

Exploring the impact of a story-based teacher training programme on language and early literacy in 4- and 5-year-olds

A description of the isiXhosa children in the study sample

This is the fourth in a series of five research briefs that explore the impact of Little Stars, a story-based teacher training programme on language and early literacy in 4- and 5-year-olds. This brief describes the isiXhosa children in the study, their home learning environment and their early development across different developmental domains.

Research approach

In February 2022 (Time 1) 154 children from Early Childhood Development (ECD) centres in Khayelitsha were assessed by trained and accredited assessors. 111 children from the original sample were assessed again in August 2022 (Time 2). Reasons for attrition were various: two centres were excluded because the teacher attended fewer than half of the training sessions or the teacher attending training was not the main 4–5 year old teacher. Some children had left the centres and some were excluded from the study because they failed a hearing screening or WHO screening criteria.

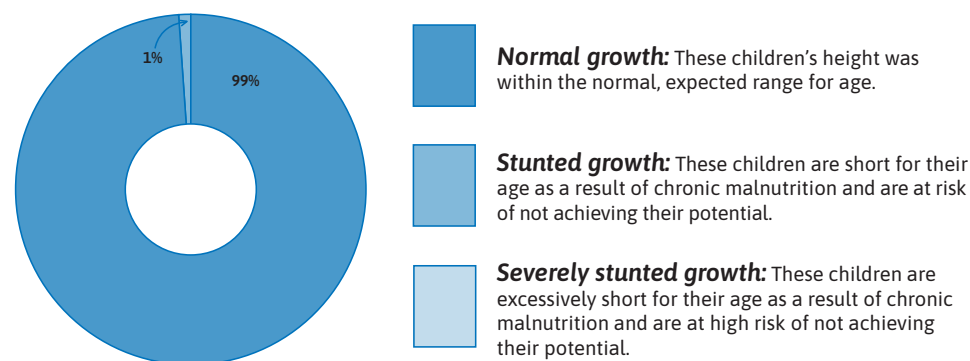
We recorded the children’s height, assessed their hearing and did telephonic interviews with caregivers to find out more about their home learning environment. We used the [Early Learning Outcomes Measure \(ELOM\)](#) to assess the children’s social-emotional functioning and developmental performance relative to age norms. We also assessed language- and literacy-related skills, including vocabulary, narrative, print and phonological awareness. (These language and literacy skills will be explored in Brief 5.)

Describing the children

Age and height for age

The average age of children in the study sample was 55.16 months (range 50–61 months).

Figure 1: Sample study – height for age (n=97)



The height for age profile of the sample indicates a higher percentage of children within the expected range compared to the 2022 [Thrive by Five Index Report](#), which found that in the Western Cape, 94.8% of children’s height was within the expected range, 4.4% of children were stunted, and 0.9% were severely stunted.

Hearing (n=95)

A hearing screening by a qualified audiologist revealed that four children had hearing loss and were referred for an audiology test. These children were excluded from the final sample. The audiologist found that 21% of children in the study sample had middle ear problems and were referred for medical treatment and re-screening.

Social-emotional functioning (n=110)

Children’s social-emotional functioning was measured through interviews with their teachers using the [ELOM Social-Emotional Rating Scale](#).

- Social relations with peers and adults:** including the ability to cooperate without prompting; to work with peers in group activities; to resolve problems without aggression; to seek support, assistance and information from familiar adults. In the study sample, 50.3% of children achieved the expected score (*Thrive by Five Index*, Western Cape sample = 66.9%).
- Emotional readiness for school:** including the ability to communicate with adults; appropriate expression of needs and feelings; willingness to do things without help; ability to adjust to changes in class or home routine; confidence in new experiences; and initiating activities. In the study sample, 64.1% of children achieved the expected score (*Thrive by Five Index*, Western Cape sample = 58.9%).

Home learning environment

The [ELOM Home Learning Environment Tool](#) (HLE) is a short questionnaire designed to measure:

- the amount of time a caregiver spends with the child in the week and weekend,
- early learning resources, and
- early learning activities in the home.

The HLE was completed through telephonic interviews with caregivers of two thirds of the sample (n=73). The average age of caregivers was 44 years, with 53% reporting matric as their highest school level.

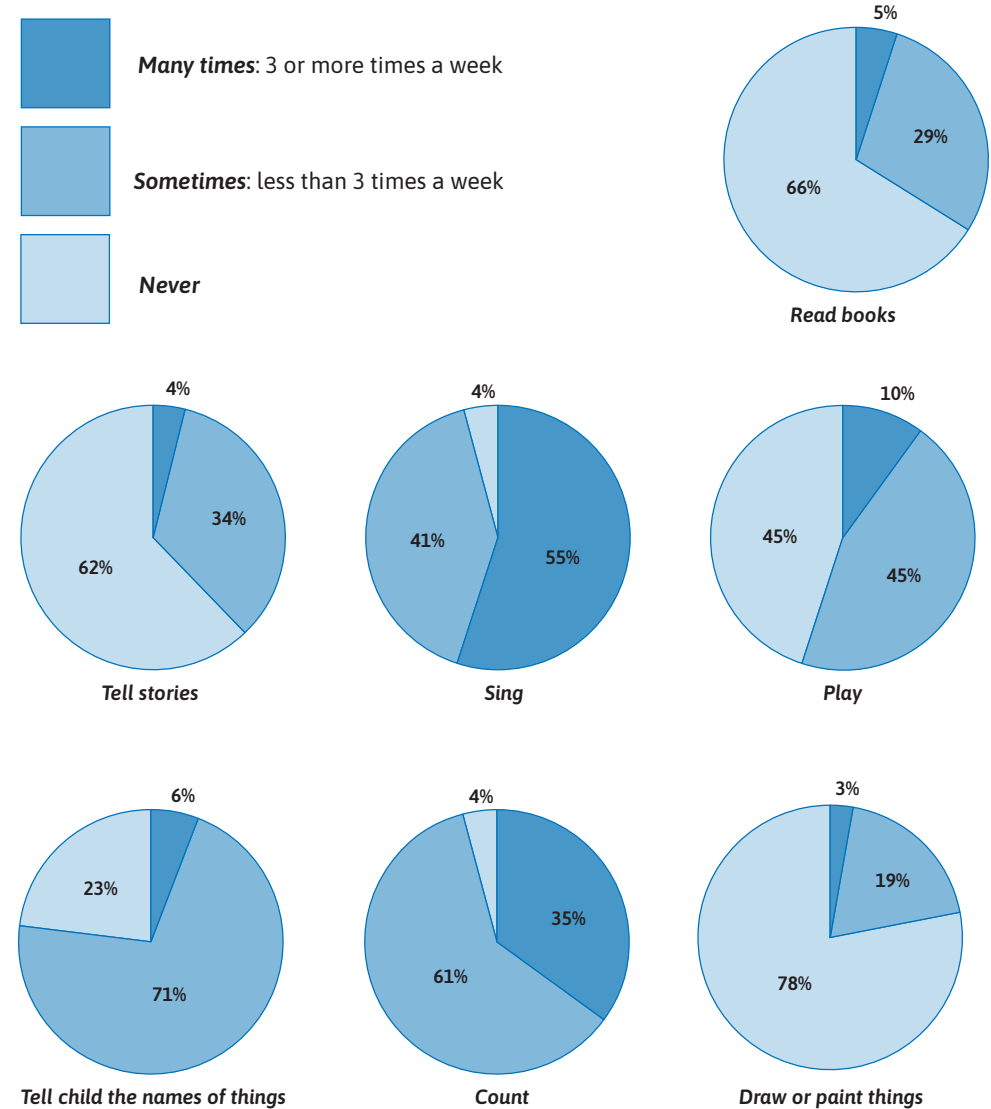
Table 1: Amount of time caregivers of the isiXhosa children in the study sample spent engaging in activities with their children

Amount of time spent playing, talking or reading with their child	Lots of time (> 2hrs)	Some time (1-2 hrs)	Very little time (< 1 hr)
Weekdays	28%	51%	21%
Weekends	14%	42%	44%

Caregivers reported an average of one picture book in their homes (range = 0-4). 47% said that they had no children's books in their home and 53% had between one and four.

When we asked caregivers about early learning activities, we found the following:

Figures 2 to 8: Early learning activities in the home



Developmental levels

The [ELOM 4 & 5](#) is a standardised tool that measures performance across five key developmental domains. Each domain is scored out of 20, with the total assessment scored out of 100 (Learning Total). Data from the 2022 *Thrive by Five Index* report allowed us to compare our study sample with a similar socio-economic group. The average Learning Total Fine Motor Coordination and Cognition and Executive Functioning domain scores were very similar to children attending centres with similar fees (Level 2 – R111 to R290 per month)¹. The children in the study sample had a higher average score for Gross Motor Development, and lower average scores for Emergent Numeracy and Mathematics and Emergent Literacy and Language.

Table 2: Comparison of Time 1 average ELOM scores with a comparable socio-economic group

ELOM domains	Children aged 50–59 months*	Comparative socio-economic groups
1. Gross Motor Development	9.23	8.14
2. Fine Motor Coordination and Visual Motor Integration (VMI)	10.78	10.77
3. Emergent Numeracy and Mathematics	8.19	8.6
4. Cognition and Executive Functioning	6.63	6.65
5. Emergent Literacy and Language	9.58	10.28
Learning Total	44.41	44.44

*When comparing average scores with the 2022 *Thrive by Five Index* report, we only included children in the 50–59-month age band at Time 1 (n=101).

Children’s ELOM scores can also be compared against expected standards for their age. Scores fall within one of three performance bands:

	<i>On track</i> : These children meet the learning standards and can do the tasks expected of children their age.
	<i>Falling behind</i> : These children are falling behind the standard and will need support to catch up with other children of their age.
	<i>Falling far behind</i> : These children are falling far behind the standard, need intensive intervention and are at risk of not catching up with their peers.

The graphs on the next page show the percentage of children *On track*, *Falling behind* and *Falling far behind* for Learning Total and the five ELOM domains at Times 1 and 2, relative to National and Western Cape samples in the 2022 *Thrive by Five Index* report.

Learning Total

At Time 1, just over a third of the children in our study sample were *On track* or *Falling behind*, with a quarter *Falling far behind*. The percentage of children *On track* was lower than the *Thrive by Five Index* national sample and Western Cape samples.

At Time 2, 70% of the children in our study sample were *On track* for Learning Total, with a quarter *Falling behind*, and only 5% *Falling far behind*. The percentage of children *On track* for Learning Total was higher than both national and Western Cape samples.

Domain scores

At Time 1, compared to Western Cape and national samples, the study sample had more children *On track* for Gross Motor Development. The percentage of children *On track* for Cognition and Executive Functioning was also marginally higher than the national sample.

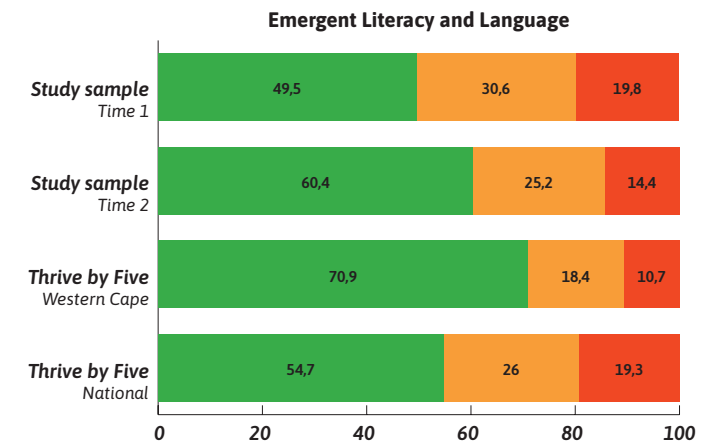
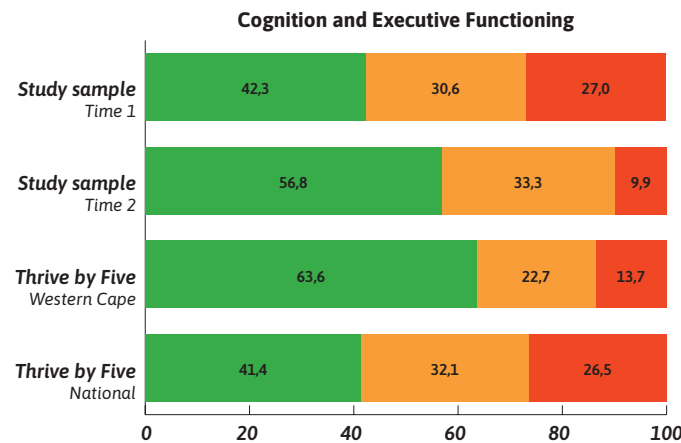
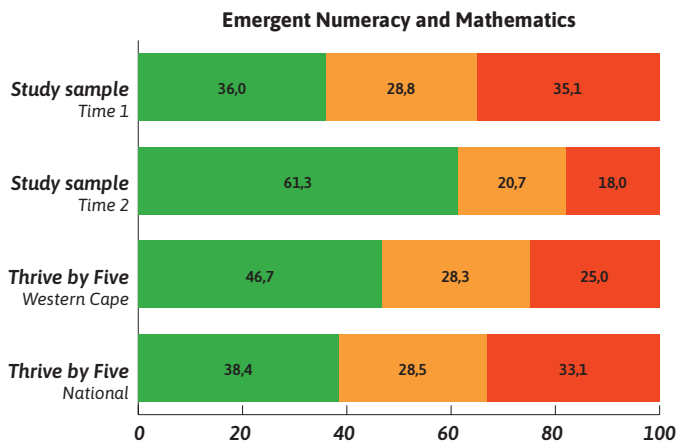
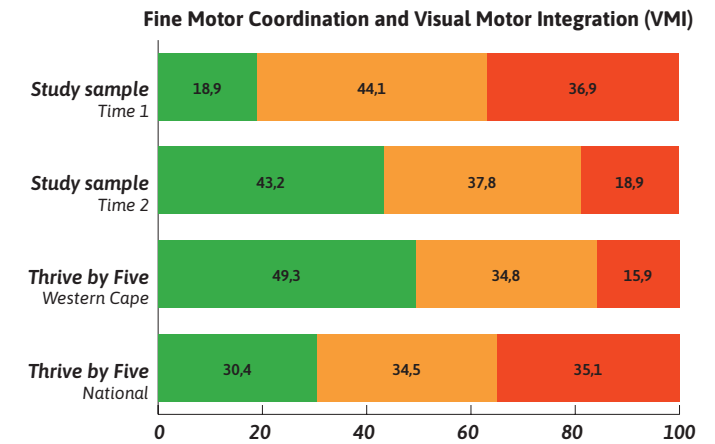
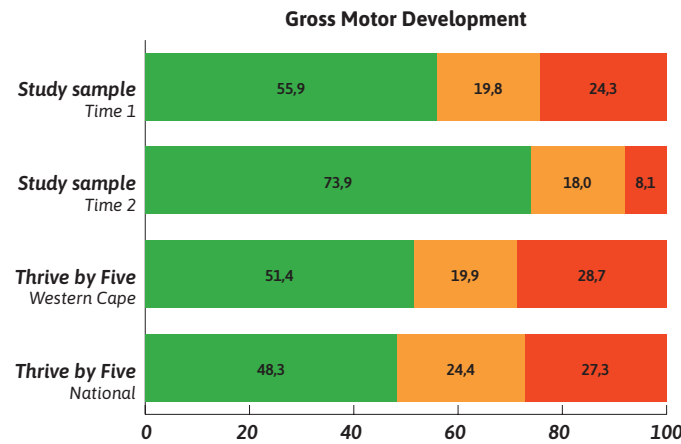
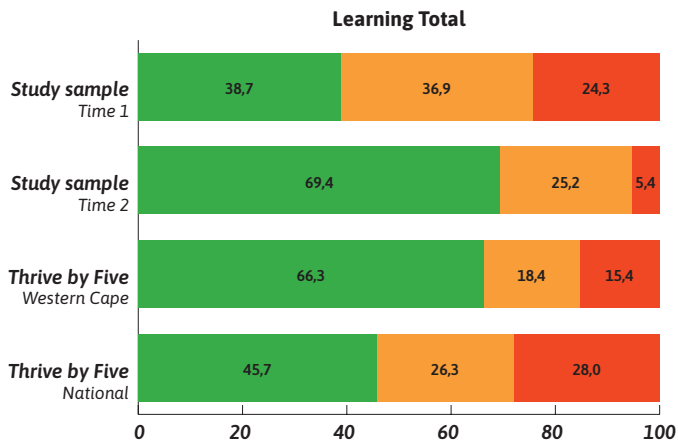
At Time 2, the percentage of children *On track* was **higher** than a national sample across all domains, but only higher than a Western Cape sample on Gross Motor Development and Emergent Numeracy and Mathematics.

¹ Level 1 (L1) is the lowest fee level, while Level 5 (L5) is the highest fee level. <https://datadrive2030.co.za/resources/child-learning-outcomes-by-elp-fee-levels/>

ELOM Learning Total and Developmental Domains

Figures 9 to 14: Percentage of children *On track*, *Falling behind* and *Falling far behind* for Learning Total and five ELOM domains²

■ On track
 ■ Falling behind
 ■ Falling far behind



² Colour coding is based on the ELOM performance standards for the 50–59-month and 60–69-month age bands. Red indicates children falling far behind, orange indicates children falling behind, and green indicates children achieving the ELOM standard.

Taking maturation into account

A comparison of the average scores of the sample study at Times 1 and 2 revealed that the **scores all improved over time**, and this improvement was statistically significant. To check whether this improvement was simply due to children getting older by six months, we calculated the amount of change expected due to maturation.

Table 3: Change over time, taking maturation into account (over 6 months)

Learning Total	Time 1 score	Time 2 score	Extent of change	Maturation in ELOM points	'Effect' in ELOM points	Effect size ³ in Standard Deviations (SD)	'Effect' in months
Full sample	45.3	58.15	12.85	6.12	6.73	0.48	6.60

Taking maturation into account, the children in the sample improved more than would be expected. The programme effect **equated to a gain of 6.6 months**. We did not compare gains made by the intervention and control groups separately, as preliminary analyses indicated that the groups were not comparable on key variables at Time 1. This will be explored further in Research Brief 5.

Summary and implications of findings

In this brief we have described a study sample of children and their home learning context. We found that **in the study sample**:

- The height of 99% of the children in the study sample was within the normal, expected range for their age.
- A hearing screening showed that four children had undiagnosed hearing loss, and a fifth of the study sample had middle ear problems that were indicators of chronic allergies or chronic and/or neglected middle ear and upper respiratory tract infections and could impact their hearing and language learning.
- Interviews with caregivers showed that the majority spent two hours or less playing, talking or reading with their child during the week, with even fewer caregivers spending this amount of engaged time with their child over weekends. Most

caregivers reported singing, counting and talking as the most frequent learning activities and engaged in playing, reading, telling stories and drawing less frequently. Almost half of caregivers reported never playing with their child, two thirds reported never reading books or telling stories and three quarters reported never drawing with their child.

- On a measure of social-emotional functioning, the average score for *Emotional readiness for school* was at the expected level, but the average score was lower than expected on a measure of *Social relations with peers and adults*. The 2022 *Thrive by Five Index* study found that children who met the standard for SEF performed better on the ELOM 4&5.
- At Time 1, the children's average ELOM scores were similar to comparable socio-economic group, except for Gross Motor Development (higher score), Emergent Numeracy and Mathematics and Emergent Literacy and Language (lower scores). However, when compared to a Western Cape sample, the percentage of children *On track* was lower for Learning Total and all domains (except Gross Motor Development), with only 39% of children *On track* for Learning Total.
- At Time 2, 70% of children were *On track*, with only 5% *Falling far behind*. Compared to a national sample, there was a higher percentage of children *On track* across all domains. The percentage *On track* was higher than the Western Cape sample for Learning Total, Gross Motor Development and Emergent Numeracy and Mathematics.
- The average scores of the children improved significantly over time and more than would be expected, taking maturation into account. The children got older by six months but over this time they also made six months' worth of additional learning gains on ELOM. The results suggest that these ECD centre programmes⁴ have been successful in raising children's learning outcomes.

In the next brief we compare the intervention and control groups, to establish whether the intervention group made significantly greater gains than the control group. We also explore whether the effects of the intervention were moderated by teacher/classroom and child variables.

³ Further reading on effect size: <https://resep.sun.ac.za/wp-content/uploads/2021/11/Estimating-the-impact-of-five-early-childhood-development-programmes-against-a-counterfactual-V06.pdf>; <https://datadrive2030.co.za/resources/how-to-guide-effects-of-maturation-on-elom-45-total-and-domain-scores/>

⁴ The ECD centres in the study are supported by two local NGOs in Khayelitsha: Sikhula Sonke and Ikamva Labantu. These NGOs train ECD teachers and principals and assist principals to meet the minimum standards for registration in order to access subsidies. Their teams also conduct regular visits to ECD centres to provide them with support and monitor their progress.