meal was statistically significant in both English and Mathematics, in 2019 there was no significant difference in the performance of learners between the two categories in both subjects.

9. The 2018 results show that home possessions have an effect on learners' performance in English and Mathematics. Learners were categorised into three groups based on the number of home possessions (electricity, piped water, borehole, television and radio) they had. In 2019, learners who had four or more home possessions outperformed those with two or three, who in-turn outperformed those with one or less home possessions. The differences in learner performance in Mathematics and English between those with four or more possessions and those with two and three possessions were statistically

significant while the differences between learners with two or three and one or less were not. The 2019 results also show that 80.5% of learners with four or more home possessions performed at or above grade level in English, while 58.1% and 53.2% of learners with two or three and those with one or less respectively performed at or above grade level. In Mathematics 71.9%, 58.2% and 50.7% of learners with four or more, two or three and one or less home possessions respectively performed at or above grade level. These results show that the percentage of learners at or above grade level increases as the number of home possessions increases. The 2019 results however indicate a decrease in performance from 2018.

10. Learners were categorised into three groups (Four or more, two or three and one or less) based on the number of home educational resources (pencil, school bag, pen, desk, computer and calculator) they had. The 2019 results indicated a significant decrease in Mathematics and English performance for all the three groups between 2018 and 2019. In 2019, learners who had four or more home educational resources outperformed those with two or three and those with one or less in English and Mathematics. However, there was no significant difference between learners with two or three and one or less home educational resources in English and Mathematics. The 2019 results also show that 73.5% of learners with four or more home educational resources performed at or above grade level in English, while 56.1% and 53.2% of learners with two or three and one or less respectively performed at or above grade level. In Mathematics 71.9%, 58.2% and 50.7% of learners with four or more, two three and one or less home educational resources respectively performed at or above grade level.

11. Analysis was done based on the highest level of parental education attained. The 2019 English and Mathematics results showed that learners with a parent or guardian who completed a tertiary education outperformed those with a parent /guardian who completed secondary school who in-turn outperformed learners with a parent or guardian who completed a primary education, and

the differences between learner performances in these categories was significant. In addition, learners with a parent or guardian who completed a primary education outperformed those with a parent who did not go to school. Therefore, the higher the level of parental education, the higher the level of learner performance.

12. For 2019, mean performances for Shona, Ndebele, Tonga, Kalanga, Nambya, and Xichangana tests were computed for each of the subgroups of gender, school type, school location and province. Results for Tshivenda are not included in the analysis for 2019 because it had too few respondents and an optional solution could not be found for convergence. The results indicate that girls performed better than boys in Shona and the difference in mean performance was significant. There was no significant differences in performance of boys and girls in the other local languages. Learners learning at registered schools performed better than those in satellite schools in Shona. In the other languages the differences in performance between registered and satellite schools was statistically insignificant. Learners from urban schools outperformed those from rural areas in Shona and Ndebele. There are no significant differences in performance between urban and rural learners in the other indigenous languages.

13. Learners were classified into three socio-economic classes (Low SES, Medium SES and High SES). There has been a significant increase in mean performance in both English and Mathematics from 2012 to 2018. The 2019 results however have shown a decline in the mean performance of learners in all classes of socio economic status in English and Mathematics. Learners from high socio-economic status (SES) outperformed those from medium and low SES in in both English and Mathematics in 2019. In 2019, the performance differences between different SES groups were statistically significant in both English and Mathematics. A similar trend was observed from 2012 to 2018. The higher the socio-economic status, the greater the performance of the learner.

14. Notable differences in performance were observed between registered and satellite schools. Overall, registered schools outperformed satellite schools in both Mathematics and English and the differences were statistically significant. Between 2018 and 2019, both registered and satellite schools recorded a decrease in English and Mathematics performance. The 2018 results also show that 62.7% of learners from registered schools performed at or above grade level in English, while 51.6% of learners from satellite schools performed at or above grade level. In Mathematics 61.7% and 51.5% of learners from registered and satellite schools respectively performed at or above grade level.

15. From 2012 to 2018, facilities such as water and electricity had a bearing on learner performance. 2019 results also indicate that facilities have a bearing on learner performance as reflected by the means for both English and Mathematics. The 2019 results further showed that 51.2% of learners without electricity and water, 57.7% with either electricity or water and 74.4% with both electricity and water performed at or above grade level in English. In Mathematics, the percentage of learners who performed at or above grade level in 2018 were; 53.7%, 54.5% and 72.9% for learners without electricity and water, with either electricity or water and with both electricity and water respectively.

16. Prior to 2017, school budget was found to predict performance significantly. However, in 2017 and 2018 results from multiple regression show that school budget did not predict learners' performance significantly. The 2019 results show that learners in urban schools with a large budget outperform their counterparts from schools with a low budget. For schools in the rural areas, a distinct pattern on how school budget could predict performance could not be established because in the 2019 ZELA cycle, no schools in rural areas had a budget between $30 and $60.

17. In 2019, learners who were never absent in the term the assessment was administered, outperformed those who were absent for one or two days who in-turn outperformed learners who were absent for three or more days in both

English and Mathematics. In English and Mathematics the performance increases between the groups were statistically significant. In both English and Mathematics, all groups showed a significant decrease in performances between 2018 and 2019. The 2019 results further showed that 68.2% of learners with no days absent, 61.7% with one day absent and 52.9% absent for three days or more performed at or above grade level in English. In Mathematics, the percentage of learners who performed at or above grade level in 2019 were; 67.5%, 60.3% and 51.8% for learners with no days absent, with one day absent and with three or more days absent respectively.

5.3 Policy Implications

The analysis of the performance of grade two learners who participated in ZELA 2019 raises to the fore policy issues which are worth discussing. These policy issues emanated from the cognitive data when it was linked to the school and home environment as collected using the School Head and the learner questionnaires.

1. **Community Sensitisation –** It emerged from this assessment that a robust Community Sensitisation and Parental Engagement need to be put in place to enhance a good conception of the critical importance the foundational education (Early Education/The Infant School Module) A broader understanding of how each variable attribute to learner performance is critical. It is pertinent that the Community should be made aware of how the time taken by the learners working for the family, learner absenteeism, the availability of home educational resources, learner enrolment age and other related variables inhibit or catalyse learner performance at school. Therefore, there is great need to sensitise the community and engage the parents concerning the repercussions of learners not accessing the requisite resources and environment for a better educational foundation.
2. **Distribution of Resources-** Learners from urban areas significantly outperformed their rural counterparts in both English and Mathematics. Results of the multivariate analysis reveal that location variables such as urban and rural have significant relationship to learner performance. This pattern has

been observed since 2012 through to 2019. This difference in performance between rural and urban learners signals the need for differentiated policy on funding and distribution of resources in favour of rural and satellite schools. In order to capacitate rural schools, there is need to improve the learner textbook ratio and teacher learner ratio. There is need to strengthen resource mobilisation skills of school managers in order to be able to upgrade school facilities. Furthermore, school managers need to prioritise early learning as the foundation for any further educational learning level by budgeting for early learning resources and facilities. Policies should also be put in place that facilitate School-Parent Partnership (SPP). Such partnerships should strengthen School Development Committees (SDCs), school boards and trustees.

3. **The effect of number of meals on performance of learners**- There is a pronounced undesirable performance of learners who have one meal per day. There is need to continue implementing vibrant and sustainable home grown feeding schemes across the primary level. Furthermore, there is need to conscientise parents on the importance of providing proper and balanced diet meals to their children during Ministry's Community Engagement Programmes. Learner performance deteriorates if the learners are hungry and malnourished.

4. **Develop systems that minimise the impact of socio-economic status (SES) on learners' performance** - In this study, the index of Socio-Economic Status (SES) was estimated for each student from highest parental education, number of books at home, number of home possessions (electricity, piped water, borehole, television and radio), number of meals per day and number of educational resources (pencil, school bag, pen, desk, computer and calculator). The policy implication is to create extra study times at school and establish community libraries as well as strengthening community parenting programmes manned by schools to allow learners to access school textbooks, library and other learning facilities within the school premises and their communities so that

those without texts books, desks, or electricity at home are not disadvantaged. This will reduce the impact of number of books at home, number of home possessions and number of educational resources on learners' performance.

5.4 Lessons Learnt

In the period 2012 to 2019, ZELA data has given huge insight into the dynamics of learning at grade two and the interaction of school and home variables with cognitive variables. One lesson learnt over that period of time is that learners can be assessed effectively at early grades level (on exiting grade 2) to determine if they are making meaningful progress. This will enable early intervention and corrective measures taken before progressing to higher levels of primary education.

Such early assessments also takes stoke if the learners are meeting the desired proficiency benchmarks and what factors influence their performances. Findings from ZELA can then be used for planning and decision making in educational activities.

The second lesson learnt is that ZELA provides a basis for comparison. Factors such as location, gender, age and socio-economic status that influence learners' performance at Grade 2 can be compared to those that influence learners' performances in the final Grade 7 public examinations. The early this is noted the early positive interventions are made, to improve the final grade 7 product. Guided by the evidence from ZELA, MoPSE, ZIMSEC, UNICEF and other stakeholders can ask critical questions about primary education in Zimbabwe. How can equity in primary education in Zimbabwe be enhanced? How can the urban-rural or registered-satellite performance difference be addressed?

Another lesson learnt is the need to engage parents more in the assessment of learners. Due to influence of socio-economic status on learners' performance as evidenced by ZELA (2012 - 2019), parents are a valued source of assessment information, as well as an audience for assessment. Because of the fallibility of direct measures of learners, assessments should include multiple sources of evidence, especially reports from parents and teachers. Assessment results should be shared with teachers and parents as part of an ongoing process that involves teachers and parents in the education of children.

5.5 Future Programming

Given the insights arising from the data, it is the recommendation of this evaluation that ZELA should continue every year. There is also need to increase the ZELA sample size from the current 500 to 700 schools to maintain the 10% representation and to enable analysis of data by Province. The need to expand the ZELA model to learners in Grade 5 and Form 2 cannot be overemphasised. Expanding the programme will strengthen a shift from the monitoring and evaluation programme to the development of a national assessment framework. A national assessment programme provides data important for policy reform, including how to target resources given evidence generated on student equity. The potential for the ZELA model to be used as a long term monitoring program has been acknowledged by MoPSE and ZIMSEC. With the introduction of the Competence-Based Curriculum in Zimbabwe, the expanded ZELA model will provide evidence for improving teacher preparation and professionalism, informing the curriculum review process, improving ZIMSEC's assessment precision and developing local community support programmes.

5.6 Four key recommendations for the ZELA 2019 cycle

In order to effectively improve teaching and learning it is therefore recommended that:

Three key recommendations for the ZELA 2019 cycle

1. In order to effectively improve teaching and learning it is therefore recommended that:

a) Teachers need to be reskilled or receive trainings that are focused on equipping them with requisite skills to deliver the Competence Based Curriculum, particularly on new learning areas and on new curriculum aspects such as embracing Cross Cutting Themes and integration learning areas of learning to broaden learner's horizon as early as the infant level in their daily teaching

b) Embrace a variety of teaching reading that include but not limited to ERI, Early Reading Toolkit, Montessori e.t.c.

c) Timely procurement and equitable distribution of teaching and learning resources/materials for infant learners to reduce the Textbook to pupil ratios

d) Class sizes need to be reduced to the statutory recommendations of 1:20 at ECD level and 1: 40 for Grade 1 and 2.

2, Community Sensitisation – It therefore recommended that:

a) A robust Community Sensitisation and Parental Engagement need to be put in place to enhance a good conception of the critical importance the foundational education (Early Education/The Infant School Module).

b) Introduction of school parenting programmes to bridge the gap for easy transitioning from the home to the school environment for quick adaptation into the learning system

c) Community awareness for a broader understanding of how each variables attribute to learner performance is critical. It is pertinent that the Community should be made aware of how the time taken by the learners working for the family, learner absenteeism, the availability of A Home grown home educational resources, learner enrolment age and other

related variables inhibit or catalyse learner performance at school. Therefore, there is great need to sensitise the community and engage the parents concerning the repercussions of learners not accessing the requisite resources and environment for a better educational foundation.

3. The Ministry, through the PPP should come up with a **more sustainable School Home Grown Feeding Programme**, supplying both gain and relish to schools to ensure that at least one hot meal is provided at school.

4. Considering the transport limitations experienced during the implementation and administration of the ZELA project, it is recommended that **funding for the procurement of four vehicles, two for the Southern Region and two for the Northern Region for MoPSE and ZIMSEC respectively is secured.**

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