CASE STUDY

INNOVATION INSIGHTS

OCTOBER 2020

The Early Learning Programme Outcomes Study

Research Insights

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Acknowledgements.

We are most grateful to Innovation Edge and Ilifa Labantwana for the opportunity to conduct this important study, the first of its kind in South Africa. We salute the organisations that agreed to collaborate with us. It takes considerable courage to be open to participation in a study during which your programme is under scrutiny. We are particularly grateful to our ELOM Assessors who played a key role in producing the evidence generated for this report.

Guidance on statistical analyses was provided by Professor Colin Tredoux of the University of Cape Town Psychology Department, and by Ms Tamsyn Naylor.

We thank Professor Sarah Chapman of the University of Cape Town who peer-reviewed the technical report. She judged the method, statistical analyses and interpretation of the findings to be sound.

Finally, to the central contributors to this study: the children, their parents and practitioners, thank you. Without you the pages that follow would be blank.

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Executive Summary.

South Africa has a well-developed National Integrated Early Childhood Development (ECD) Policy and a number of early learning programme delivery modalities exist for three- to five-year-old children.

The Early Learning Programme Outcomes (ELPO) Study is the first to examine the relative effectiveness of different programmes that aim to improve the early learning outcomes of young children from low-income backgrounds.

This research brief presents key findings from the study, and is intended for a general audience. The full technical report is available on request from info@innovationedge.org.za

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Study Sample and Design

Two centre development models (each offering 5 sessions per week) were compared with a mobile playgroup model (1 session per week) and a site-based playgroup model (two or three sessions per week) using a quasi-experimental baseline (pre-programme) and endline (post-programme) field study design. A third playgroup model was included in descriptive analyses only. All playgroup children were from the poorest socioeconomic home backgrounds (quintile 1 to 3), while this was the case for 80% of children attending centre-based programmes.

All of the ECD practitioners involved in the study were rated as well-functioning by their organisations. In addition, sound quality assurance and supervision practices were in place. **The sample comprised 369 children (average age 54 months at baseline and 62 months at endline) attending five-day per week centre-based programmes (n = 195), or playgroups (n = 174) one to three mornings per week.**

Children were assessed using the Early Learning Outcomes Measure (ELOM)[1] at baseline (March 2018) and endline (October 2018). ECD practitioners were interviewed to gather data about the programme that may affect children's early learning outcomes, such as:

- **practitioner education and experience**
- **practitioner-to-child ratio**
- **practitioner satisfaction with resources and support**

327 caregivers were interviewed to obtain data on the home learning environment, including:

- **resources in the home**
- **the type and frequency of early learning activities caregivers engage in with their child**
- **the time caregivers have available to spend with children during the week and weekend**

Analytical Approach

Descriptive analyses were undertaken for all five programmes. Two of the playgroup programmes and both centre-development programmes had the necessary data for multilevel modelling. This was undertaken to investigate their relative effectiveness, as well as to investigate the contribution of child, programme and home factors to a change in the children's ELOM performance over the course of the interventions.

Key Findings

Significant improvements in total ELOM scores were observed for all four programmes included in multi-level modelling, with the extent of change ranging from 13 to 20 ELOM standard score points.

Key Finding:

One playgroup programme, offering either two or three sessions per week, and one five session per week centre-based programme experienced the greatest improvement. Children who attended more programme sessions showed the most improvement in ELOM scores.

Other factors that contributed to improvement in ELOM scores included:

- **practitioners' reported support from their organisations**
- **children's height-for-age (their growth status)**
- **the child's baseline ELOM scores (those with lower baseline scores made the greatest gains).**

Changes in ELOM scores are largely attributable to **programme participation** rather than to opportunities for stimulation at home. That said, **children with more books and toys at home performed significantly better on two ELOM domains** (Fine Motor Coordination and Visual Motor Integration, and Cognition and Executive Functioning). Apart from resources, the limited influence of the home environment is probably due to the restricted time caregivers had for activities with their children; more than two thirds of the caregiver sample reported having two hours, or less, during the week and weekends to spend with their children. **Additionally, significant proportions of caregivers reported never engaging in activities, such as reading telling stories, or singing to children, which are likely to improve learning outcomes.**

Image from www.123rf.com

Conclusion

Positive gains were observed across all early learning programmes in all ELOM domains, especially for those children who were most behind at baseline.

Significantly, a well monitored one-session per week programme delivered by NQF Level 4 practitioners is able to improve the outcomes of very disadvantaged children, but not to the same extent as programmes offering more sessions.

Nevertheless, for many children, there were still gaps in particular domains, such as Emergent Numeracy and Mathematics, Cognition and Executive Functioning, and Fine Motor Control and Visual Motor Integration. A concerted focus on these areas in programming is recommended.

Higher programme exposure was revealed as significant for developmental performance. It is therefore critical to ensure the regular programme attendance of children. In this regard, feeding and other incentives for attendance may be valuable. Children's height-for-age score also had a significant effect on their performance, across all ELOM domains, reemphasising the importance of health and nutrition for early learning, and the importance of addressing this from the first 1000 days and beyond.

Finally, caregivers reported having little time to engage with young children. Programmes depending largely on parent input are thus unlikely to be successful in changing children's early learning outcomes unless caregivers are able to spend sufficient time supporting their children's early learning. It is therefore crucial that these programmes monitor attendance closely, and establish if (and how) caregivers apply what they have learnt.

Image below from www.123rf.com

Contents.

Image by Agence Olloweb on www.unsplash.com

Using Research to Drive Early Learning Programme Excellence.

To date, there has been no large-scale South African study that explores the extent to which different channels of delivery for Early Learning Programmes (ELPs), described in policy, achieve developmental outcomes for children and enable their readiness to learn in school. **The particular need was for studies of programmes that target poor children facing multiple, intersecting disadvantages, and who are at significant risk of long-term developmental deficits.**

The present study addresses these gaps in our knowledge. Findings from this first large-scale outcomes study of playgroups and ECD centre-enrichment models in South Africa provide useful pointers for early learning programme development as implementation of the National Integrated ECD Policy (NIECD), and the ECD provisions of the National Development Programme deepens.

Study Partners

The study involved three playgroup models operating in KwaZulu-Natal, the Western Cape, Mpumalanga and the Free State. These were compared to two ECD centre development models that focus on improving the quality of teaching and early learning, largely through in-service staff support and training. These centre development models were based in KwaZulu-Natal and the Free State.

Please note that these organisations have been anonymised in this report and are stylised according to whether they are playgroups (i.e. PG1, PG2, and PG3) or centre development models (i.e. CD1 and CD2). The ELPO study was commissioned by Innovation Edge and Ilifa Labantwana and was conducted by the ELOM team.

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The ELPO Study.

The primary goal of the ELPO study was to determine the extent to which different types of early learning programmes improve the developmental outcomes of three- to five-year old children from low-income backgrounds.

Two types of programme delivery models were included: playgroups that deliver one to three sessions per week; and early childhood development (ECD) centres that deliver daily sessions for pre-Grade R children, with a focus on improving the quality of teaching and learning. Five programmes took part in the study; three different playgroup models, and two that focus on ECD centre development. The key features of each programme are presented in Table 1 below.

In addition to the measurement of change in children's developmental performance, the study measured certain predictors of this change. Child factors, programme factors, and elements of the home learning environment were studied to establish the extent to which these variables influence children's developmental outcomes.

Research Questions

The ELPO study sought to answer two main research questions:

1. How do different ELPs, targeting three- to five-year-old children from low-income backgrounds, vary in their effectiveness in preparing children for Grade R, as measured by the Early Learning Outcomes Measure (ELOM)?

2. What programme, child, and home environment factors predict changes in ELOM scores, following exposure to an ELP?

Table 1. Key Features of Programmes that Participated in the ELPO Study.

	CD1	CD2	PG1	PG2	PG3
DELIVERY MODEL	Centre development programme for practitioners in independent ECD sites; no direct intervention with children.	Centre development programme for practitioners in independent ECD sites; no direct intervention with children.	Playgroup model directly managed by PG1.	Mobile playgroup model directly managed by PG2.	Playgroup franchise model designed for scale (minimum critical specification for efficient replication).
PROGRAM TARGET	Practitioners of Pre-Grade R children (4-5 years)	Practitioners of Pre-Grade R children (4-5 years).	Two- to four-year old children.	Three- to five-year old children.	Three- to four-year old children.
CHILD SESSIONS PER WEEK	Five sessions per week of 4.5 hours.	5 sessions per week of 3-4.5 hours.	Two to three sessions per week of 4 hours each.	One session per week of 2.5 hours.	Two sessions per week of 3 hours.
CHILD TOTAL EXPOSURE PER WEEK	22.5 hours	15 – 22.5 hours	8 (2 sessions) or 12 hours (3 sessions)	2.5 hours	6 hours
INTENDED STAFF TO CHILD RATIO	Depends on the site.	Depends on the site.	One practitioner plus an assistant to groups of 15 to 20 children.	Two practitioners per group of up to 25 children.	One practitioner to groups of 5 to 12 children.
PRACTITIONER'S QUALIFICATIONS	Depends on the site.	Depends on the site.	Minimum NQF Level 4 ECD Qualification.	Minimum NQF Level 4 ECD Qualification.	Minimum: 5-day training and accreditation; some practitioners have NQF Level 4 ECD Qualification.

	CD1	CD2	PG1	PG2	PG3
OTHER STAFF	Depends on the site.	Depends on the site.	Community assistants.	No.	Community members may assist.
PROGRAMME INPUTS	Ten monthly theme-based workshops for practitioners; ten on-site mentoring visits by an experienced trainer, who models good teaching practice; and area-based peer support by other practitioners in the programme.	Initial five-day training followed by ongoing support facilitated by a team of trained ECD specialists; unannounced compliance assessments are conducted monthly; practitioners attend monthly cluster workshops with other practitioners; child assessments are conducted by trainers; CD2 provides each centre with an educational resource kit and practitioner guide.	A trained group leader conducts monthly on-site monitoring; practitioners attend bi-annual quality improvement sessions; practitioners are provided with weekly inputs on the programme for the following week; and child outcomes are measured internally, per age group.	Weekly feedback and planning meetings are held with the Playgroup Coordinator; practitioners submit monthly reports on programme delivery and child progress; and random quality assurance visits are conducted by Playgroup Coordinator and M&E staff.	Programmes are supported by the National Franchise Hub and by coaches who oversee the support and monitoring of practitioners; practitioners attend regular area-based support meetings with other practitioners; coaches conduct annual quality assessments and random on-site support visits; practitioners are provided with programme resources (toy kits, books and other resources); and there is a toy library component where groups have access to materials and a larger playgroup experience for children every two weeks.
PARENT FEES	Variable. Depends on the site.	Variable. Depends on the site.	None.	None.	None.

	CD1	CD2	PG1	PG2	PG3
PARENT ENGAGEMENT	Variable: depends on the individual ECD centres. Not provided by CD1.	Variable: depends on the individual ECD centres. Not provided by CD2.	No formal parent component.	Weekly formal parent component and home visits to vulnerable parents.	Parent information component and home visits to parents who do not attend parenting sessions, and to vulnerable families.
NUTRITION	Variable, provided by the individual ECD centres.	Variable, provided by the individual ECD centres.	Breakfast and snack provided.	Snack provided.	Fortified porridge.
EMPLOYER	Practitioners employed by the ECD centres, not by CD1.	Practitioners employed by the ECD centres, not by CD2.	PG1.	PG2.	PG3. Most earn stipends.
NUMBER OF SITES IN STUDY	13 sites in 2 localities.	17 sites in 2 localities.	14 sites in 2 localities.	2 sites in 1 locality.	17 sites in 1 locality.
OTHER COMMENTS	Centres may receive a subsidy of R15 per day per child from DSD.	Centres may receive a subsidy of R15 per day per child from DSD.		Integrated service provision with referrals to DSD and DoH.	

Data Collection

Children were assessed at **two points in the year:** in March 2018 (baseline) and then again at the end of the programme year (October - November 2018). They were **assessed on the Early Learning Outcomes Measure (ELOM)[1] in their home languages by trained and accredited assessors,** in a session lasting approximately **45 minutes per child.**

In order to gather data on children's home learning environments, primary caregivers were interviewed at endline. Practitioners were also interviewed at endline to obtain data on programme factors likely to influence programme quality and child outcomes, such as their education and ECD sector work experience, and the support and supervision that they had received. Administrative and other programme-level data such as child attendance, was provided by the participating organisations.

Sample

The study employed elements of both programme site- and child-level randomisation, as well as convenience sampling when random selection of sites was not feasible. The final number of children in the study's sample was **369**. A total of **106 assessments (22%) were lost** to follow-up at baseline. A bias check was conducted, suggesting no systematic attrition based on the baseline performance of the child, or their age.

Of the children who were not available for assessment at endline, **91% had dropped out** of their programmes (largely due to relocation and inability to pay fees at ECD centres) and **9% were still enrolled, but absent on the day of assessment.**

The numbers of children assessed at baseline and endline are presented in Table 2.

Children were between the ages of 55 and 74 months at endline. The sample was split evenly according to gender, with 49.6% of the sample being male and 50.4% of the sample being female.

All programmes target children from low-income backgrounds (quintiles 1 to 3). The study's sample reflects this: **86% of children were in quintiles 1, 2 and 3; and just under a third of the sample (29%) came from quintile 1 areas (the most impoverished locations in the country). Furthermore, 86% of families that took part in the study are recipients of the Child Support Grant.***

Table 2. Child Sample (After Data Cleaning).

MODEL	TARGET	BASELINE	ENDLINE
CENTRE DEVELOPMENT	226	242	195
PLAYGROUPS	339	240	175
TOTAL	565	482	369

* The Child Support Grant is a social assistance grant available to low-income South African citizens who care for children under the age of 18. In order to receive the grant, single caregivers earn up to R4000 per month, and the combined income of married caregivers does not exceed R8000 per month. At the time of the ELPO baseline study (March, 2018), caregivers were granted R400 a month per child.

Image below from www.123rf.com


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The Early Learning Outcomes Measure (ELOM).

The ELOM is a population level instrument designed to measure the developmental status of children between the ages of 50 to 59 months old and 60 to 69 months old.[1,2]

The two age bands take into account the different levels of development expected of children in each age group. Children are individually assessed by trained and accredited ELOM assessors in their home language in a session lasting about 45 minutes. Scores are captured on a tablet and uploaded to a server for analysis.

Image below from www.istockphoto.com

The ELOM consists of 23 direct assessment items, clustered in five domains:

- Gross Motor Development
- Fine Motor Development and Visual Motor Integration
- Emergent Numeracy and Mathematics
- Cognition and Executive Functioning
- Emergent Literacy and Language

It also consists of a teacher assessment, involving an interview between the ELOM assessor and the child's teacher. The teacher is asked to rate the child's self-care (independent use of a toilet), social relations with peers and adults, and emotional functioning.

The ELOM is a reliable, age valid tool that provides a fair assessment of children from across ethnolinguistic groups.


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Key Findings: Child Development.

In this section, we answer the study's first research question: how do different ELP interventions vary in their effectiveness in preparing children for Grade R, as measured by the ELOM?

This question was addressed by comparing programmes which had data on all relevant variables. This applied to two playgroups (PG1 and PG2) and the two centre-development programmes (CD1 and CD2). The ELPO study analysed the ELOM results using a statistical method called multilevel modelling. This method measures the relative influence of important differences between children (e.g. age, stunting, and early learning stimulation at home), site (e.g. practitioner skills and group size) and programme (e.g. number of sessions per week). By doing so, we can understand the influence that these factors are likely to have on the change in ELOM scores. In addition, the analyses reveal which programmes perform significantly better or worse on each ELOM domain, in terms of their children's change in scores from baseline to endline.

In figures 1 to 6* below, the multilevel modelling results are presented for ELOM Total and for each ELOM domain. What is important here is the steepness of the lines, with each line representing a programme. **The steepness of these lines represents the difference between average baseline and endline scores of the children in each programme, after controlling key child, site and programme variables. The steeper the line, the greater the improvement in ELOM scores, relative to children attending the other programmes.**

* In Figures 1 - 6, in order to simplify the presentation of the the complex results of modeling, we use Change Scores (delta). Readers of the ELPO Technical Report will note that that Figures 33 - 38 look different. This is because they are based on estimated marginal means.

ELOM Total

Between baseline and endline, children in PG1 (2 or 3 sessions per week) and CD2 (5 sessions per week) experienced significantly greater improvement in ELOM Total scores than the other programmes.

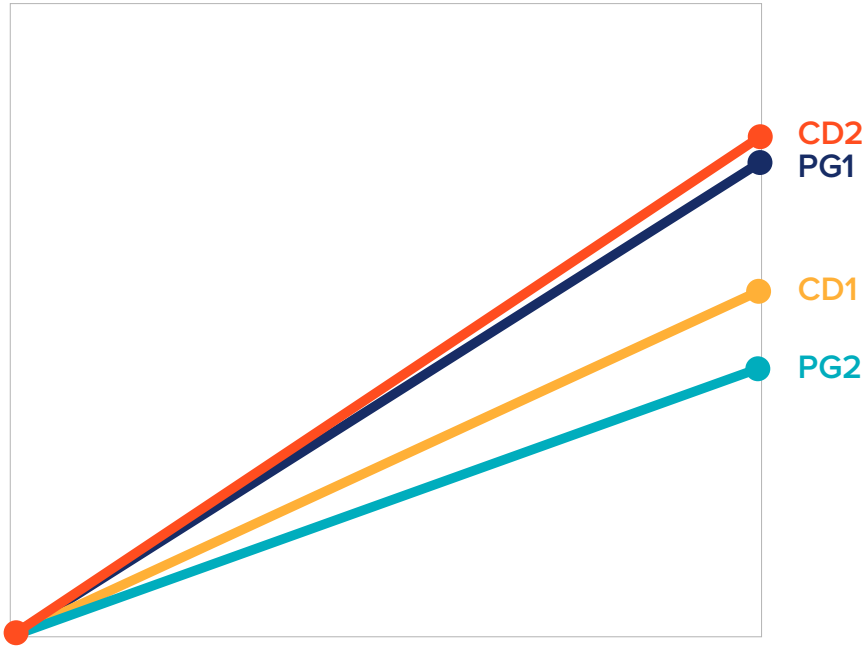

Figure 1. Change in ELOM Total (from Baseline to Endline), per Programme.

Gross Motor Development (GMD)

This subdomain assesses children's ability to use large muscle skills, demonstrating control and coordination in large movements (e.g. catch a ball or stand on one foot).

PG1 and CD1 demonstrated statistically significantly larger gains in GMD, relative to the gains measured in the other programmes.

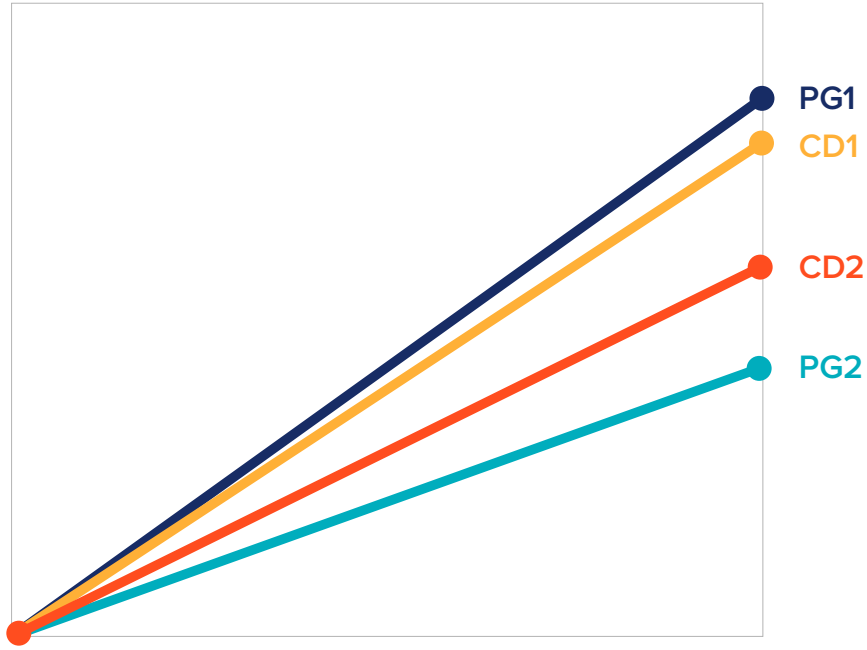

Figure 2. Change in GMD (from Baseline to Endline), per Programme.

Fine Motor Control and Visual Motor Integration (FMCVMI)

This subdomain assesses children's ability to control the small muscles of the body for tasks such as holding a pencil correctly or stringing beads. PG1 and CD2 showed significantly larger gains than the other programmes.

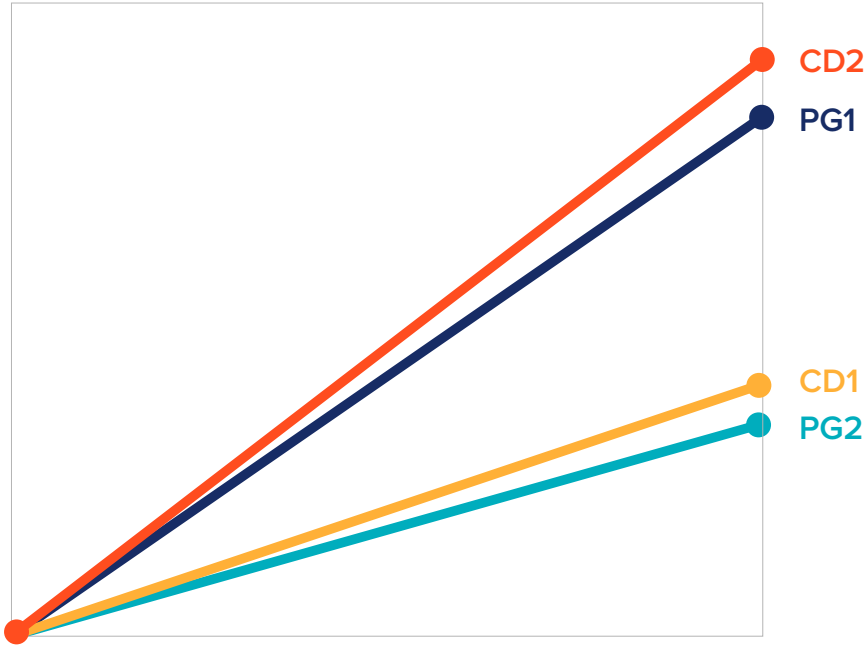

Figure 3. Change in FMCVMI (from Baseline to Endline), per Programme.

Emergent Numeracy and Mathematics (ENM)

This subdomain assesses children's ability to understand number concepts (counting, and simple addition and subtraction), as well as the understanding of symbols, shapes, size, and space. None of the programmes performed significantly differently from each other in terms of change between baseline and endline score.

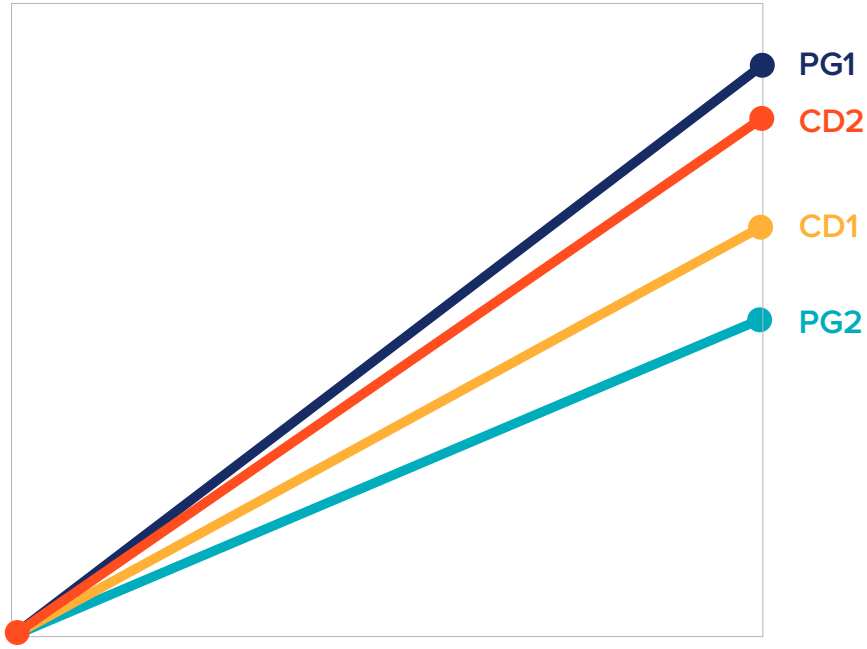

Figure 4. Change in ENM (from Baseline to Endline), per Programme.

Cognition and Executive Functioning (CEF)

This subdomain assesses children's ability to think critically, solve problems, form concepts, and attend to instructions while controlling impulses. Children attending CD2 showed the greatest change in their CEF scores, performing (statistically) significantly better than children in other programmes.

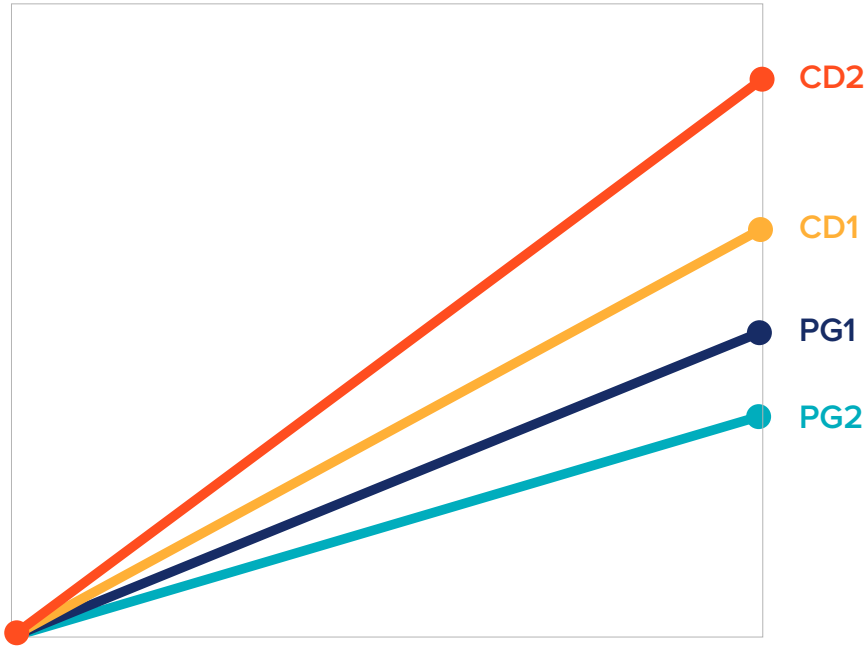

Figure 5. Change in CEF (from Baseline to Endline), per Programme.

Emergent Literacy and Language (ELL)

This subdomain assesses children's ability to communicate effectively and use language correctly. On ELL, CD1 performed significantly worse than the others. This is expected, as these children started at the highest level of performance at baseline and changed the least.

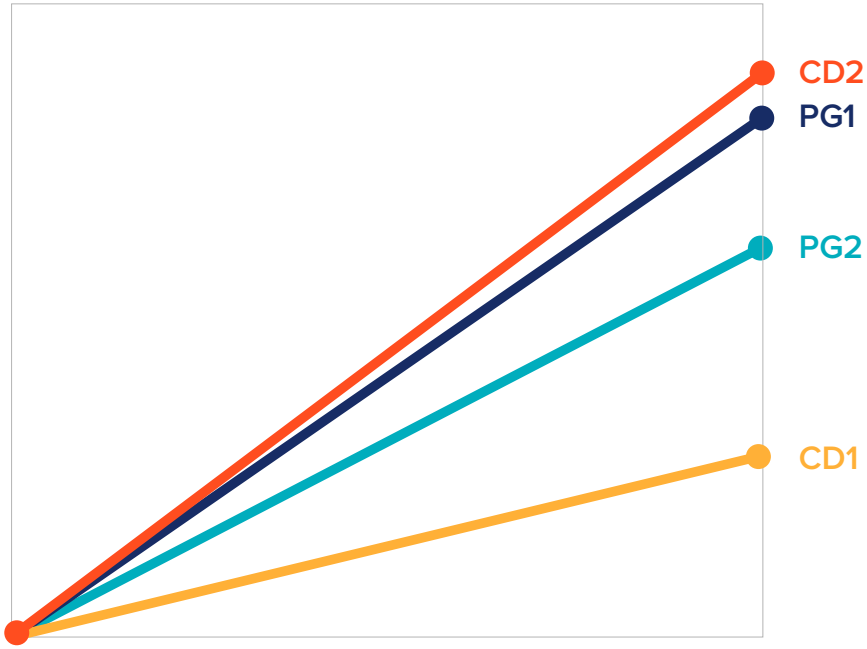

Figure 6. Change in ELL (from Baseline to Endline), per Programme.

In addition to indicating which programmes were associated with the largest gains in ELOM scores (after having controlled for other measured factors), the multilevel model analyses also uncovered which factors made a significant contribution to those gains. In other words, analyses revealed the extent to which child, home and programme factors influenced children's change in ELOM scores (from baseline to endline).

This serves to answer the second research question: what programme, child, and home environment factors predict changes in ELOM scores following exposure to an early learning programme?

First and foremost, the analyses revealed that after controlling for other variables measured, all four programmes included in the model made statistically significant gains in total ELOM scores and in domain scores. This indicates that these programmes are effective in increasing the developmental outcomes of their participants.

Image by Gautam Arora on www.unsplash.com

Other findings from analyses are as follows:

The level from which programme children start at baseline is predictive of the extent of gain they are likely to make over the course of the intervention. Those who start from a low base, and particularly poorer children, are likely to gain more during the intervention than those who are better off and start the programme with higher scores. This is consistent with international research findings.[3,4]

Regardless of programme type, children who attended more sessions performed significantly better than children with lower programme exposure on the FMCVMI and ELL domains, and in total ELOM scores. Additionally, sessions attended emerged as a significant contributor to the overall picture of child performance on total ELOM scores and ELL.

Children with higher height-for age scores (less likely to have suffered under-nutrition) performed significantly better on all ELOM domains and on the ELOM Total score.

Children who had been in some form of ECD programme for 3 years performed significantly better than children with fewer years on GMD and ELL.

Children with greater learning resources (books and toys) at home performed significantly better on FMCVMI and CEF. This effect represents a combination of more books in the home and a variety of different types of toys to play with, such as store-bought toys, homemade toys, or the use of household objects as toys (e.g., sticks and pans).

Descriptive Results

In this section, the average baseline and endline ELOM scores are presented for all three playgroup models and the two centre-development programmes. These results are descriptive only; they do not control for other potentially contributing factors as the MLM results above do. **Rather, they indicate the sample's progression towards achieving the ELOM standards. The standards represent the level of performance that we would like to see for all children prior to entering Grade R (see sidebar).**

Figure 7 displays the changes in children's average ELOM Total scores between baseline (the first dot) and endline (the second dot). The colours of the dots reflect the ELOM's performance bands:

- Children are ***At Risk***
  (well below the ELOM standard and need significant assistance to come up to the standard)
- Children are ***Falling Behind***
- Children are ***Achieving the ELOM Standard***

Interpreting ELOM Results

The ELOM places groups of children into three performance bands: ***At Risk, Falling Behind, or Achieving the Standard.*** The expected ELOM performance standards are benchmarked at the standard score achieved by the top 40% of children (the 60th Percentile on the distribution). Thus, those who are ***At Risk*** are in the bottom 32% of children, and are well below the standard and need significant assistance to reach the standard. Children who are ***Falling Behind*** are in the middle (between the 32nd and 59th percentile), performing better than those who are ***At Risk*** but not as well as those in the top 40%; with support they should be able to ***Achieve the Standard***.

Children's overall ELOM scores do improve with age as expected while they learn and develop. However, their position within the ELOM performance bands does not change as a function of their increasing age alone, but rather, as a function of other influences such as enhanced learning opportunities.

Full details may be found at www.elom.org.za

The figure indicates the following:

1. Children from the five different programmes started the year at different developmental levels (indicated by varying average baseline scores).

2. Children in two playgroup programmes (PG1 and PG3) improved from being ***At Risk*** at baseline to ***Falling Behind*** at endline.

3. PG1 and PG2 children made significant gains to be close to the standard at endline.

4. One centre-based development programme (CD2) improved total ELOM scores by 23.7 points to move children from ***Falling Behind*** to ***Achieving the ELOM Standard.***

In the figures that follow, the average ELOM domain scores are presented, demonstrating the extent of change produced by each programme between baseline and endline.

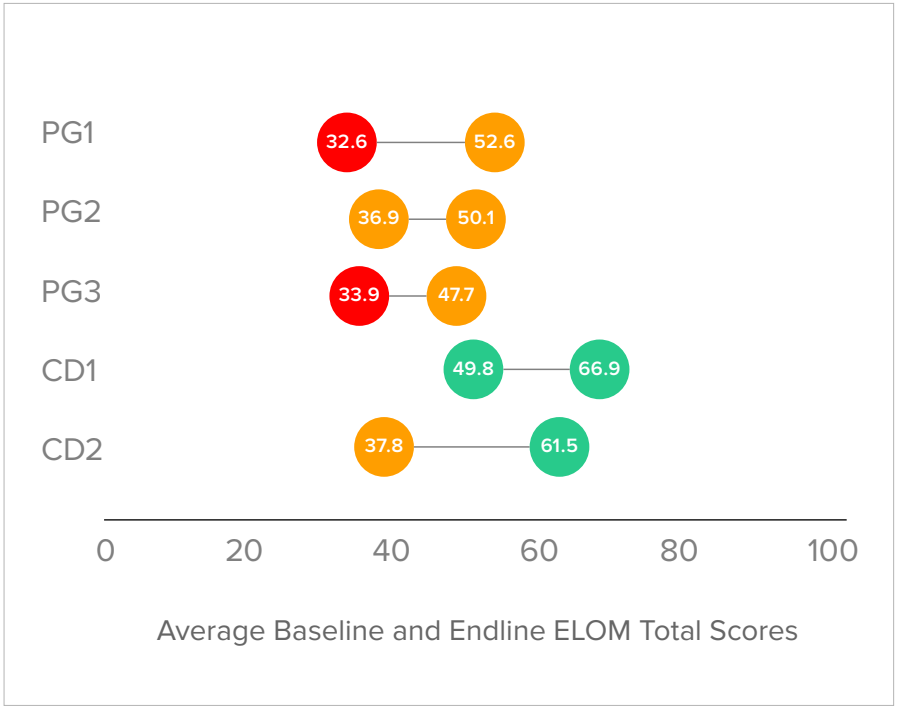

Figure 7. Change in Average ELOM Total Scores from Baseline to Endline, by Programme.

Gross Motor Development

All children were ***Falling Behind*** in GMD at baseline. At endline, all had improved and were ***Achieving the ELOM Standard*** at endline, except for those in PG2.

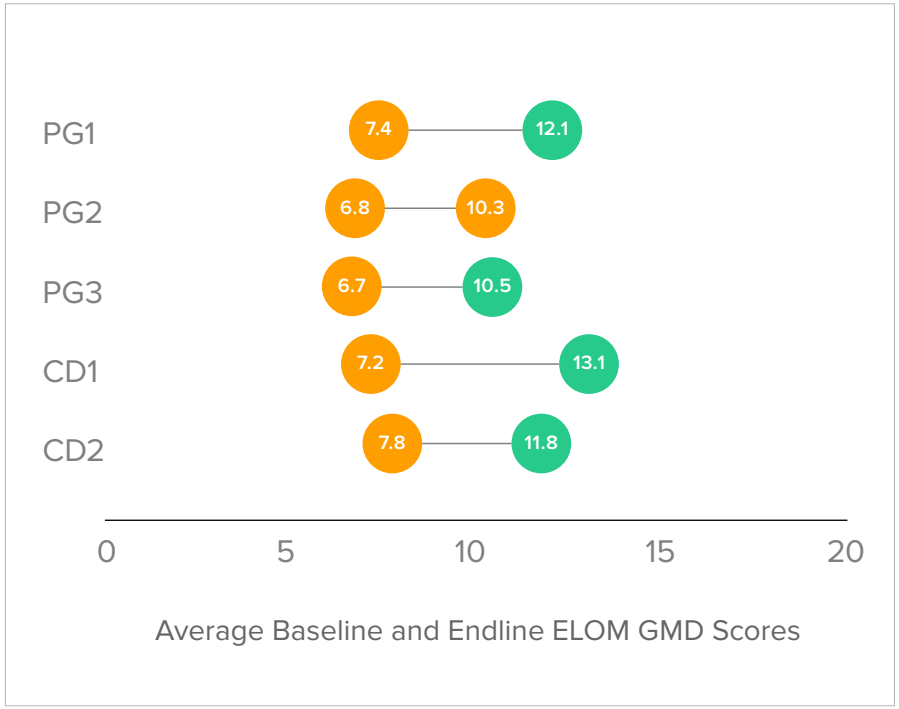

Figure 8. Change in Average ELOM GMD Scores from Baseline to Endline, by Programme.

Why the variability in baseline scores?

One might ask why some programmes had higher baseline scores than others. It is plausible that this would be due to a combination of child, home background and programme factors. This was not investigated systematically for the study. However, the following points are noteworthy:

1. The majority of the PG3 and CD1 children in the study had been enrolled in programmes for more than one year.

2. PG1 and PG3 children primarily come from impoverished areas (quintile 1), while children from CD1 and CD2 primarily come from quintile 3 areas and can be assumed to be substantially less deprived than those from PG1, PG2 and PG3.

Fine Motor Control and Visual Motor Integration

FMCVMI proved challenging for the playgroup programmes in particular. CD2 children moved substantially from being ***At Risk*** at baseline to ***Achieving the Standard*** at endline.

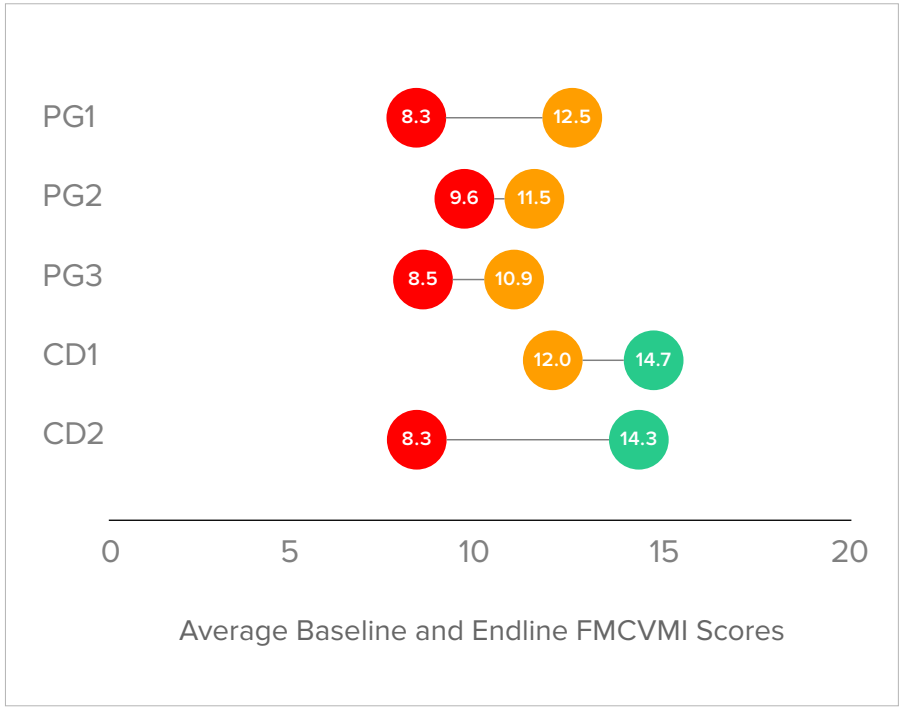

Figure 9. Change in Average ELOM FMCVMI Scores from Baseline to Endline, by Programme.

Emergent Numeracy and Mathematics

Improvements are evident for all programmes. PG2 and CD2 children improved from ***Falling Behind*** at baseline to ***Achieving the Standard*** at endline.

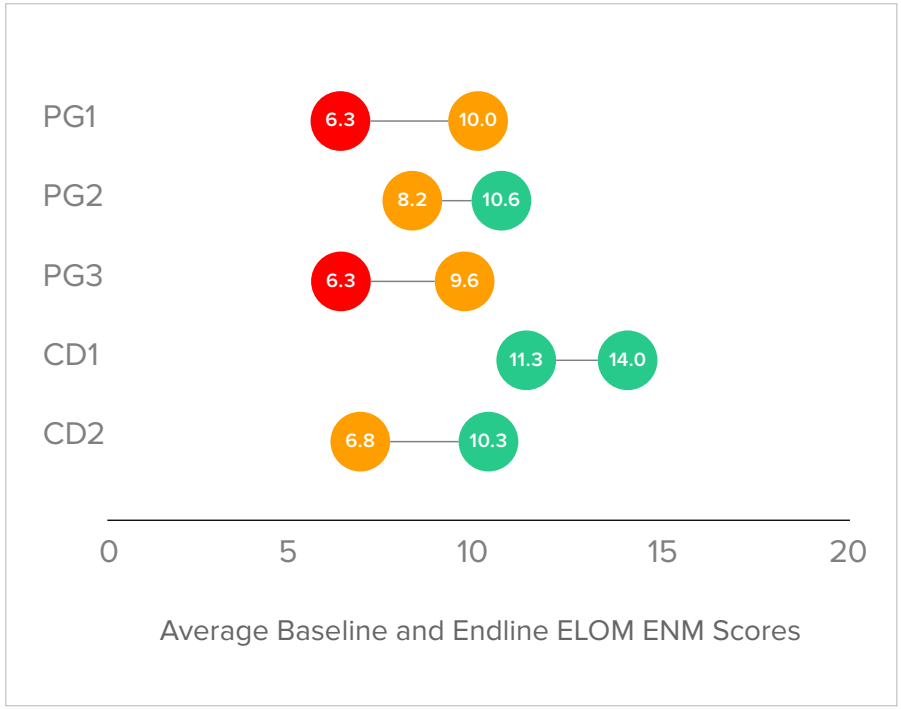

Figure 10. Change in Average ELOM ENM Scores from Baseline to Endline, by Programme.

Cognition and Executive Functioning

PG1 and PG2 children continue to ***Fall Behind*** at endline, while PG3 children improved from being ***At Risk*** to ***Falling Behind***. CD2 children showed the largest point change from baseline to endline.

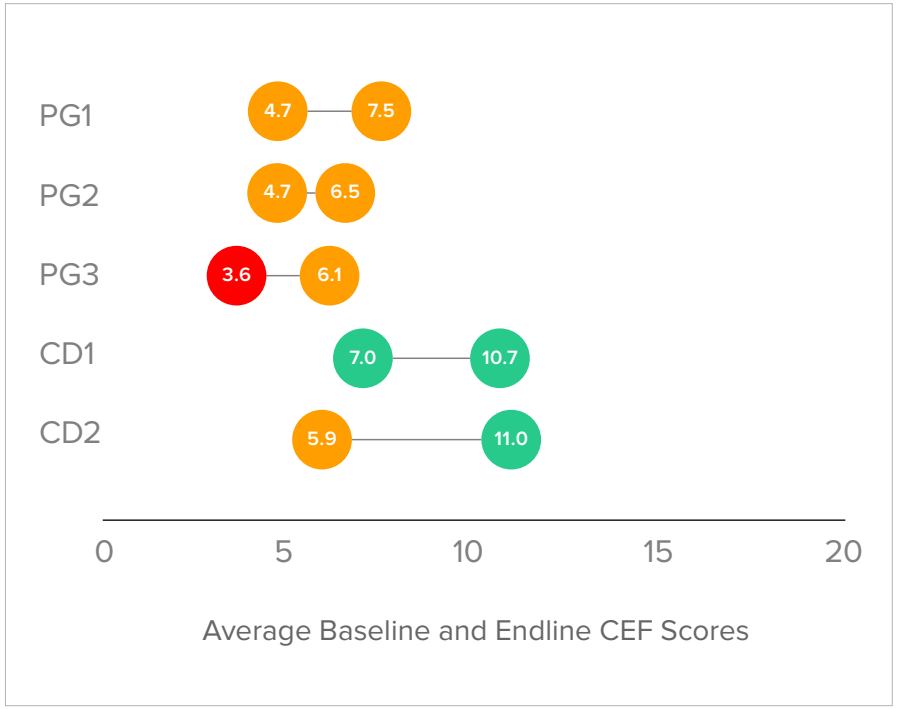

Figure 11. Change in Average ELOM CEF Scores from Baseline to Endline, by Programme.

Emergent Literacy and Language

Improvement is evident across all programmes, especially among children in PG1 and CD2. Those programmes where children were ***Falling Behind*** at endline, would only need to improve by about 1 standard score point to ***Achieve the Standard***.

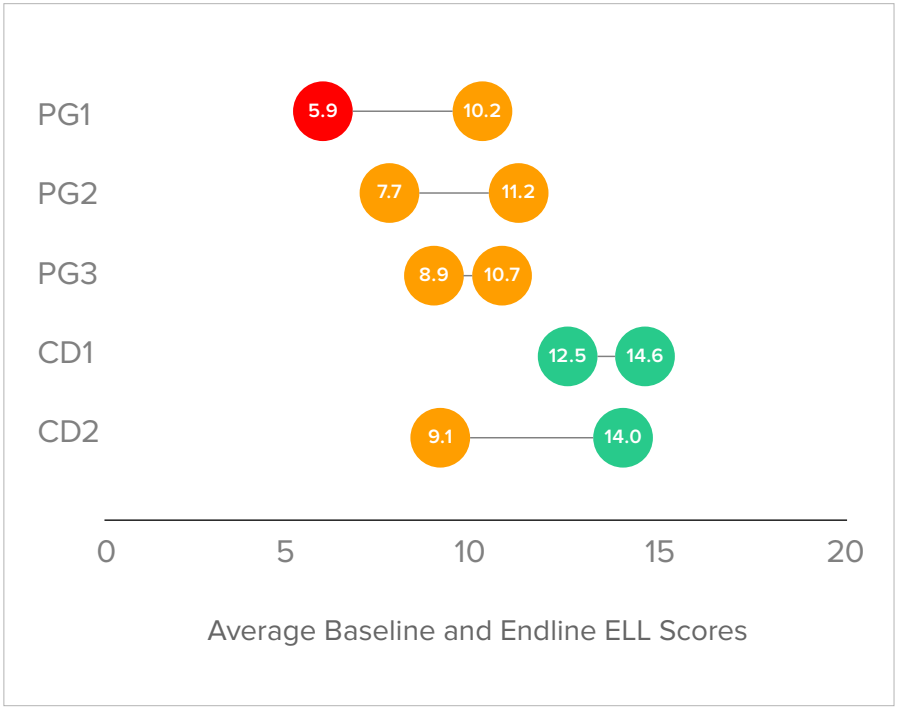

Figure 12. Change in Average ELOM ELL Scores from Baseline to Endline, by Programme.

How do different ELP interventions vary in their effectiveness in preparing children for Grade R?

After controlling for child, home learning environment, and socio-economic status variables likely to predict child outcomes, all four programmes included in the multi-level model made statistically significant gains in ELOM total and domain scores from baseline to endline. Specifically, PG1 and CD2 showed the greatest gains in ELOM total scores. PG1 offers two to three sessions per week, sessions are run by practitioners with a minimum NQF Level 4 qualification, and monitoring takes place monthly. CD2 offers five sessions per week, most practitioners have an NQF Level 4 qualifications, and the organisation provides ongoing monthly support visits to practitioners as well as random site visits. In each domain, some programmes performed significantly better than others.

On GMD, PG1 and CD1 did significantly better than other programmes. On FMCVMI, PG1 and CD2 showed the greatest gains. No programme performed significantly differently on ENM.

On CEF, CD2 performed significantly better. On ELL, all programmes showed the same increase in scores except for CD1, as these children showed the highest baseline scores (and therefore the least change).

What programme, child, and home environment factors predict changes in ELOM scores following exposure to an ELP?

Children with higher height-for-age scores performed significantly better on all ELOM domains and on the total ELOM score. Regardless of programme type, children who attended more sessions performed significantly better than children with lower programme exposure on ELOM Total and the FMCVMI and ELL domains. Children who had been in some form of ECD programme for 3 years performed significantly better than children with fewer years on GMD and ELL.

Children with greater learning resources (books and toys) at home performed significantly better on FMCVMI and CEF. Finally, groups run by practitioners who were satisfied with support from their organisations performed better on FMCVMI.

Image on right and below from www.istockphoto.com

Key Findings: The Home Environment.

The influence of children's home environment on their development is well-established and is commonly observed to influence children's developmental test scores. This means that **both a child's participation in an early learning programme and the home environment influence their developmental level prior to entering school.**[5] Despite the importance of this relationship, it has not yet been explored in South Africa. For this reason, interviews were conducted at endline with as many caregivers of the sample's children as possible, in order to establish what the home learning environment looks like for these children. In doing so, we could replicate international studies and uncover how a child's home environment influences their ELOM scores.

Caregivers of 327 children in the study sample were interviewed, 90% of whom were the child's mother, father or grandmother. The average age of caregivers was 36 years, with the youngest being 16, and the oldest being 88 years old.

Time Spent with Children

Most caregivers (72%) said that they have very little time (2 hours or less) to spend with their children during the week and on the weekend (71%). Available time will depend on a range of factors, including employment and other family responsibilities.

While this study does not explore how caregivers use their time, the findings presented here indicate that **caregivers have limited time for activities with their children during the week and on the weekend. This would likely affect the extent to which they are able to apply lessons from the parent information sessions that may accompany an early learning programme.**

Resources in the Home

Based on the interviews, just over half of all caregivers (55%) said that they have between one and five children's books in their home, while 40% said that they have none. In addition to books in the home, caregivers were asked whether their children had access to three types of toys: homemade, shop-bought, or household objects that can be used as toys (e.g. sticks and pans). Figure 13 displays the percentage of caregivers who reported having these types of toys in their homes. While all have some homemade toys, PG3, located in a poor rural community, stands out as having the highest proportion of these and the lowest proportion of store-bought toys. This may be due to the caregivers' poorer economic circumstances, a lack of toy shops nearby, as well as PG3's encouragement of caregivers to make toys for their children.

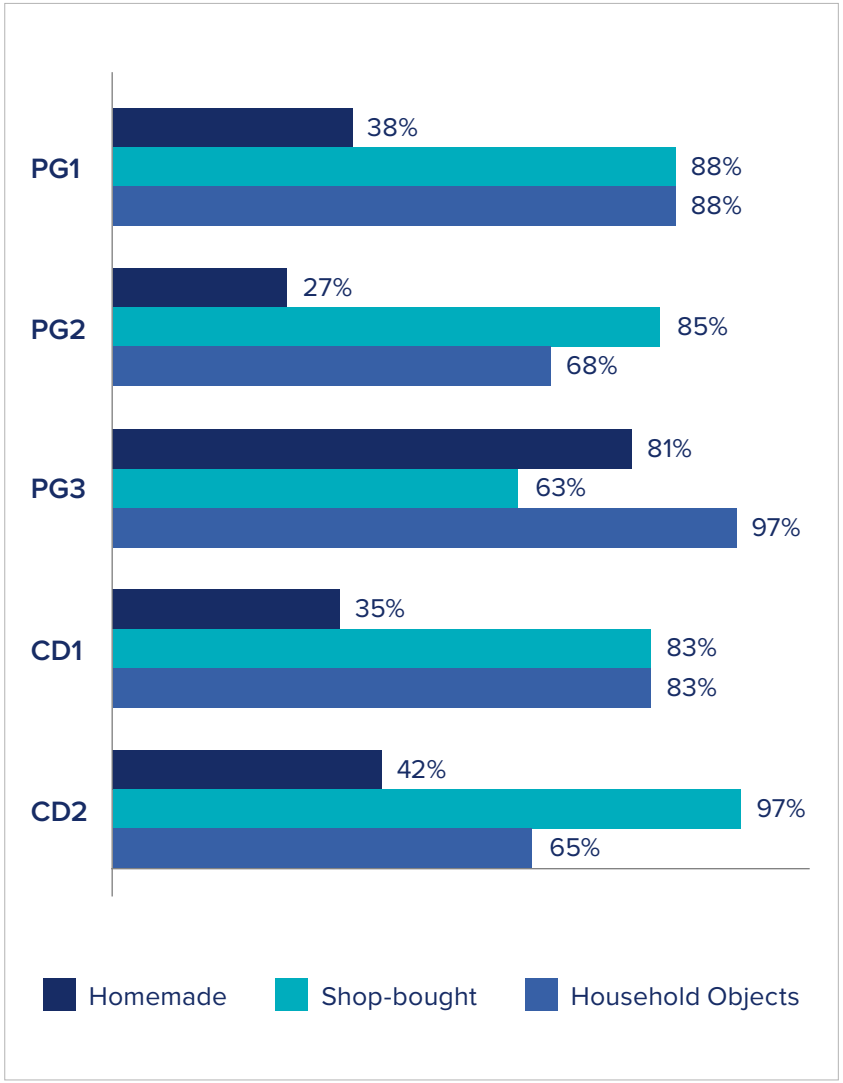

Figure 13. Availability of Toys in Caregivers' Homes, per Programme.

Early Learning Activities

To investigate the types of learning activities the study children are generally exposed to, caregivers were asked whether they, or other household members, engaged in particular activities with their children in the past week, including:

- Reading books or looking at picture books
- Telling stories
- Singing songs or lullabies
- Playing
- Telling the child the names of things
- Counting things
- Drawing or painting

Of note is that, on average, across the programmes, many caregivers report that in the last week, their children were:

- Never read to (32%)
- Never told stories (33%)
- Never sung to (53%)

Image from www.123rf.com

In excess of 20% of those interviewed indicate that no one is reading, telling stories, or singing to the child. This is highly likely to negatively affect the children's language acquisition. Statistics South Africa's General Household Survey[6] provides similar results: 35% of respondents reported that they never told stories to their young children and 47% never read books to them.

On a positive note, in this study, **94% of caregivers said that children were played with, either sometimes (45%) or many times (49%). Additionally, high proportions of caregivers reported naming things and counting things with their children** – important activities to support emergent language and literacy, and emergent numeracy (Figure 14 and Figure 15).

Lastly, there was considerable variation in the number of caregivers who reported drawing or painting with their child across programmes (Figure 16). This is an important activity for children's fine motor development, however without additional data (e.g. caregiver access to materials) we cannot comment further on this observation.

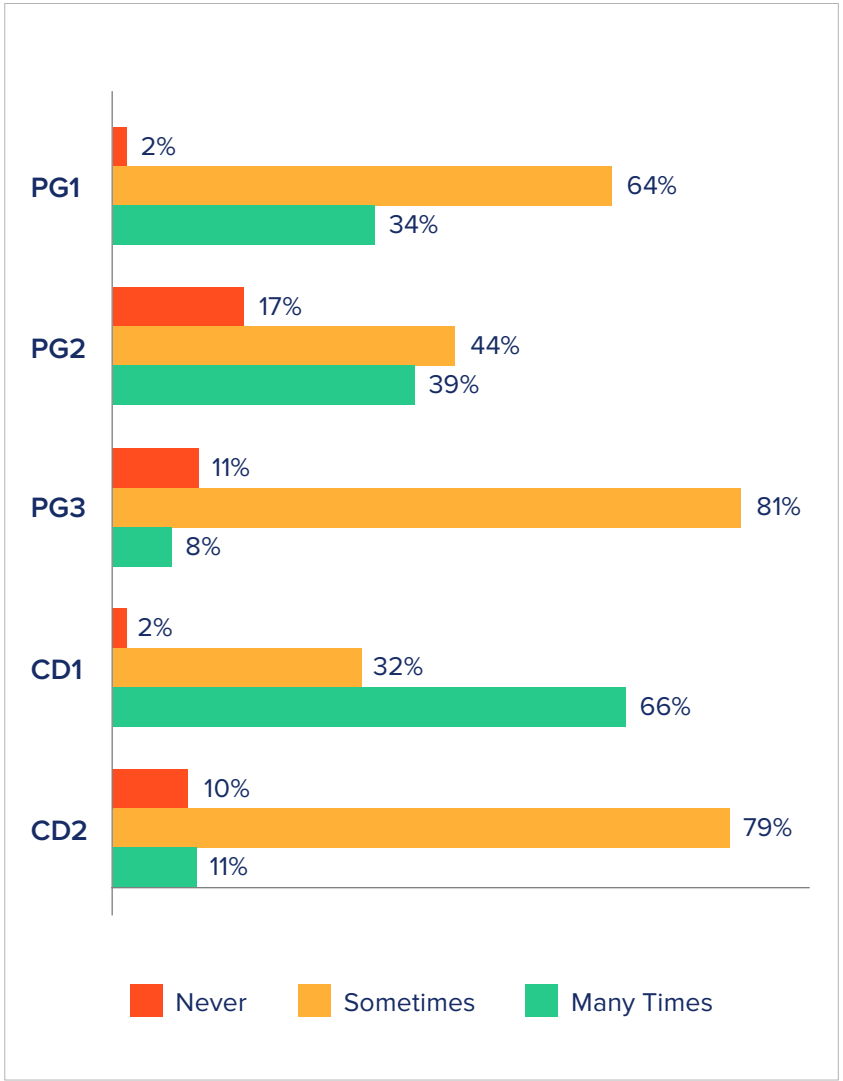

Figure 14. Percentage of Caregivers who Named Things with the Child in the Past Week, per Programme.

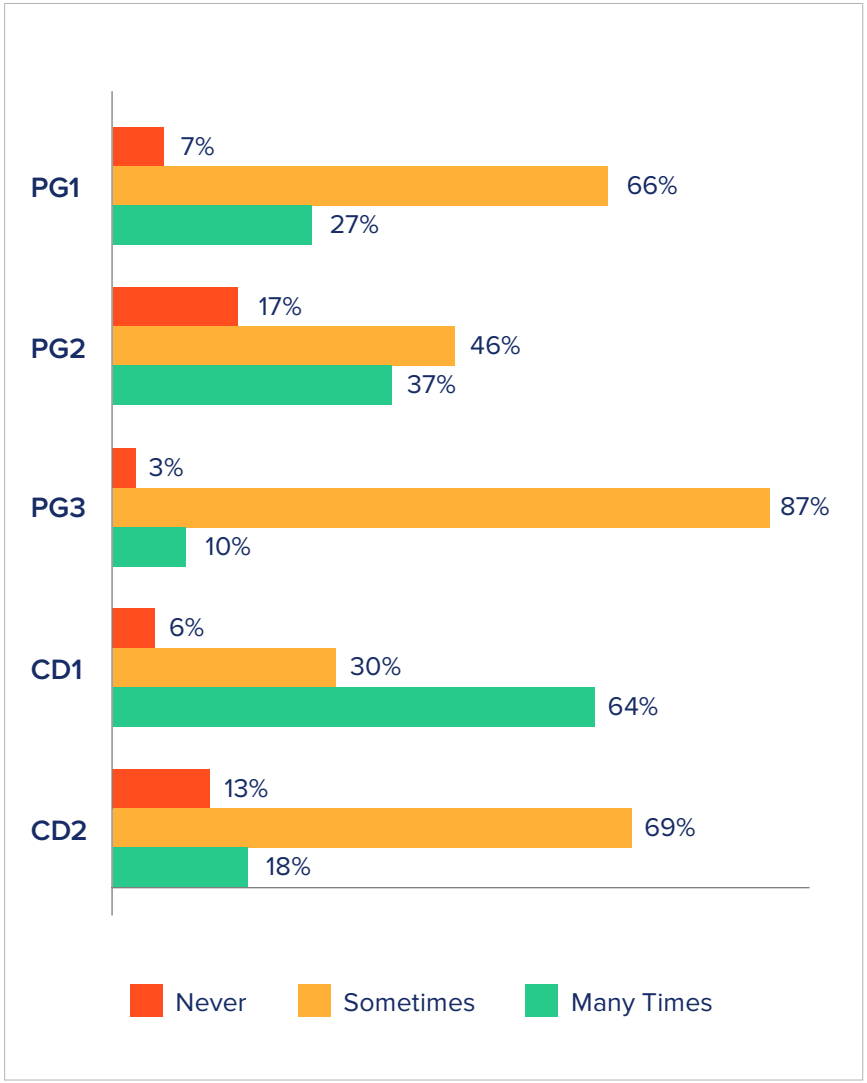

Figure 15. Percentage of Caregivers who Counted Things with the Child in the Past Week, per Programme.

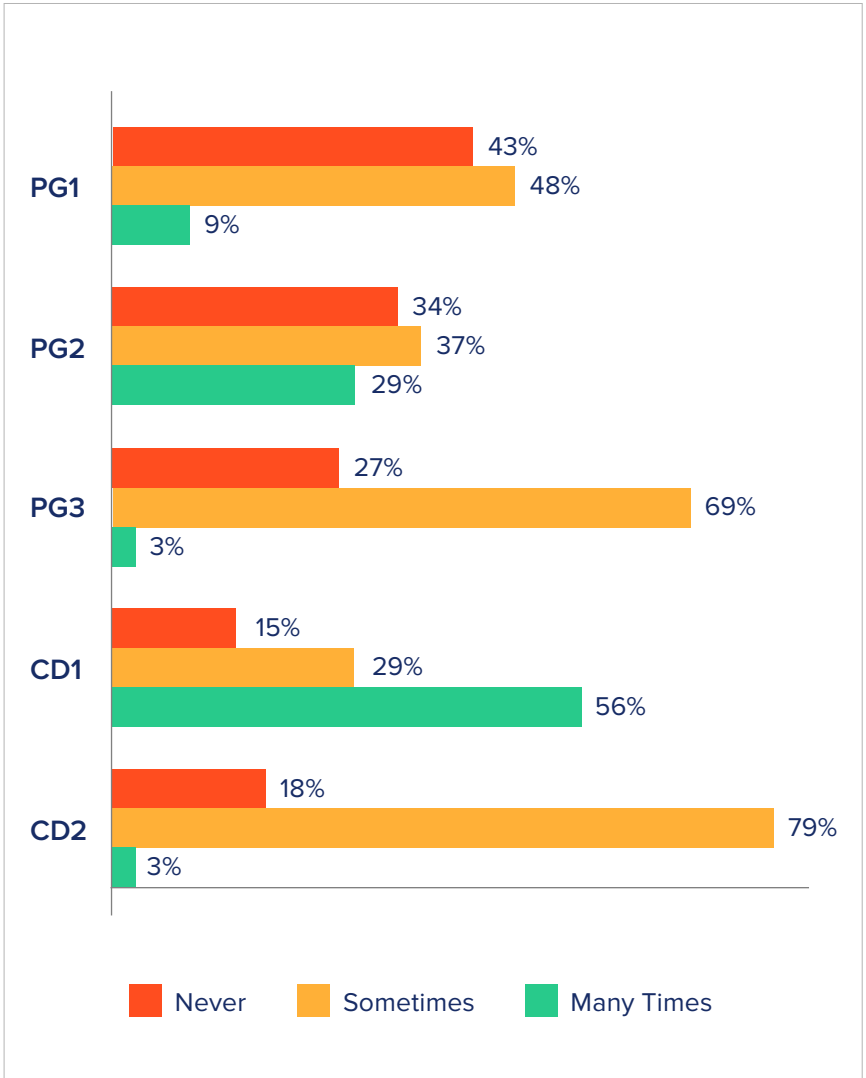

Figure 16. Percentage of Caregivers who Drew or Painted with the Child in the Past Week, per Programme.

Image below from www.istockphoto.com

Final Thoughts.

Children who attend more sessions benefit the most

The number of sessions attended emerged as a significant contributor to children's gains in total ELOM scores in both playgroups and centre-based programmes. Given the challenge of meeting the needs of all young children in South Africa in the short to medium term, the fact that well-run playgroups can shift ELOM Total scores by between 10 and 20 points, is encouraging. None of the playgroup programmes studied offered more than 12 hours per week. The two centre-based programmes in this study enabled children to achieve the ELOM Total score standard (or grow within it in the case of CD1). Key gaps are evident in ENM, CEF, and FMCVMI for many children. A concerted focus on these domains in programming may be necessary.

This is the first study of the effectiveness of a part time playgroup model in South Africa, and suggests that carefully monitored and supported groups of sound quality, with school-readiness-targeted curricula (PG1 and PG2), can make a significant difference for the poorest children.

Ensuring regular attendance in all programmes, particularly those with limited numbers of sessions per week, is essential if gains are to be realised. International evidence indicates that a minimum of 15 hours per week may be necessary to improve developmental outcomes.[7] We were not able to obtain reliable data on programme hours. This is an important area for further study, with particular relevance to planning for the pre-Grade R year and aligning with international benchmarks (on the number of recommended hours of early learning input per week).

The literature suggests that two or more years' exposure to a programme is more beneficial than one.[4,8,9] In this study, children who attended for at least three years showed greater gains on GMD and ELL. **Given our finding of limited time devoted to language stimulation at home, longer participation in a programme is indicated to compensate, suggesting that children who have a group-based early learning opportunity prior to the pre-Grade R year are likely to derive greater benefit during pre-Grade R and Grade R.**

Image from www.123rf.com

Children's health is an essential component of education achievement

As would be expected, in line with the literature on early learning outcomes[10], children with higher height-for-age scores performed significantly better on all ELOM domains and on the ELOM Total score. This re-emphasises that interventions that ensure adequate health and nutrition (and improved water and sanitation) in the early years are essential to achieving good educational and developmental outcomes. The finding supports the NIECD policy focus[11] on good health and nutrition during the first 1000 days of life. We would argue that nutritional support remains essential beyond this point. ECD programmes provide opportunities for improving children's access to good nutrition.

Parents do not necessarily have the time or resources to engage in early learning stimulation at home

Finally, it is well established that family economic circumstances and the home learning environment are the most significant contributor to educational outcomes during childhood, with developmental gains evident by age five.[5] In this study, educational resources available in the home contributed to ELOM outcomes, highlighting the importance of promoting access to books in the home. Unfortunately, caregivers reported having very little time to engage with young children in activities that could promote early learning.

The lesson is that programmes depending largely on caregiver education are unlikely to be successful in changing children's early learning outcomes unless caregivers have the time and the resources to spend on activities that support early learning. Where programmes include parenting input, it is crucial that caregivers be encouraged and supported to apply what they have learnt and that efforts are made to monitor this. A particularly important goal would be to increase caregivers' time spent on early language activities.

Study Limitations

A quasi-experimental field study such as this, while providing clear evidence of relationships between predictors and early learning outcomes, is not a randomised controlled trial (RCT) in which children are randomly assigned to an intervention or control group. **RCTs are the most powerful approach to determining whether programmes cause the observed outcomes. However, such a design is not always practical, as was the case here.**

Overall, study attrition was high but not unusual in the South African context. Twenty-two per cent of children assessed at baseline could not be followed up. Children who remained in the programmes and those who left were compared on ELOM scores at baseline. There was no difference. Attrition therefore did not lead to bias in the results.

All programmes were requested to provide their attendance data (number of sessions and hours children attended). **Unfortunately, missing or unreliable attendance figures for PG3 prevented that programme's inclusion in the multi-level model.**

Study programmes used very different internal systems for rating their practitioners and other aspects of programme quality. **We therefore lacked a common programme quality indicator to use across the study sites, and programmes' ratings were not used in our modelling.**

Image below by Tetbirt Salim on www.unsplash.com

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