



From school entry to Grade 3:

Longitudinal evidence on
children's learning from the
Western Cape, South Africa

ROOTS AND SHOOTS WAVE 4 REPORT

April 2026

By Heleen Hofmeyr and Jess Qvist

About the Roots and Shoots Study

The Roots and Shoots study is a longitudinal research project tracking the early learning and development of children in the Western Cape, South Africa. The study was designed to generate evidence on how children's cognitive and socio-emotional skills develop over time, and how early differences in these skills relate to later learning outcomes.

Data collection began in 2022, with a cohort of children assessed at multiple points as they progressed through the early grades. The study combines direct child assessments with information on children's home environments, schools, and caregivers, allowing for a comprehensive view of the factors that shape early learning trajectories.

Roots and Shoots is the first longitudinal study in South Africa to follow the same group of children from the start of Grade R through the Foundation Phase. This design makes it possible to examine patterns of persistence, change, and inequality in learning over time.

The study is funded by the Mr Price Foundation and Optima, and is implemented in collaboration with and support from partners including the Western Cape Education Department (WCED), Genesis Analytics, DataQuest, Funda Wandé and the Binding Constraints Lab.

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Executive summary

Introduction

This report presents the results of the fourth wave of the Roots and Shoots study. The study, the first of its kind in South Africa, has followed the same group of learners from the start of Grade R through the Foundation Phase. Its core aim is to investigate how inequalities in learning outcomes in the early grades can be traced back to inequalities already present when children first enter formal schooling.

Data collection began in 2022, when 557 Grade R learners in 75 public primary schools in and around Cape Town were assessed using the Early Learning Outcomes Measure (ELOM) 4&5. A year later, 434 of these learners were assessed again at the start of Grade 1 using the ELOM-R (v1). In 2024, 364 learners were assessed in Grade 2 using the Early Grade Reading Assessment (EGRA) and the Early grade Mathematics Assessment (EGMA). The fourth wave of data collection took place in the third term of 2025, when 401 learners were assessed again in Grade 3 using the same EGRA and EGMA instruments used in wave 3. This final wave makes it possible to examine how early differences in school readiness translate into differences in literacy and mathematics by the end of the Foundation Phase.

As in previous waves, the sample is made up predominantly of learners in socio-economically disadvantaged schools. Of the 75 schools in the study, 68 (91%) serve historically disadvantaged communities and either charge no fees or very low fees. The study also includes a smaller group of mid-fee schools, allowing for comparison across sharply different schooling contexts. This remains one of the central strengths of the Roots and Shoots design: it enables the study not only of average learning levels, but also of how children with similar starting points fare in very different school environments.



Main results

1. Large socio-economic inequalities in learning outcomes remain firmly in place by Grade 3. The cross-sectional wave 4 results show very large gaps in both literacy and mathematics by school fee status. Learners in mid-fee schools substantially outperformed learners in both no-fee and low-fee schools, while the no-fee and low-fee groups performed similarly to one another. By Grade 3, the gap between learners in mid-fee schools and those in poorer schools is no longer a subtle difference in average performance; it is a large separation in achievement levels.

Benchmarking the EGRA results against DBE reading norms makes the extent of these inequalities even clearer. In mid-fee schools, 92% of learners reached the Grade 3 reading benchmark. In no-fee schools, the equivalent figure was 49%, and in low-fee schools it was 36%. Learners in no-fee and low-fee schools were particularly concentrated at the Grade 1 benchmark, suggesting that many were still reading well below the level expected by the end of Grade 3. These results indicate that a very large share of children in poorer schools are progressing through the Foundation Phase without acquiring grade-appropriate reading fluency.

2. The pro-girl gap in literacy observed in previous waves remains visible in wave 4. Girls continued to outperform boys in literacy in Grade 3, while there was little evidence of a comparable gender gap in mathematics. The reading benchmark figures show this clearly: 60% of girls reached the Grade 3 reading benchmark, compared to 41% of boys. Boys were also more likely than girls to be clustered at lower benchmark levels, with larger shares still at the Grade 1 or Grade 2 benchmark. This suggests that the gender gap in literacy that emerged between Grade 1 and Grade 2 does not disappear by Grade 3. Rather, it appears to persist through the end of the Foundation Phase.

3. The longitudinal results show that inequalities visible at school entry persist, and in some cases widen, over time. When the same learners are followed from wave 1 to wave 4, the share classified as “on track” falls sharply in no-fee and low-fee schools, but remains very high in mid-fee schools. Among learners observed in both wave 1 and wave 4, 57% of learners in no-fee schools and 58% of learners in low-fee schools were on track in Grade R, compared to 92% of mid-fee learners. By Grade 3, those shares had shifted to 40%, 32%, and 90% respectively. In other words, the already large inequality present at school entry had not narrowed by the end of the Foundation Phase. If anything, learners in poorer schools were less likely to be on track in Grade 3 than they had been at the start of Grade R, while learners in mid-fee schools maintained their very strong position.

4. Early advantage is not equally protective across school contexts. One of the central questions of the Roots and Shoots study has been what happens to children who enter school on track but attend very different types of schools. The wave 4 distributions suggest that early advantage is far more likely to be preserved in mid-fee schools than in no-fee and low-fee schools. By Grade 3, roughly half of

learners in no-fee and low-fee schools who had been developmentally on track at the start of Grade R were still on track in terms of reading skills. This proportion was 89% among learners who had been developmentally on track at the start of Grade R in mid-fee schools. This indicates that children who begin school with similar developmental readiness do not face the same odds of staying on track. School context appears to matter greatly for whether early potential is sustained through the Foundation Phase.



Summary

The findings from the fourth wave of the Roots and Shoots study paint a clear picture. Inequality in learning outcomes at the start of Grade R is reproduced and reinforced as learners move through the early grades. By the end of Grade 3, large socio-economic gaps in mathematics remain and children in poorer schools are much less likely to be reading at grade level. The study therefore provides strong longitudinal evidence that inequalities in learning outcomes are already firmly established at the start of formal schooling and, importantly, that they do not narrow as children progress through the Foundation Phase. If anything, the results point to a widening gap: learners in poorer schools are increasingly less likely to remain on track for their grade over time, while learners in mid-fee schools maintain consistently high levels of performance.

The results point to a critical policy implication: being school-ready is necessary, but not sufficient, for achieving grade-level outcomes by the end of the Foundation Phase. Even when children enter school developmentally on track, many in poorer schools fall behind over time. This means that expanding access to high-quality early childhood development, while essential, will not on its own be enough to ensure that learners are performing at grade level by Grade 3. Without improvements in the quality of teaching and learning in the Foundation Phase, there is a ceiling on what early childhood interventions alone can achieve.

Acknowledgements

The Roots and Shoots study is funded by the Mr Price Foundation and Optima. We are grateful to the Western Cape Education Department (WCED) for supporting this study, facilitating access to schools, and assisting with the coordination of school visits. We also thank the school principals who generously allowed us to conduct research in their schools.

We extend our sincere appreciation to Genesis Analytics and DataQuest for expertly managing data collection, and to the dedicated enumerators who carried out the assessments.

Thank you to the caregivers who consented to their children's participation, and to the caregivers and teachers who generously gave their time to complete surveys. We are especially grateful to the children who participated in the study and generously shared their time and effort with us.

Finally, we thank Funda Wande for providing administrative support and Brand Iron SA for graphic design and layout of the report.



1. Introduction

1.1. Overview of the Roots and Shoots study

Roots and Shoots is a longitudinal study of the learning outcomes of children in the Western Cape, South Africa. Although the Western Cape is South Africa's best-performing province on international, regional and national assessments (Department of Basic Education, 2025, 2024a, 2024b, 2024c, 2023), it remains characterised by sharp socio-economic inequality in schooling outcomes, making it a particularly instructive setting for studying the early origins of learning gaps.

This report presents the results of the fourth wave of the study. The study has followed the same group of learners from the start of Grade R through the Foundation Phase. Its core aim is to investigate how inequalities in learning outcomes in the early grades can be traced back to inequalities already present when children first enter formal schooling. Data collection began in 2022, when 557 Grade R learners in 75 public primary schools in and around Cape Town were assessed using the Early Learning Outcomes Measure (ELOM) 4&5. A year later, 434 of these learners were assessed again at the start of Grade 1 using the ELOM-R (v1). In 2024, 364 learners were assessed in Grade 2 using the Early Grade Reading Assessment (EGRA) and the Early grade Mathematics Assessment (EGMA). The fourth wave of data collection took place in the third term of 2025, when 401 learners were assessed again in Grade 3 using the same EGRA and EGMA instruments used in wave 3. This final wave makes it possible to examine how early differences in school readiness translate into differences in literacy and mathematics by the end of the Foundation Phase.

The sample is made up predominantly of learners in socio-economically disadvantaged schools. Of the 75 schools in the study, 68 (91%) serve historically disadvantaged communities and either charge no fees or very low fees. The study also includes a smaller group of mid-fee schools, allowing for comparison across sharply different schooling contexts. This remains one of the central strengths of the Roots and Shoots design: it enables the study not only of average learning levels, but also of how children with similar starting points fare in very different school environments.

1.2. Background and motivation

South Africa's learning crisis is well documented. By the end of Grade 3, most learners are not able to read for meaning or perform basic mathematical operations (Department of Basic Education, 2024a), and this has been identified as a binding constraint to long-run development (Van der Berg et al., 2016). Much of the policy discussion has focused on the quality of schooling as the

primary driver of these outcomes. But an equally important question is when these inequalities first emerge. If large gaps in skills are already present when children enter school, then the role of the schooling system is, at least in part, to either reduce or amplify these initial differences. Understanding this dynamic is critical for designing effective interventions.

The Roots and Shoots study speaks directly to this question. By measuring children's skills at school entry and following the same learners over time, it is possible to assess the extent to which patterns observed at the end of the Foundation Phase can be traced back to differences that were already visible at the start of schooling.

The study is guided by the following research questions:

- What are the foundational skill levels of learners when they first enter school?
- To what extent can the patterns of performance seen in Grade 3 be traced back to trends already present on the first day of school?

1.3. Purpose of this report

Results from the [first wave](#) point to clear socio-economic gaps in school readiness, with children attending schools serving socio-economically disadvantaged communities being much more likely to be developmentally behind at the start of Grade R compared to their wealthier counterparts. This echoes findings from the nationally representative Thrive by Five studies (Giese et al., 2025, 2022). Results from [wave 2](#) show that while there was some evidence of catch-up among learners who were developmentally behind at the start of Grade R, these learners were mostly concentrated in historically advantaged schools. Learners who were behind at the start of Grade R and attending historically disadvantaged schools were unlikely to catch up during the Grade R year. These results point to socio-economic differences in school quality that are already apparent during Grade R, and constitute the first quantitative evidence from South Africa that inequality in instructional quality begins as early as Grade R. The [third wave](#) of data shows that socio-economic inequalities in learning observed at the start of Grade R and Grade 1 are maintained as children move through the Foundation Phase, with some evidence that these gaps widen over time. The aim of this report is to present the findings from the fourth wave of data collection, that is, when the main cohort of Roots and Shoots learners were in Grade 3.

The report builds on the findings from the third wave, using the same EGRA and EGMA instruments to measure learning that were used in wave 3. While data were collected across four waves, the main analysis in this report focuses on comparisons between wave 1 (school entry) and wave 4 (end of the Foundation Phase). This provides a clear and policy-relevant view of how early differences in development translate into later learning outcomes, while retaining the largest possible sample of learners.¹

¹ Analyses based on the fully balanced panel (learners observed in all four waves) yield similar patterns but are not presented here.

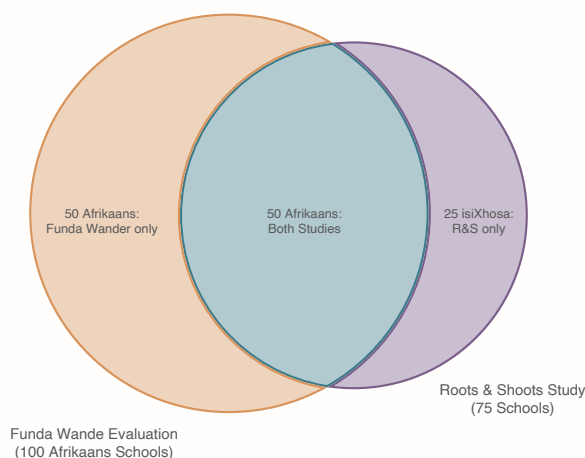
2. Study design and methods

2.1. Sampling

The Roots and Shoots sample consists of learners from 75 public primary schools in five education districts in and around Cape Town.² Of the 75 schools, 68 (91%) serve historically disadvantaged communities and do not charge school fees, or charge very low fees (a maximum of R70 per month in 2022).³ The sample also includes seven schools that charged between R965 and R2,667 per month in 2022, which are mostly located in suburban areas. 50 of the schools have Afrikaans as the language of learning and teaching (LOLT), and 25 have isiXhosa as the LOLT, which represent the largest two language groups in the Western Cape. Although the sample is not nationally or provincially representative, it captures meaningful variation in socio-economic status (SES), school quality and language.

Roots and Shoots is part of a broader impact evaluation of a literacy intervention implemented by the NGO Funda Wandé. The final sample includes learners from both the Afrikaans treatment and control schools in the original evaluation, as well as additional isiXhosa-medium schools selected to broaden linguistic representation.⁴ Figure 1 presents a Venn diagram illustrating the overlap between the schools included in the Roots and Shoots study and those participating in the Funda Wandé evaluation. 50 Afrikaans schools are part of both studies, 50 Afrikaans schools only participated in the Funda Wandé evaluation, and the 25 isiXhosa schools are unique to Roots and Shoots.

Figure 1: Overlap between schools in the Funda Wandé evaluation and the Roots and Shoots study



Notes: This Venn diagram illustrates the overlap in schools sampled between the Funda Wandé evaluation and the Roots & Shoots (R&S) study. The Funda Wandé evaluation included 100 Afrikaans-speaking schools, 50 of which also participated in the Roots & Shoots study. The Roots & Shoots sample comprised 75 schools: 50 Afrikaans-speaking

² The districts are Metro Central, Metro East, Metro North, Metro South and Cape Winelands.

³ School fees are reported in 2022 prices since surveys with school principals where this information was obtained were only conducted in 2022.

⁴ The Afrikaans schools were selected from the 100 schools in the Funda Wandé evaluation, with 25 treatment schools and 25 matched control schools drawn from the districts closest to Cape Town. Stratification by district and school fee status guided selection. The isiXhosa schools were drawn from the same districts but stratified by performance quintiles using systemic test scores. See the Appendix for full sampling details.

schools that also participated in the Funda Wandé evaluation, and an additional 25 isiXhosa-speaking schools that were unique to Roots & Shoots. Data were collected for both studies concurrently.

At wave 1, one Grade R class was randomly selected from each school, and eight learners (four girls and four boys) were randomly sampled from each class to arrive at the target sample of 600 learners. Due to caregiver refusal (N = 12) and unsuitable testing conditions on the day of the assessment⁵ (N = 20), 568 learners were assessed in Wave 1. 11 of these learners were older than 69 months at the time of assessment and were therefore excluded from the analysis, as the instrument used to assess learners in wave 1 (the ELOM 4&5) is designed for children aged 69 months and younger (Dawes et al., 2020). The final wave 1 sample therefore consists of 557 Grade R learners. In each subsequent year, fieldworkers returned to the schools to assess the same learners assessed in wave 1. If a learner was absent on the day of the assessment, fieldworkers returned once. If the learner was absent on the second school visit, they were excluded from that wave of data collection.

2.2. Assessment across waves

Learners in the Roots and Shoots study were assessed at multiple points from the start of Grade R through the early grades of primary school. Different instruments were used at each wave to reflect age-appropriate skills, with a focus on early learning, literacy, and mathematics. While this section describes all waves for completeness, the analysis in this report focuses primarily on Wave 1 and Wave 4.

2.2.1. Wave 1 (Grade R, Term 1, 2022)

At the start of Grade R, learners were assessed using the Early Learning Outcomes Measure (ELOM) 4&5. The ELOM 4&5 is a direct, tablet-based assessment that is used to assess school readiness across five developmental domains, including early literacy and numeracy, as well as broader cognitive and physical skills (Dawes et al., 2020). Assessments were administered one-on-one by trained ELOM enumerators.

2.2.2. Wave 2 (Grade 1, Term 1, 2023)

At the start of Grade 1, learners were assessed using the ELOM-R (v1). Like the ELOM 4&5, the ELOM-R (v1) is a direct, tablet-based assessment administered one-on-one by trained enumerators. However, unlike the ELOM 4&5 that measures five developmental domains, the ELOM-R (v1) measures school readiness in only two domains (early language and mathematics) (Dawes and Biersteker, 2025). The tool is designed for assessing children around the transition from Grade R into Grade 1. The assessment consists of multiple items covering key domains of early literacy and mathematics (Kleinebst et al., 2025a, 2025b).

⁵ Conditions were deemed unsuitable if the enumerator could not find a quiet space to assess the learner one-on-one or the assessment could not continue due to interruptions.

2.2.3. Wave 3 (Grade 2, Term 3, 2024)

In wave 3, learners' literacy and mathematics skills were assessed using the Early Grade Reading Assessment (EGRA) (RTI International, 2015) and the Early Grade Mathematics Assessment (EGMA) (Platas et al., 2014). The EGRA was administered one-on-one and included tasks such as letter-sound recognition, word reading, oral reading fluency, and comprehension. The EGMA was a written assessment administered in a group setting, with instructions provided verbally by trained enumerators. It included tasks on number recognition, basic operations, and word problems.

2.2.4. Wave 4 (Grade 3, Term 3, 2025)

The same cohort of learners was assessed again in Grade 3 using the same EGRA and EGMA assessments that had been used in wave 3.

Box 1: Calculating learning scores across waves

ELOM 4&5 (Wave 1)

The ELOM 4&5 is a direct child assessment of school readiness across five developmental domains. Children complete a series of structured tasks, with scores aggregated into domain-level measures and summed to produce an overall score out of 100. This total score captures overall developmental readiness at school entry, with higher scores indicating stronger performance across domains.

EGRA and EGMA (Wave 4)

Learners' literacy and mathematics skills were assessed using multiple EGRA and EGMA subtasks. Scores on each task were first standardised within language of assessment, then averaged to form composite literacy and mathematics scores. These composite scores were subsequently standardised to facilitate interpretation and comparability across learners.

2.3. Other measures across waves

2.3.1. Socio-economic status (SES)

School fee status is used as a proxy for socio-economic status, given the strong relationship between the fees schools charge and the socio-economic backgrounds of the learners they serve in South Africa. Information on school fees was collected from school principals in wave 1 (2022). An inspection of these data revealed a clear clustering of schools into three distinct groups. First, no-fee schools, which do not charge any school fees. Second, a group of low-fee schools, which charge relatively modest fees of less than R850 per annum. Third, a group of mid-fee schools, where annual fees range from approximately R11,500 to R32,000. Notably, there is a substantial gap between the low-fee and mid-fee categories, with no schools charging fees in the intermediate range. This natural break in the data supports the classification of schools into these three categories, which we use throughout the analysis.⁶

2.3.2. Learner demographic information

Learners' age and gender were obtained from school records in wave 1 and confirmed by enumerators during the child assessments. Learners' grade was obtained from school records and also confirmed during the assessments.

2.4. Grade repetition in the sample

Grade repetition was observed at each wave of the study.⁷ In each year, learners were assessed using the instrument appropriate for the grade level of the main cohort, rather than their individual grade. That is, all learners were assessed using the same tool, even if some had repeated a grade and were therefore in a lower grade than their peers. This approach was taken for two reasons. First, enumerators were trained to administer a single assessment at each wave. Training enumerators on multiple instruments would have been costly and would have required compromising on the use of experienced enumerators, who are typically familiar with only one type of assessment (for example, EGRA or ELOM). Second, the ELOM assessments are designed to be age-appropriate rather than grade-specific. It would therefore not be appropriate to administer, for example, the ELOM-R (v1) assessment to learners who had repeated Grade 1 and were therefore in Grade 1 in wave 3, instead of Grade 2 like the main cohort.

In waves 3 and 4, the same EGRA and EGMA instruments were used across grades. This means that all learners completed the same assessments, regardless of whether

⁶ School fee status is used instead of official DBE quintiles since evidence presented in the first Roots and Shoots report shows that there were many quintile 5 schools that did not in fact charge any fees (Hofmeyr et al., 2022). School fee status is therefore considered a better measure of socio-economic conditions of the school than official quintile status, at least for this sample of schools.

⁷ See Section 2.5 for more details.

they had repeated a grade. The distinction lies in how performance is interpreted. For the EGRA, grade-specific reading benchmarks are used to classify whether learners are performing at the expected level for their grade. These benchmarks are available for grades 1, 2, and 3, making it possible to assess whether a learner is reading at grade level, even if they are not in the same grade as the rest of the cohort.

2.5. Sample retention

Table 1 shows the number of learners assessed in each wave of the study, alongside their grade at the time of assessment. The “Total” column indicates the total number of learners assessed in each wave, while the “Total” row indicates the total number of learners in each grade across waves. The shaded diagonal line indicates the cohort of learners who moved through the Foundation Phase without repetition during the course of the study.

A total of 557 learners were assessed at the start of Grade R in wave 1 (2022). By wave 2 (2023), 434 of these learners were reassessed, the majority of whom (404) had progressed to Grade 1, while 30 remained in Grade R. In wave 3 (2024), 364 learners were assessed, with most (322) in Grade 2 and a smaller group (42) still in Grade 1. By wave 4 (2025), 401 learners were assessed, of whom 317 were in Grade 3, while 83 were in Grade 2 and one learner remained in Grade 1. These patterns indicate that grade repetition is not negligible in the early grades.

It is important to note that some learners appear to “skip” a wave, meaning they were assessed in earlier and later waves but not in one of the intermediate waves. This is because fieldworkers worked from the original wave 1 sample list in each round of data collection, rather than updating the sample based on the previous wave. As a result, learners who were absent on the day of assessment in a given year (and again on the day that fieldworkers returned) were not assessed in that wave, but could be assessed again in subsequent waves if they were present. This is also why more learners were assessed in wave 4 (401) than in wave 3 (364): a number of learners who were not assessed in wave 3 due to temporary absence were successfully assessed again in wave 4.

For the analysis in this report, we use the sample of learners who were assessed in both wave 1 and wave 4, regardless of whether they were assessed in the intermediate waves. This choice is driven by the core objective of the study, which is to understand how inequalities in school readiness at the start of formal schooling relate to inequalities in learning outcomes at the end of the Foundation Phase. Answering this question does not require observing learners in every intermediate wave, but rather requires reliable measures at the beginning and end of the period. Using the wave 1–wave 4 sample therefore allows us to maximise the available sample size (401 learners, compared to a substantially smaller balanced panel of 340 learners observed in all four waves) while remaining aligned with the main research question.

Table 1: Sample size and grade progression of the Roots and Shoots cohort across waves

	Grade R (ELOM 4&5)	Grade 1 (ELOM-R (v1))	Grade 2 (EGRA & EGMA)	Grade 3 (EGRA & EGMA)	Total
Wave 1 (2022)	557				557
Wave 2 (2023)	30	404			434
Wave 3 (2024)		42	322		364
Wave 4 (2025)		1	83	317	401
Total	587	447	405	317	1756

Notes: Each row reports the number of learners assessed in a given wave, by the grade they were in at the time of assessment. Variation across grades within a wave reflects Grade repetition and progression differences across learners. Totals therefore include learners who were assessed in different grades in the same wave. Sample sizes vary across waves due to attrition.

Table 2 compares baseline characteristics of learners who were retained in wave 4 with those who attrited from the sample. Overall, the two groups are broadly similar across most observed characteristics. There are no meaningful differences in gender composition, school fee status, or social grant receipt. Retained learners are slightly older on average (65.6 vs 65.1 months), although the magnitude of this difference is small. The most notable difference is in language: Afrikaans learners are overrepresented among the retained sample (69.4% vs 54.7%), i.e. isiXhosa learners were more likely to attrite. Importantly, there is no statistically significant difference in baseline learning outcomes between retained and attrited learners, suggesting that the sample is not selectively retaining stronger or weaker learners at school entry.

Table 2: Comparison of baseline characteristics between learners retained in wave 4 and those lost to attrition

	Retained (401 learners)	Attrited (156 learners)
Age (months)	65.4*	65.0
Female (%)	50.1%	49.4%
Afrikaans (%)	68.8%***	55.1%
No-fee (%)	72.1%	75.0%
Low-fee (%)	18.0%	17.3%
Mid-fee (%)	10.0%	7.7%
Social grant receipt (%) ^a	75.8%	76.5%
Missing data on social grant receipt (%)	23.7%	23.7%
Wave 1 (ELOM 4&5) score	58.2	57.9

Notes: Data shown for learners assessed at baseline (wave 1). “Retained” refers to learners observed in wave 4. Values are means for continuous variables and percentages for binary variables. Asterisks indicate statistically significant differences between retained and attrited learners based on two-sample t-tests (*p<0.10, **p<0.05, ***p<0.01).

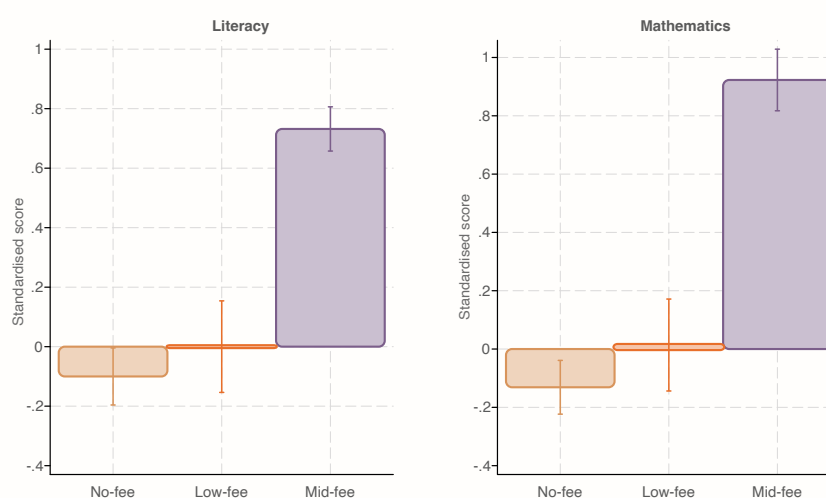
^a Percentages are calculated among non-missing observations.

3. Cross-sectional results

3.1. Overall performance on the EGRA and EGMA

Figure 2 shows large and systematic differences in achievement by school fee status in both literacy and mathematics.⁸ Learners in mid-fee schools perform substantially better than their peers in no-fee and low-fee schools, with gaps of approximately 0.7–0.8 standard deviations in literacy and close to a full standard deviation in mathematics. By contrast, learners in no-fee and low-fee schools perform at or below the sample average, with relatively small differences between these two groups. These are large differences in educational terms and point to stark inequalities in learning outcomes by the end of the Foundation Phase. While the magnitudes of the gaps appear somewhat larger in mathematics than in literacy, these comparisons should be interpreted with caution given differences in the underlying assessments. Nevertheless, the overall pattern is clear: learners attending more affluent schools are substantially ahead of their peers in poorer school contexts across both domains.

Figure 2: Standardised literacy and mathematics scores by school fee group



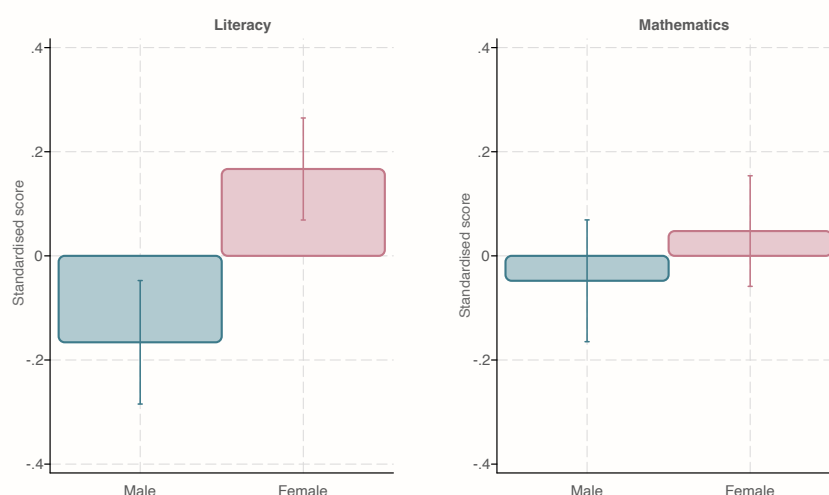
Notes: Literacy was assessed using the Early Grade Reading Assessment (EGRA) and Mathematics was assessed using the Early Grade Mathematics Assessment (EGMA). Scores were standardised within assessment language and reflect relative performance across learners. No-fee schools did not charge fees in 2022, low-fee schools charged up to R850 per annum, and mid-fee schools charged more than R11,500 per annum. Observations (number of learners): N = 401 (no-fee = 289; low-fee = 72; mid-fee = 40).

Figure 3 shows differences in achievement by gender in literacy and mathematics. In literacy, there is a clear pro-girl gap: girls perform above the sample mean, while boys perform below it, with a difference of approximately 0.3 standard deviations. In mathematics, by contrast, there is little difference between boys and girls, with both groups performing close to the sample average and no statistically significant gap. These results indicate that gender differences in achievement are domain-specific rather than general, with an advantage for girls emerging

⁸ Scores are standardised within assessment language, so the results reflect relative performance within the sample rather than raw totals.

in literacy but not in mathematics. This pattern is consistent with findings from wave 3, suggesting that the literacy advantage observed among girls in the early grades persists through to the end of the Foundation Phase.

Figure 3: Standardised literacy and mathematics scores by sex



Notes: Information about the learners' sex was obtained from school records. Literacy was assessed using the Early Grade Reading Assessment (EGRA) and Mathematics was assessed using the Early grade Mathematics Assessment (EGMA). Scores were standardised within assessment language (Afrikaans and isiXhosa) and reflect relative performance across learners. N = 401 (female = 201; male = 200).

3.2. Benchmarking reading performance

A key advantage of the South African assessment landscape is the recent development of nationally recognised reading benchmarks, which provide a clear standard against which to evaluate whether learners are performing at grade level. Since 2017, the Department of Basic Education has led a rigorous, data-driven process to establish these benchmarks across all official languages, drawing on large-scale assessment data and extensive linguistic expertise (Department of Basic Education, 2025). These benchmarks are grounded in the relationship between foundational reading skills (particularly oral reading fluency) and later comprehension, and are defined in terms of measurable indicators such as correct letter sounds per minute in Grade 1 and correct words per minute in later grades. These literacy benchmarks allow for meaningful interpretation of learning outcomes, since they make it possible to assess whether learners are acquiring the skills needed to read with understanding by the end of the Foundation Phase. The national reading benchmarks were developed using EGRA-based assessments of foundational reading skills, including measures such as oral reading fluency and comprehension (Department of Basic Education, 2025). Since the same EGRA framework was used to assess learners in Roots and Shoots, the national reading benchmarks can be directly applied to the data to assess whether learners in the Roots and Shoots study are performing at the expected level of reading proficiency for their grade. The national reading benchmarks for Afrikaans and isiXhosa are listed in Table 3.

Table 3: DBE reading benchmarks for Afrikaans and isiXhosa learners

	Afrikaans	isiXhosa
Grade 1	40 correct letter sounds per minute	40 correct letter sounds per minute
Grade 2	45 correct words per minute	20 correct words per minute
Grade 3	60 correct words per minute	35 correct words per minute

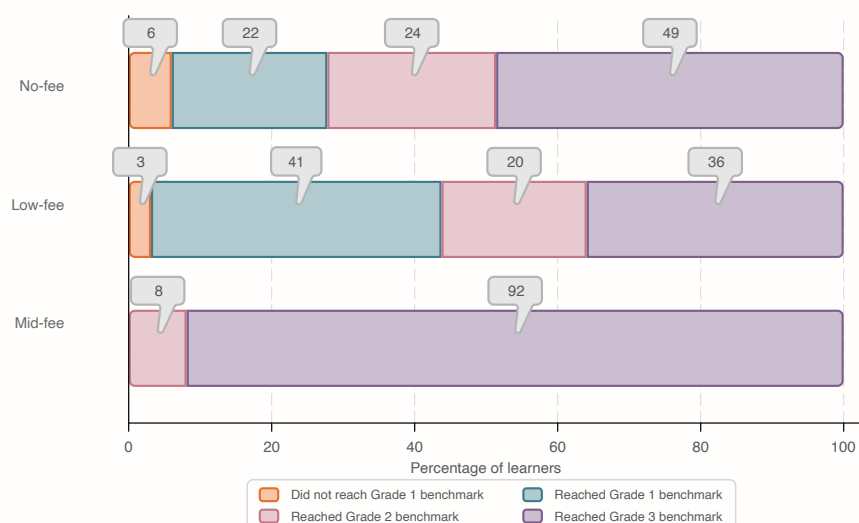
Notes: We use the DBE reading benchmarks specified in Table 1 of the Funda Uphumelele National Survey (FUNS) Summary Report (Department of Basic Education, 2025).

The proportion of learners in Roots and Shoots sample reaching the Grade 3 reading benchmark is 43%, which is identical to the estimate reported for the Western Cape in the Funda Uphumelele National Survey (FUNS) (Department of Basic Education, 2025). The FUNS sample was explicitly designed to be representative at both the national and provincial levels, with sufficient sample sizes to produce reliable estimates for each province. The close alignment between these estimates suggests that, despite differences in sampling design, the reading performance observed in this study is broadly consistent with province-wide patterns. This provides some reassurance that the sample analysed here is not systematically atypical in terms of reading outcomes, and that the findings are likely to be informative of wider trends in the Western Cape.

Figure 4 shows the highest grade-level reading benchmark attained by learners in wave 4, disaggregated by school fee status. In no-fee schools, roughly half of learners (49%) reached the Grade 3 benchmark, while 24% reached only the Grade 2 benchmark and a further 22% were reading at the Grade 1 level. 6% of Grade 3 learners in no-fee schools did not reach the Grade 1 benchmark at all. A similar but slightly weaker pattern is observed in low-fee schools, where only 36% of learners reached the Grade 3 benchmark, while a large proportion (41%) remained at the Grade 1 level and 20% reached the Grade 2 benchmark. These proportions are substantially higher than those observed nationally among learners in Quintile 1–3 schools (i.e. no-fee schools), where only between 21% and 23% reached the Grade 3 benchmark (Department of Basic Education, 2025). In stark contrast, learners in mid-fee schools perform substantially better: 92% reached the Grade 3 benchmark, with only 8% remaining at the Grade 2 level and none falling below this threshold.

These results highlight large and persistent inequalities in reading proficiency by school context. In no-fee and low-fee schools, a substantial proportion of learners are still reading below grade level by the end of Grade 3, with many performing at levels expected one or even two grades earlier. By contrast, the vast majority of learners in mid-fee schools are reading at the expected level. This suggests that while some learners in poorer schools do reach the grade-level benchmark, a long tail of underperformance remains, pointing to deep and systemic inequalities in the acquisition of foundational reading skills.

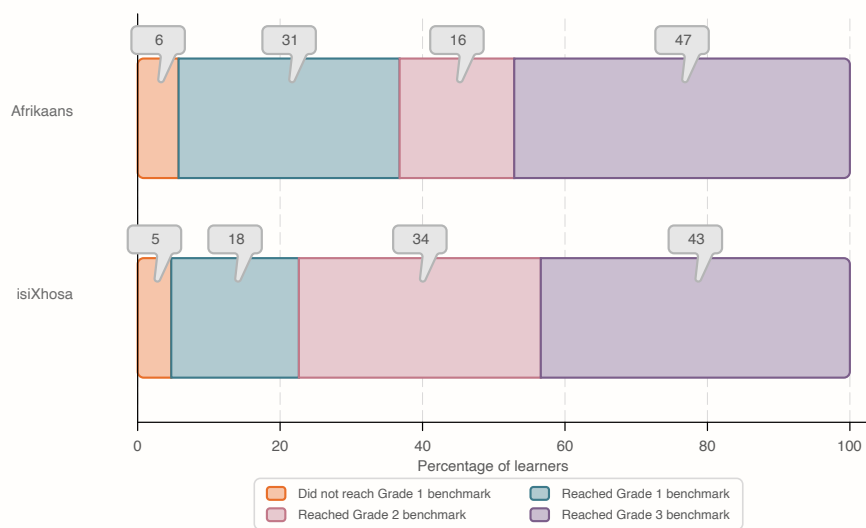
Figure 4: Percentage of learners reaching reading benchmarks by school fee group



Notes: Bars show the percentage of learners reaching each reading benchmark, by school fee group. Only learners who were in Grade 3 in wave 4 are included. No-fee schools did not charge fees in 2022, low-fee schools charged up to R850 per annum, and mid-fee schools charged more than R11,500 per annum. N = 317 (no-fee = 216; low-fee = 64; mid-fee = 37).

Figure 5 shows the highest grade-level reading benchmark attained by learners in wave 4, disaggregated by language of assessment. For comparability, observations are limited to learners in no-fee and low-fee schools as there were no isiXhosa LOLT mid-fee schools in the sample. The graph shows that the overall proportion of learners reaching the Grade 3 benchmark is similar across the two groups, with 47% of Afrikaans learners and 43% of isiXhosa learners meeting this benchmark. However, there are notable differences in how learners are distributed below this threshold. Among Afrikaans learners, a larger share remain at the Grade 1 level (31%), with a further 16% reaching the Grade 2 benchmark and 6% not reaching the Grade 1 benchmark. By contrast, isiXhosa learners are less concentrated at the lowest levels, with only 18% at the Grade 1 level and 5% below Grade 1, but a substantially larger proportion (34%) clustered at the Grade 2 benchmark. These patterns suggest that while overall levels of grade-level reading proficiency are similar across language groups, the distribution of learning differs. Afrikaans learners exhibit a more polarised pattern, with a relatively large group reaching the Grade 3 benchmark alongside a sizeable group still at the lowest levels. In contrast, isiXhosa learners are more concentrated in the middle of the distribution, with many learners progressing beyond the most basic skills but not yet reaching grade-level proficiency.

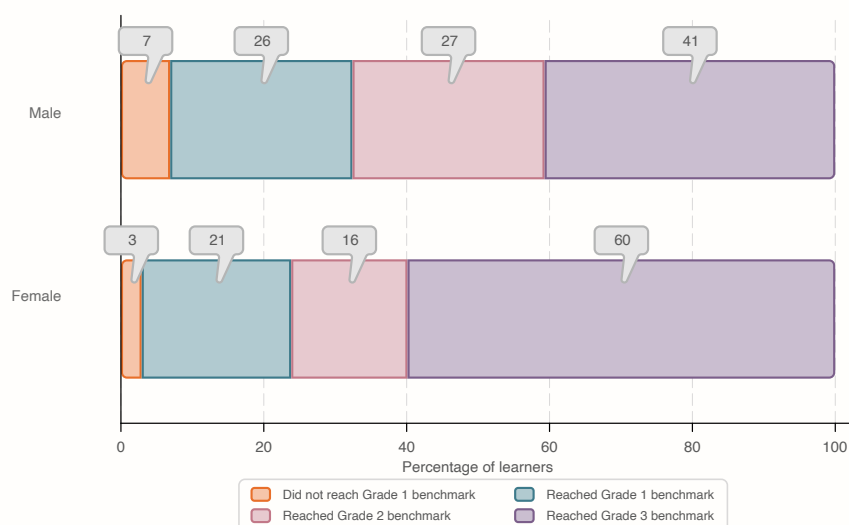
Figure 5: Percentage of learners reaching reading benchmarks by language of learning and teaching (LOLT) of the school



Notes: Bars show the percentage of learners reaching each reading benchmark, by the language of learning and teaching (LOLT) of the school. For comparability, observations are limited to learners in no-fee and low-fee schools as there were no isiXhosa LOLT mid-fee schools in the sample. Observations are further limited to learners who were in Grade 3 in wave 4. N = 280 (Afrikaans = 174; isiXhosa = 106).

Figure 6 shows the highest grade-level reading benchmark attained by learners in wave 4, disaggregated by gender. A clear pro-girl pattern is evident. A substantially larger proportion of girls (60%) reach the Grade 3 benchmark, compared to 41% of boys. By contrast, boys are more likely to remain at lower levels: 27% of boys are at the Grade 2 benchmark and a further 26% at the Grade 1 level, compared to just 16% and 21% of girls, respectively. A small proportion of learners in both groups do not reach the Grade 1 benchmark, although this is slightly higher among boys (7%) than girls (3%).

Figure 6: Percentage of learners reaching reading benchmarks by sex



Notes: Bars show the percentage of learners reaching each reading benchmark by sex. Information about learner sex was obtained from school records. Only learners who were in Grade 3 in wave 4 are included. N = 317 (Female = 172; Male = 145).

The results in this section show that large and systematic inequalities in foundational skills are firmly in place by the end of the Foundation Phase. Learners in more affluent school contexts substantially outperform their peers in poorer schools in both literacy and mathematics, while a clear pro-girl gap is evident in literacy but not in mathematics. These patterns are consistent with those observed in earlier waves of the study, confirming that inequalities by socio-economic status and gender are not transient features of early learning, but persistent and deeply embedded. The cross-sectional results provide a clear picture of where learners are by Grade 3. The next section builds on this by taking advantage of the longitudinal design of the study to examine how these inequalities emerge and evolve over time. In particular, it allows for an analysis of whether the gaps observed at the end of the Foundation Phase can be traced back to differences that were already present at the start of formal schooling, and how learners' trajectories diverge across different school contexts.



4. Longitudinal results

4.1. How many learners are “on track” across waves?

This section tracks the proportion of learners classified as “on track” across waves, by school fee group. By following the same learners over time, the longitudinal design of the study makes it possible to move beyond cross-sectional comparisons and examine how early differences in school readiness translate into later differences in learning outcomes. In doing so, it provides a direct view of how trajectories diverge across school contexts as children progress through the Foundation Phase.

Box 2: Note on classifying learners as “on track” across waves

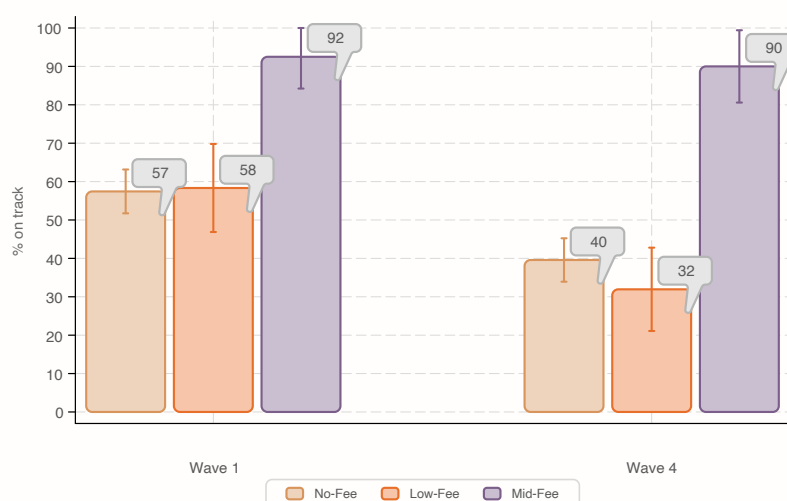
The classification of learners as “on track” differs across the assessment tools used in this study, reflecting the distinct constructs they are designed to measure. In Wave 1, “on track” refers to overall developmental readiness across the five domains captured by the ELOM 4&5 assessment. This classification is based on performance across the full assessment rather than any single domain. In contrast, the subsequent EGRA and EGMA assessments are domain-specific instruments that assess literacy and mathematics separately. While established reading benchmarks allow for the classification of learners as “on track” in literacy using EGRA, no equivalent benchmarks are available for EGMA. As a result, it is not possible to classify learners as “on track” in mathematics in later waves. Further analysis focuses on the Emergent Literacy and Language (ELL) domain in Wave 1. This uses ELL-specific thresholds from the ELOM 4&5 assessment to classify learners as “on track” in early literacy skills, allowing for a more direct comparison with later reading outcomes.

These choices reflect both the design of the assessment tools and the aims of the study. At school entry, the key consideration is whether children are developmentally ready across a broad set of domains. By contrast, by the end of the Foundation Phase, the primary policy concern is whether learners have acquired the foundational skills – particularly in literacy – needed to access the curriculum in later grades. This approach provides a consistent and policy-relevant way of tracking learners’ progress over time, while acknowledging the differences in what each assessment is designed to measure.

Figure 7 compares the proportion of learners classified as “on track” at wave 1 and wave 4, by school fee group. The figure shows that at Grade R entry (wave 1), just over half of learners in no-fee (57%) and low-fee (58%) schools were developmentally on track, although this was substantially lower than in mid-fee schools (92%). By wave 4, when the main cohort was in Grade 3, these patterns had diverged markedly. The proportion of learners on track in terms of reading development had declined sharply in no-fee and low-fee schools, to between

40% in no-fee schools and 32% in low-fee schools. This proportion remained very high in mid-fee schools, at 90%. This result suggests that inequalities observed at school entry are not only maintained but begin to widen relatively early in the schooling process, particularly in the transition into the acquisition of literacy skills.

Figure 7: Percentage of learners classified as “on track” in wave 1 and wave 4, by school fee group



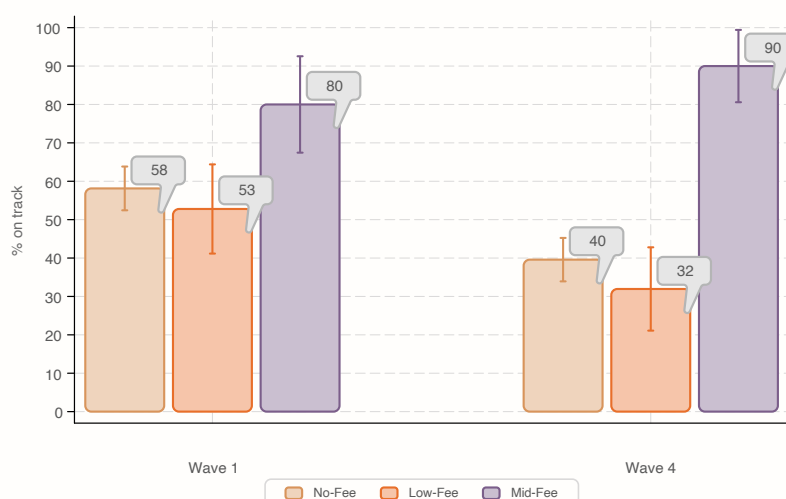
Notes: Data shown for learners assessed in both wave 1 and wave 4. N = 401 (no-fee = 289; low-fee = 72; mid-fee = 40). Bars show the percentage of learners classified as “on track” at each wave, with 95% confidence intervals. On-track status is based on wave-specific measures: in wave 1, the ELOM 4&5 composite (overall development across domains); In wave 4, grade-specific reading benchmarks. Learners are evaluated against the benchmark for their current grade, accounting for Grade repetition. No-fee schools did not charge fees in 2022, low-fee schools charged up to R850 per annum, and mid-fee schools charged more than R11,500 per annum.

While the results presented in Figure 7 use a holistic measure of school readiness at school entry, it is also informative to focus specifically on early literacy skills. Given that later outcomes are assessed in terms of reading proficiency, narrowing the wave 1 measure to the Emergent Literacy and Language (ELL) domain allows for a more direct comparison between early skills and later outcomes. This provides a clearer view of whether differences in early literacy (rather than broader developmental readiness) are already present at school entry and how these relate to subsequent reading performance.

Results are shown in Figure 8. At school entry, 58% of learners in no-fee schools and 53% in low-fee schools are on track in ELL, compared to 76% in mid-fee schools. By wave 4, these differences had widened substantially. The proportion of learners on track declines to 40% in no-fee schools and 32% in low-fee schools, while increasing to 90% in mid-fee schools. This pattern suggests that disparities in literacy-related skills are less pronounced at school entry but become more marked over time. In no-fee and low-fee schools, a smaller share of learners are on track in terms of literacy development by Grade 3 than at the start of schooling, indicating that many do not sustain early progress in literacy as they move through the Foundation Phase. By contrast, the proportion of learners on track in terms of literacy development in mid-fee schools increases substantially between wave 1 and wave 4, suggesting that learners in these contexts are, on average, more likely to acquire and consolidate the literacy skills needed to reach

grade-level benchmarks. These results point to diverging trajectories in literacy development across school contexts, with gains over time concentrated in more advantaged schools.

Figure 8: Percentage of learners classified as “on track” in wave 1 (Emergent Literacy and Language) and wave 4 (grade-level reading proficiency), by school fee group



Notes: Data shown for learners assessed in both wave 1 and wave 4. N = 401 (no-fee = 289; low-fee = 72; mid-fee = 40). Bars show the percentage of learners classified as “on track” at each wave, with 95% confidence intervals. On-track status is based on wave-specific measures: in wave 1, the ELOM 4&5 Emergent Literacy and Language domain, using age-specific thresholds; in wave 4, grade-specific reading benchmarks. Learners are evaluated against the benchmark for their current grade, accounting for Grade repetition. No-fee schools did not charge fees in 2022, low-fee schools charged up to R850 per annum, and mid-fee schools charged more than R11,500 per annum.

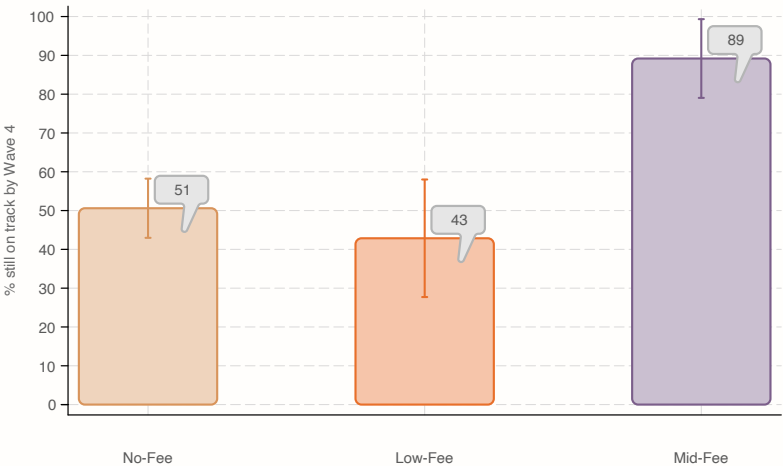
4.2. What happened to on-track learners in different types of schools?

The previous section showed that learners in different school contexts follow markedly different trajectories in terms of remaining on track over time. This section examines these patterns more closely by asking whether learners who start school on track are equally likely to remain on track in different types of schools. By comparing the later outcomes of learners with similar starting points, it becomes possible to move beyond differences at school entry and assess the extent to which school context shapes the evolution of learning outcomes over time.

Figures 9 and 10 show the proportion of learners who remain on track by wave 4 among those who were on track at school entry, using two alternative definitions of “on track” in wave 1. Figure 9 defines on-track status in terms of overall developmental readiness (ELOM 4&5 composite), while Figure 10 focuses specifically on Emergent Literacy and Language (ELL). Despite these differences in measurement, the pattern is strikingly similar across both figures. In mid-fee schools, the vast majority of learners who start school on track remain on track by wave 4. In no-fee and low-fee schools, however, fewer than half of initially on-track learners remain on track, indicating substantial slippage over time. This

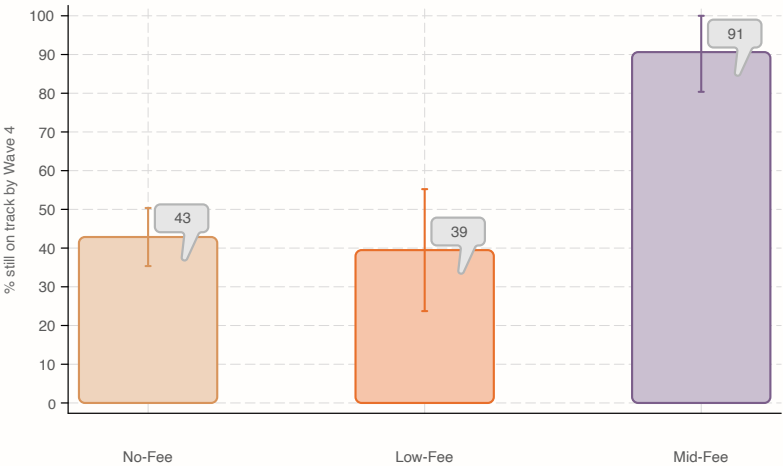
consistency across specifications shows that the divergence in learning trajectories by school context is not driven by how “on track” is defined at school entry. Whether considering overall developmental readiness or early literacy skills specifically, learners with similar starting points face very different probabilities of remaining on track depending on the type of school they attend.

Figure 9: Percentage of learners who were on track at school entry (Grade R) and remained on track by wave 4, by school fee group



Notes: Sample restricted to learners classified as developmentally on track in wave 1 (overall ELOM 4&5 scores) and observed again in wave 4 (N = 245; no-fee = 166; low-fee = 42; mid-fee = 37). Bars show the percentage of these learners who are still on track by Grade 3, based on grade-specific reading benchmarks, with 95% confidence intervals. On-track status in wave 1 reflects overall developmental readiness, while in wave 4 it reflects reading proficiency at the appropriate grade level. No-fee schools do not charge fees, low-fee schools charge up to R850 per annum, and mid-fee schools charge more than R11,500 per annum.

Figure 10: Percentage of learners who were on track in Emergent Literacy and Language at school entry (Grade R) and remained on track by wave 4, by school fee group



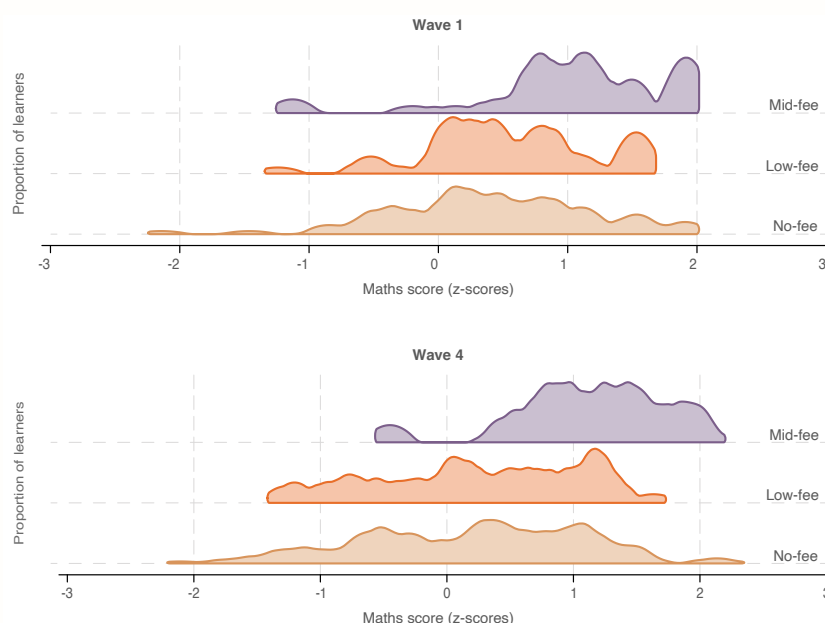
Notes: Sample restricted to learners classified as “on track” in the ELOM 4&5 Emergent Literacy and Language domain in wave 1 and observed again in wave 4 (N = 336; no-fee = 228; low-fee = 66; mid-fee = 42). Bars show the percentage of these learners who are still on track by Grade 3, based on grade-specific reading benchmarks, with 95% confidence intervals. On-track status in wave 1 is based on age-specific thresholds for the ELOM 4&5 Emergent Literacy and Language domain, while in wave 4 it reflects reading proficiency at the appropriate grade level. No-fee schools did not charge fees in 2022, low-fee schools charged up to R850 per annum, and mid-fee schools charged more than R11,500 per annum.

4.3. Do these patterns also hold for mathematics?

The analysis thus far has focused primarily on literacy, given its central role in the early grades and the availability of well-defined benchmarks. However, it is also important to examine whether similar patterns are observed in mathematics. This section therefore considers learners' performance in mathematics to assess whether the divergence in outcomes across school contexts is specific to literacy, or reflects broader differences in the acquisition of foundational skills.

Figure 11 shows the distribution of mathematics scores in wave 1 and wave 4 for learners who were classified as developmentally on track (in terms of overall ELOM 4&5 scores) at school entry, disaggregated by school fee group. At wave 1, the distributions of mathematics scores differ across fee groups, but also display considerable spread within each group. This reflects the fact that overall "on track" status is based on performance across multiple developmental domains and does not map directly onto performance in Emergent Numeracy and Mathematics (ENM). As a result, there are learners across all school contexts who are classified as developmentally on track overall but have relatively weak mathematics scores at school entry. By wave 4, the distributions shift and separate to some extent, with learners in mid-fee schools more concentrated at higher levels of performance in mathematics, while those in no-fee and low-fee schools remain more dispersed. However, because the initial classification does not isolate mathematics skills, it is difficult to interpret these changes as reflecting the preservation or erosion of early mathematical advantage.

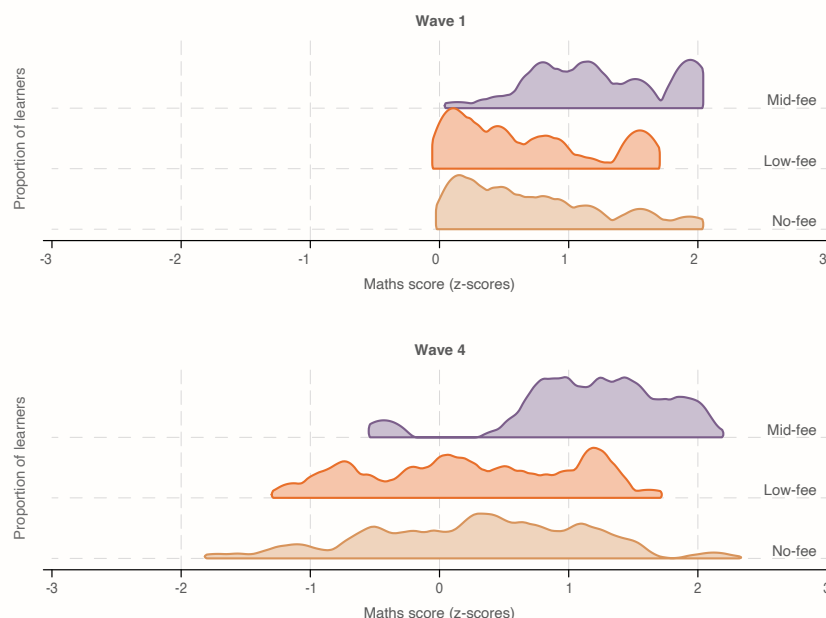
Figure 11: Distribution of mathematics scores in wave 1 and wave 4 among learners who were on track at school entry, by school fee group



Notes: Sample restricted to learners classified as "on track" based on the ELOM 4&5 composite (overall developmental readiness) in wave 1 and observed again in wave 4 ($N = 245$; no-fee = 166; low-fee = 42; mid-fee = 37). Distributions show standardised mathematics scores in each wave. wave 1 scores reflect performance on the ELOM 4&5 emergent numeracy and mathematics domain, while wave 4 scores are based on the average of standardised EGMA tasks. Scores are standardised within language groups to ensure comparability across learners. No-fee schools did not charge fees in 2022, low-fee schools charged up to R850 per annum, and mid-fee schools charged more than R11,500 per annum.

Figure 12 shows the distribution of mathematics scores in wave 1 and wave 4 for learners who were on track in Emergent Numeracy and Mathematics (ENM) at school entry, disaggregated by school fee group. This allows for a more direct assessment of how early mathematical skills evolve over time across different school contexts. At wave 1, the distributions across fee groups are relatively similar, with substantial overlap and only modest differences in central tendency, as the sample is restricted to learners who were on track in ENM at school entry. By wave 4, however, the distributions of mathematics scores have separated markedly. Learners in mid-fee schools are tightly concentrated at higher score levels, while those in no-fee and low-fee schools are more dispersed and shifted toward lower scores. In no-fee schools in particular, a substantial share of learners who were initially on track in terms of ENM are found at low levels of performance by wave 4. This indicates that, as with literacy, early advantage in mathematics is not equally sustained across school contexts. Learners with similar starting points follow very different trajectories depending on the type of school they attend. In more advantaged schools, early mathematics skills appear to be consolidated and extended, while in poorer school contexts many learners fall behind over time, resulting in widening gaps in mathematics achievement by the end of the Foundation Phase.

Figure 12: Distribution of mathematics scores in wave 1 and wave 4 among learners who were on track in Emergent Numeracy and Mathematics at school entry, by school fee group



Notes: Sample restricted to learners classified as “on track” in the ELOM 4&5 emergent numeracy and mathematics domain in wave 1 and observed again in wave 4 (N = 209; no-fee = 133; low-fee = 42; mid-fee = 34). Distributions show standardised mathematics scores in each wave. wave 1 scores reflect performance on the ELOM 4&5 mathematics domain, while wave 4 scores are based on the average of standardised EGMA tasks. Scores are standardised within language groups to allow for comparability across learners. No-fee schools did not charge fees in 2022, low-fee schools charged up to R850 per annum, and mid-fee schools charged more than R11,500 per annum.

5. Conclusion

This report presents the results from the fourth wave of Roots and Shoots study, following the same group of learners from the start of Grade R to the end of Grade 3. This longitudinal design allows us to move beyond cross-sectional snapshots and examine how early differences in development translate into later learning outcomes.

The results point to a concerning feature of the schooling system. The Foundation Phase is not operating as an equalising stage that reduces initial differences in learning. Instead, it appears to reproduce and, in some cases, amplify those differences. Learners who enter school on track do not face the same likelihood of staying on track: in more advantaged school contexts, early skills are reinforced and extended, while in poorer schools many learners fall behind over time. The result is a widening separation in trajectories rather than convergence, even over a relatively short period of time.

These findings speak to a concern increasingly raised in South Africa's early childhood community. While expanding access to quality early learning programmes is essential, it is increasingly recognised that this alone will not be sufficient to ensure that children achieve grade-level outcomes in the early grades (Dawes, 2025; Giese et al., 2025). Sustained gains depend on whether primary school systems are able to build on these foundations. The Roots and Shoots results provide the first longitudinal evidence from South Africa of what happens when this alignment is absent: without sustained support in the early grades, a substantial share of learners who start school with the necessary foundations do not stay on track. The results point to a critical policy implication: expanding access to high-quality early childhood development, while essential, will not on its own be enough to ensure that learners are performing at grade level by Grade 3. Without improvements in the quality of teaching and learning in the Foundation Phase, there is a ceiling on what early childhood interventions alone can achieve.



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