

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

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A description of the Afrikaans 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 Afrikaans children in the study, their home learning environment and their early development across different developmental domains.

Research approach

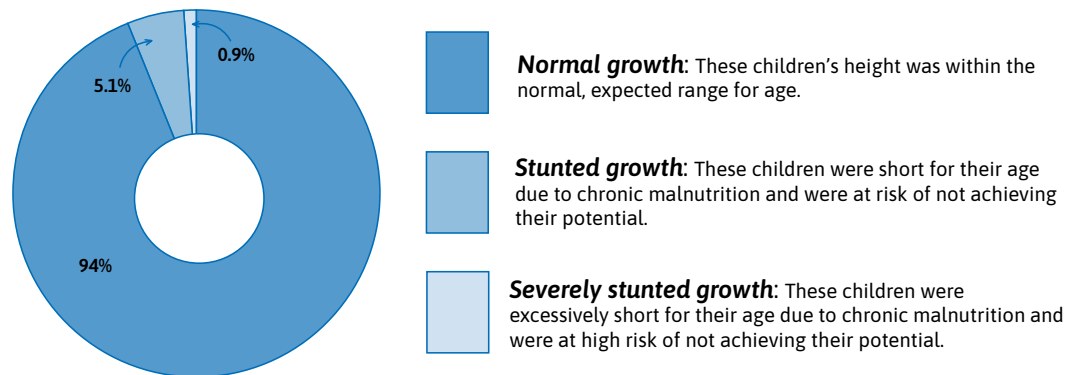
In February 2022 (Time 1) 154 children from Early Childhood Development (ECD) centres in Paarl/Wellington were assessed by trained and accredited assessors. 135 children from the original sample were assessed again in August 2022 (Time 2). Reasons for attrition were various: some children had left the centres, one centre was excluded because the teacher attended fewer than half of the training sessions, and two children were excluded from the study because screening tests indicated a hearing loss. 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 55.02 months (range 50–64 months).

Figure 1: Sample study – height for age (n=117)



The height for age profile of the sample is in line with 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=131)

A hearing screening by a qualified audiologist revealed that two children had hearing loss and were referred for an audiology test. These children were excluded from the final sample. The audiologist found that 26% of children in the study sample had middle ear problems and were referred for medical treatment and re-screening.

Social-emotional functioning (n=129)

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, 75.8% 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, 72.2% 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 for just under half of the sample (n=66). The average age of caregivers was 33 years, with 68% reporting matric as their highest school level.

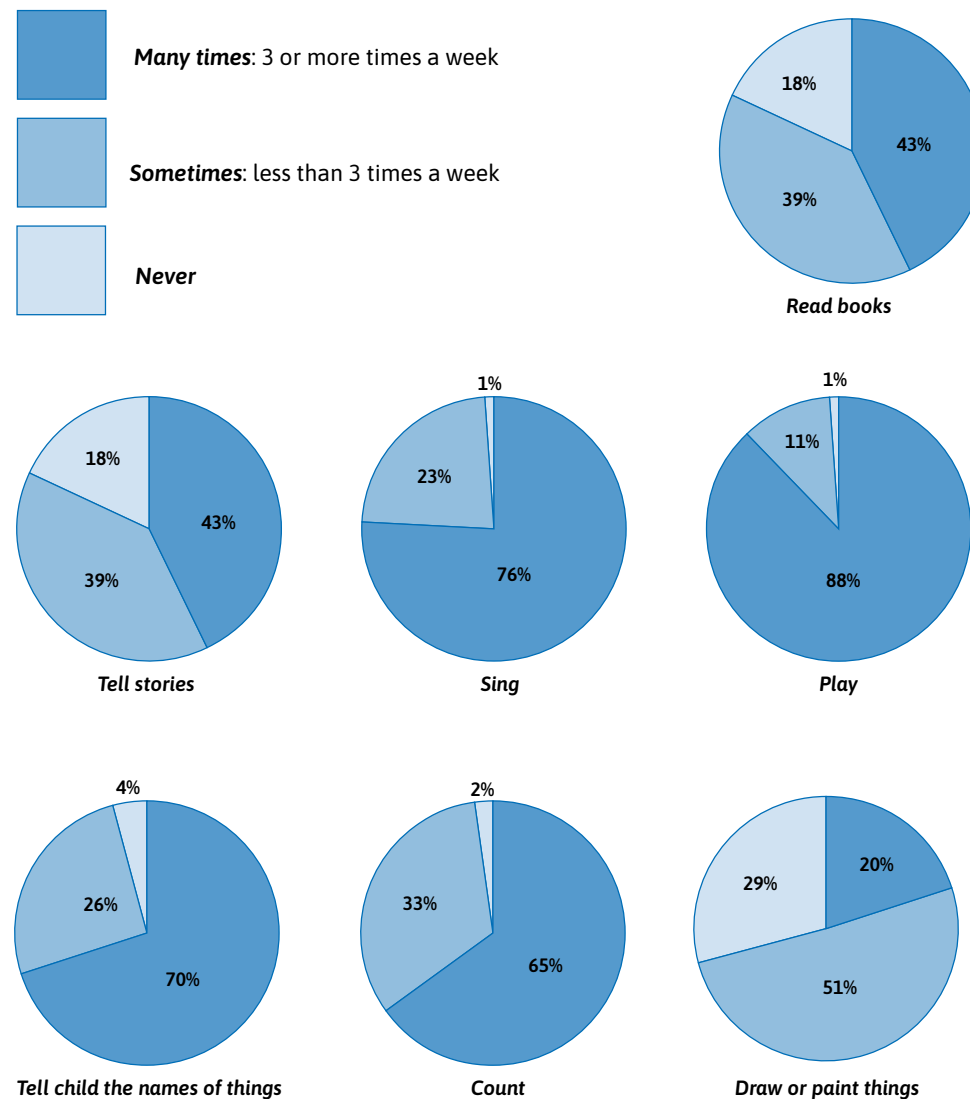
Table 1: Amount of time caregivers of the Afrikaans children in the study sample spent engaging in activities with their children

Amount of time spent playing, talking or reading with their child	Lots of time (> 2 hrs)	Some time (1–2 hrs)	Very little time (< 1 hr)
Weekdays	60%	37%	3%
Weekends	88%	11%	1%

Caregivers reported an average of five picture books in their homes (range = 0–30). 14% said that they had no children’s books in their home, 60% had between one and five, and 26% said that they had over five books.

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. Apart from the Emergent Numeracy and Mathematics domain, average scores for our study sample were better when compared to those of children from the comparative socio-economic group, who attend centres with similar fees (Level 3 – R291 to R750 per month)¹.

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	8.89	8.31
2. Fine Motor Coordination and Visual Motor Integration (VMI)	12.41	11.54
3. Emergent Numeracy and Mathematics	8.70	8.97
4. Cognition and Executive Functioning	7.87	7.69
5. Emergent Literacy and Language	12.05	10.63
Learning Total	49.90	47.14

*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 = 118).

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.

At Time 1, just over half the children in our study sample were *On track* for Learning Total, with a quarter *Falling behind*, and another quarter *Falling far behind*. The percentage of children *On track* was higher than the comparative *Thrive by Five* national sample, but **lower** than the Western Cape sample for Learning Total and all domains.

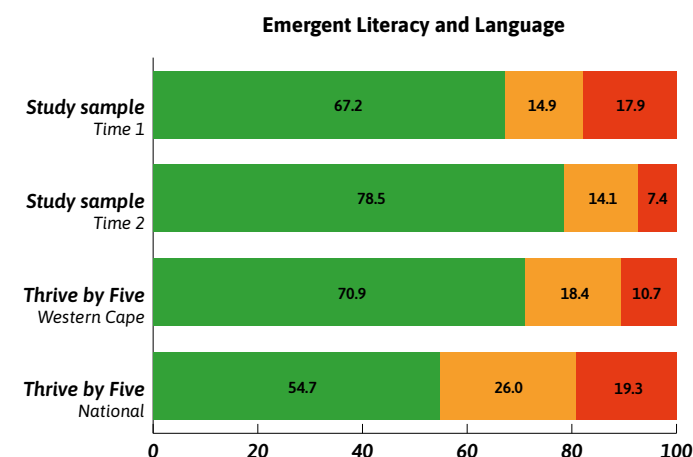
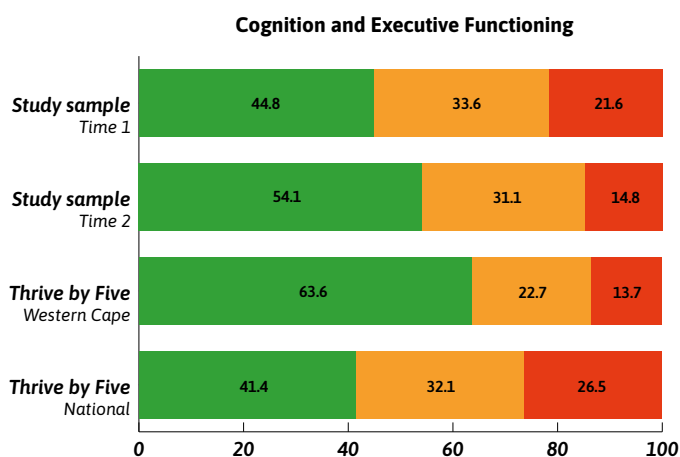
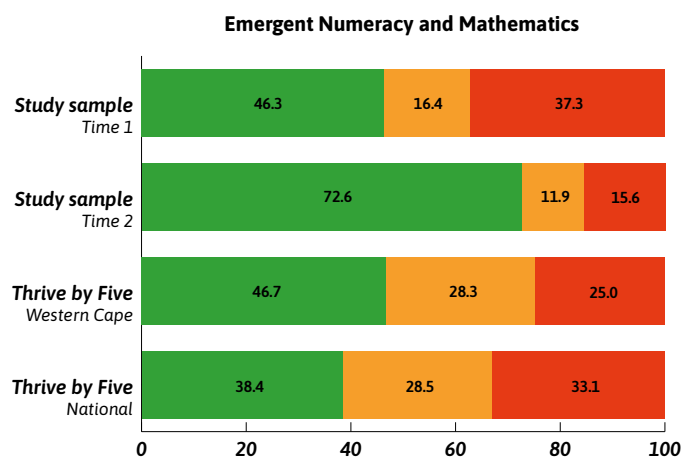
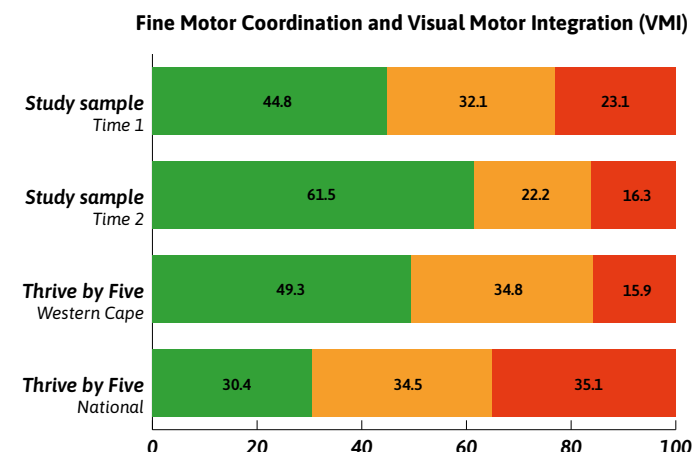
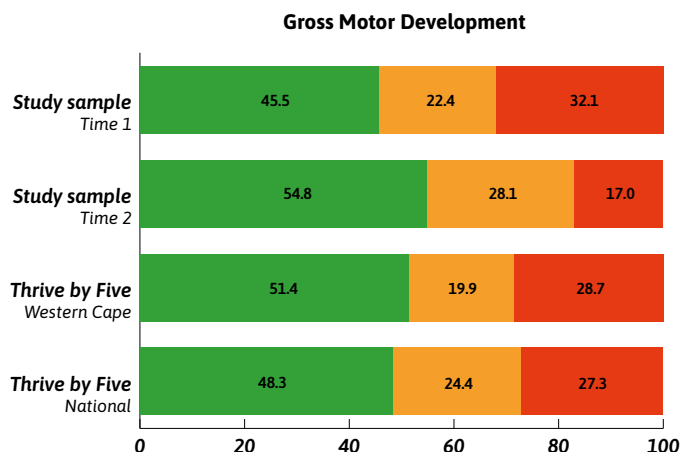
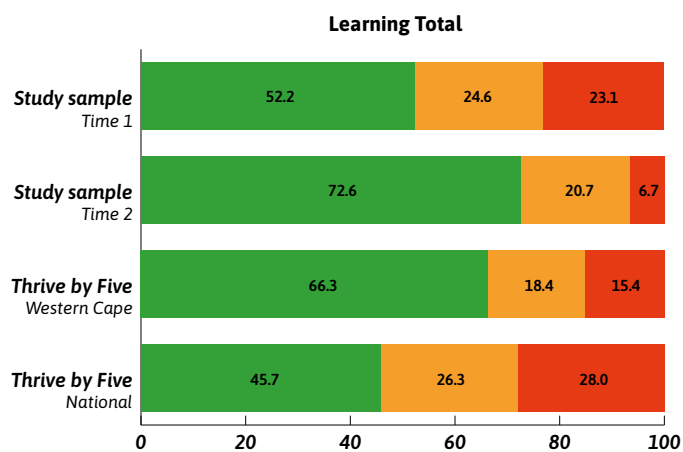
At Time 2, 72.6% of the children in our study sample were *On track* for Learning Total, with 20.7% *Falling behind*, and only 6.7% *Falling far behind*. The percentage of children *On track* was **higher** than the Western Cape sample for Learning Total and all domains, except for Cognition and Executive Functioning.

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. We did this for the full sample, as well as looking separately at the intervention and control groups, as preliminary analysis indicated that they were comparable on most measures at Time 1. This will be explored further in Research Brief 5.

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	50.25	62.46	12.21	6.12	6.09	0.43	5.97
Intervention group	48.57	64.28	15.71	6.12	9.59	0.68	9.40
Control group	51.92	60.67	8.75	6.12	2.63	0.19	2.58

Taking maturation into account, both the intervention and control groups improved more than would be expected. **The extent of change over and above maturation was greater for the intervention group, with the intervention group gains equating to 9.4 months.**

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 children's height for age was in line with the *Thrive by Five* Western Cape sample. The hearing screening showed that a quarter of the children 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 more than two hours playing, talking or reading with their child over weekends, with just over half spending this amount of engaged time with their child during the week. Most caregivers reported talking, singing, playing and counting as the most frequent learning activities, and engaged in reading, telling stories and drawing less frequently.
- Children achieved the expected score on a measure of social-emotional functioning. This is encouraging as the 2022 *Thrive by Five* study found that children who met the standard for social-emotional functioning performed better on the ELOM 4&5.
- At Time 1, relative to a comparable socio-economic group in the *Thrive by Five* study, the children's average ELOM scores were similar or higher, except for Emergent Numeracy and Mathematics. However, when compared to the *Thrive by Five* Western Cape sample, the percentage of children who were *On track* was lower for Learning Total and all domains, with only half of the children *On track* for Learning Total.
- At Time 2, almost three quarters of children were *On track*, with less than 10% *Falling far behind*. The percentage of children who were *On track* was higher than the Western Cape sample, except for Cognition and Executive Functioning.
- The average scores of the children improved significantly over time and more than would be expected, taking maturation into account. The effect size for the intervention group is comparable to effect sizes obtained for high-functioning ECD programmes in the [Early Learning Programme Outcomes Study](#)⁴. The results suggest that the ECD centre programmes in the study (and particularly the centres implementing the Little Stars programme) have been successful in raising children's learning outcomes.

In our 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 All of the ECD centres are supported by a local NGO, Inceba Trust. In addition to supporting and training principals, Inceba Trust trains ECD and mentors teachers in partnership with the Kinderland Academy.