

Basic Concepts Programme Evaluation: Baseline Report



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Background

The evaluation is assessing the extent to which the programme improves the school preparedness of Grade R learners who attend schools that use the Basic Concepts curriculum. The evaluation will also investigate the relationship between Early Learning Outcomes Measure (ELOM) scores (collected at baseline) and Test of Basic Concepts Knowledge (TBCK) scores at end line (a predictive validity sub-component).

1. Does the Basic Concepts Programme improve the school preparedness of programme learners, and if so, by how much?
 - a. Are programme outcomes moderated by:
 - i. Child factors?
 - ii. Support and supervision of educators?
 - iii. Classroom size?
 - iv. Qualities of the District (Quintile, Language and Rural/Urban mix)?
2. Do Early Learning Outcomes Measure scores (ELOM) predict Test of Basic Concepts Knowledge (TBCK) scores?

This report outlines progress made in the evaluation at the conclusion of baseline assessment and analysis.



Method

A quasi-experimental evaluation design using multi-stage cluster random sampling was used. A comparison group was sampled from schools who are not yet receiving the intervention, but who are candidates for the intervention in the future.

Sampling

We selected all Afrikaans schools in PKS (13), and all Setswana schools in JTG (15) and conducted assessments in a random selection of 10 of these in each district. Each school was assigned a random number and then ranked from lowest to highest number. The top 10 schools from these lists were chosen for assessments.

Once the assessors arrived at the school, they obtained class lists from each BCP-trained teacher (intervention group), or comparison school teacher. Children were then randomly selected; 8 children were selected from each intervention school, and 4 children were selected from each comparison school. Children outside of the ELOM range were not assessed, however, the age was extended to 70.99 months. The total target number of assessments was 240, and the total number of assessments conducted during fieldwork was 244 (see Table 1). For a full list of the schools that were visited during fieldwork, and the number of ELOM assessments conducted at each school, please see Appendix A.

STATISTICAL POWER

Using G*Power, the following statistical power was calculated for the target sample of $n = 240$.

- Analysis: Analysis of Variance with fixed effects and interactions.
- Effect Size = 0.25
- Power = 0.80
- Alpha = 0.05
- Sample N = 196
- Adjustment for Attrition = 1.20
- Adjusted Sample N = 235 (240 for sampling purposes)

**Table 1. Target and Realised Sample.**

| Intervention Group | Districts | Number of Schools per District | Target Number of Children per School | Total Target Children per Group | Actual Children Assessed per Group |
|---------------------------|------------------|---------------------------------------|---|--|---|
| <i>Treatment</i> | Pixley Ka Seme | 10 | 8 | 80 | 84 (105%) |
| | John Taolo | 10 | 8 | 80 | 80 (100%) |
| | Gaetsewe | | | | |
| | | | Sub-Total | 160 | 164 (102%) |
| <i>Comparison</i> | Pixley Ka Seme | 10 | 4 | 40 | 40 (100%) |
| | John Taolo | 10 | 4 | 40 | 40 (100%) |
| | Gaetsewe | | | | |
| | | | Sub-Total | 80 | 80 (100%) |
| | | | Total | 240 | 244 (102%) |

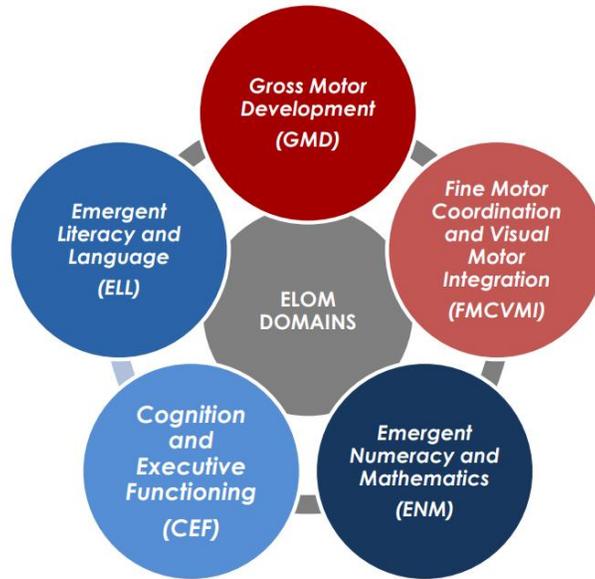
Measurement Tool

Baseline data collection was conducted using the Early Learning Outcomes Measure (ELOM). The ELOM is a population-level instrument designed to measure the developmental status of children aged 50 to 69 months. Children are individually assessed by trained assessors in their home language in a session lasting about 45 minutes. Scores are captured on a tablet and uploaded to a server for cleaning and analysis.

The ELOM consists of 23 direct assessment items clustered in five domains (see Figure 1). During standardisation, psychometry based on Item Response Theory was conducted on a sample of 1331 children from five language groups and representative of five socio-economic strata. The ELOM is a reliable, age valid tool that provides a fair assessment of children from across ethnolinguistic groups. Children's expected performance is specified in Early Learning Development Standards (ELDS). These are available for ELOM total scores and for each domain. Full details may be found at: <http://elom.org.za>. For this study, we permit the expansion of the ELOM age range up to 71 months of age.



Figure 1. Developmental Domains Assessed by the ELOM.



Data Collection and Fieldwork

Baseline ELOM data was collected from 5 February 2020 to 25 February 2020 by 4 trained ELOM assessors. Two assessors were based in Pixley Ka Seme (PKS) District and spoke Afrikaans, and the other two were seTswana-speaking, based in John Taolo Gaetsewe (JTG) District.

A total of 33 schools were visited during fieldwork. Table 2 displays the number of intervention and comparison schools that were visited per district.

Table 2. Number of Intervention and Comparison Schools Visited per District.

| | Intervention Schools | Comparison Schools | Total |
|--------------|----------------------|--------------------|-----------|
| PKS | 10 | 5 | 15 |
| JTG | 10 | 8 | 18 |
| Total | 20 | 13 | 33 |



Fieldwork Challenges and Solutions

Teacher Interference

In both districts, assessors reported several instances where practitioners interrupted the assessments to tell a child that they must give good answers, that they must not embarrass them, or that they are stupid and must try harder. This distressed the assessors and the children being assessed, and added a degree of difficulty to the collection of assessment data. The assessors reported that they handled those situations by requesting that the teachers allow them privacy with the learners. We counselled them further in strategies to avoid and diffuse those situations.

There were also instances reported in both districts where teachers delayed the assessments by asking the assessors probing personal questions – how they were employed to do assessor work, what they were being paid and how the younger assessors were qualified to be doing assessor work. The assessors were advised to answer politely that they are employed by Alacrity Development and fully-trained by Innovation Edge to conduct these assessments.

Remote Locations

Assessors in both districts experienced various challenges owing to the isolated nature of the school locations. While we had map GPS locations for all schools, they were not always perfectly accurate. To mitigate this, we requested directions from schools when possible. When this was not possible, or the directions were unclear, the assessors left their accommodation 30 minutes earlier to make sure that they will had time to find the school if they got lost.

Transport

In the JTG District, the assessors used various taxi/car services and public transport solutions to travel to the schools in and around Kuruman. Public Transport Services were not always on time, or running to all areas at the time that our assessors needed to travel. To resolve this, they left their accommodation early to catch their transport or a private taxi service was arranged to take the assessors to their scheduled schools. Private taxi services were very expensive to



use on a daily basis, and so we limited their use to schools where a well-established public transport solution was not available.

Data Analysis

ELOM assessments were submitted to a central server by the assessors every day during fieldwork. During this time, the assessments were checked daily for issues that may necessitate removing the assessment (and therefore reducing sample size), such as failing a disability screen or assessors assessing children outside of the ELOM age range.

Upon completion of fieldwork, all assessments were downloaded from the server and checked according to the criteria listed in Table 3. A total of 4 assessments were removed.

Table 3. Criteria for Data Removal.

| Criterion | Number of Cases Removed at Baseline |
|--|--|
| 1. The child failed the WHO disability screening ¹ | 0 |
| 2. The child refused to participate after the assessment had already begun. | 0 |
| 3. The assessment was judged invalid if the child had a Total ELOM score < 15 and a Task Orientation score = 0. ² | 2 |
| 4. The child was assessed but was not of appropriate age. | 1 |
| 5. The child was assessed in a language that was not their home language. | 0 |
| 6. Duplicate data was submitted or was a trial. | 0 |
| 7. The assessment was compromised due to assessor error. | 0 |
| 8. The child failed two or more domains and scored a 0 for Task Orientation. | 1 |
| <i>Total cases removed</i> | 4 |

After cleaning, descriptive statistics were performed.

¹ The adapted WHO screening tool for use with the ELOM is explained in the Technical Manual.

² ELOM Task Orientation is explained in the Technical Manual.

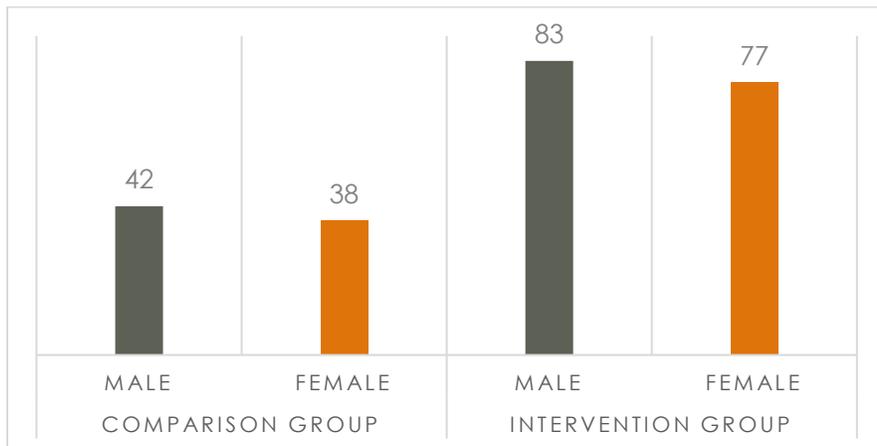


ELOM Descriptive Findings

Evaluation Sample

After cleaning, a total of 240 ELOM assessments were included in descriptive analyses. Of this total, 80 assessments were from comparison schools and 160 assessments were from intervention schools. The sample was almost evenly split in terms of gender, with 52% of the sample being female, and 48% of the sample being male.

Figure 2. Gender Split per Treatment Group.



The average age of the children in the sample was 65.2 months old, with the youngest child being 55.7 months old, and the oldest child being 70.9 months old. These statistics are presented per treatment group in the table below, showing little difference between the groups.

Table 4. Age Statistics per Treatment Group.

| | Min Age | Max Age | Average Age | Standard Deviation |
|--------------------|-------------|-------------|-------------|--------------------|
| Comparison Group | 55.9 | 70.8 | 65.4 | 3.3 |
| Intervention Group | 55.7 | 70.9 | 65 | 3.6 |
| | 55.7 | 70.9 | 65.2 | 3.5 |



The majority of sample children in JTG District were assessed in SeTswana (94%) and all but one child in PKS District were assessed in Afrikaans. A total of 8 children in both districts requested the assessment be done in English.

Height-for-age z-scores indicate whether a child is unusually short for their age. A z-score of -2.00 or less is an indication of possible stunting. At this time, the tool devised for generating these scores has only been expanded to a maximum age of 68 months. This will be expanded further to include all children in the study at endline, but the figures below serve as an indication of the proportion of potentially stunted children in the BCP intervention sample and comparison sample. We note that a higher proportion of BCP children are stunted (19.49% in BCP and 9.52% in comparison). Thirty-six children fall above 68 months of age, and are excluded from Height-for-age calculations at this time.

Figure 3. Number of Children Stunted per Treatment Group (50 – 59 Month Group).

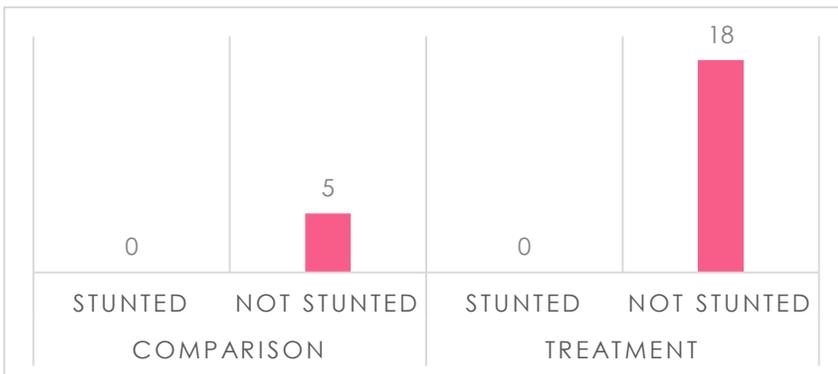


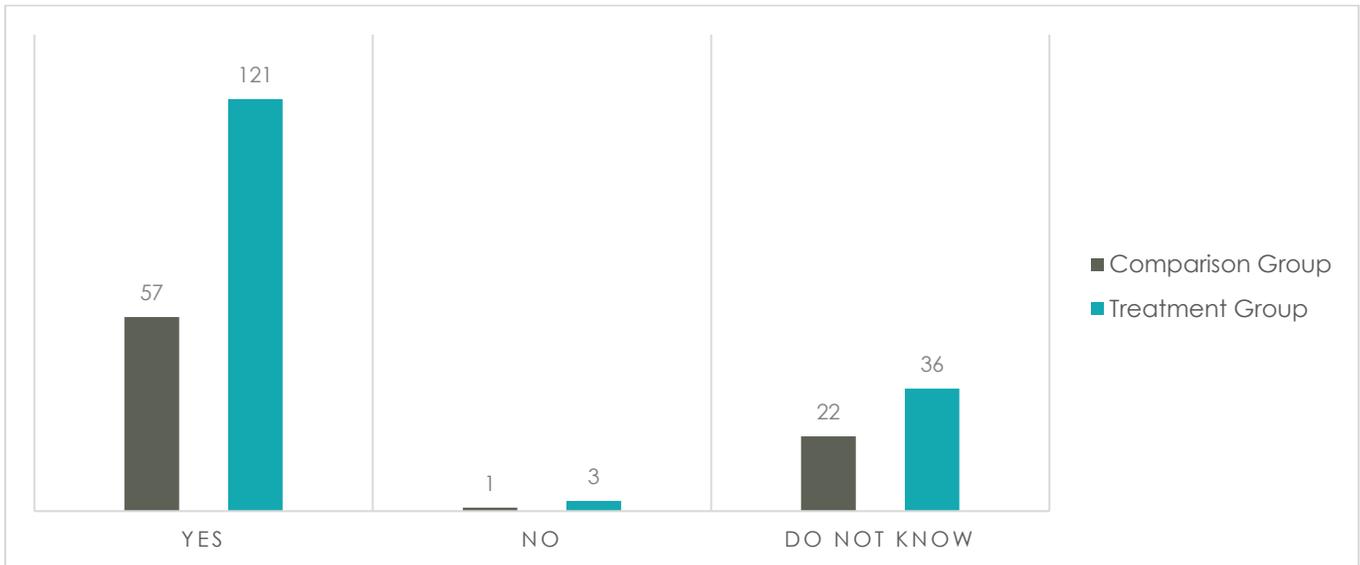
Figure 4. Number of Children Stunted per Treatment Group (60 - 70 Month Group).





As can be seen in the figure below, the majority of the evaluation sample (74%) receive the Child Support Grant. More children in the intervention group receive the grant ($n = 121$) compared to the comparison group ($n = 57$). However, given that the comparison sample is half the size, these two are proportionately the same.

Figure 5. Number of Children Who Receive the Child Support Grant.





ELOM Performance

In this section, we present the average ELOM domain scores for the evaluation sample who are categorised as between the ages of 50 to 59 months old, and 60 to 70.9 months old (so as to correspond to the ELOM performance bands). It is important to note that these findings are descriptive only and do not represent the influence of other variables, such as teacher factors or characteristics of the district. Their purpose is to provide a simple overview of baseline performance on the ELOM.

The tables use the ELOM convention for colour coding the cells:

| | |
|--|---|
| | Children are <i>At Risk</i> |
| | Children are <i>Falling Behind</i> |
| | Children are <i>Achieving the ELOM Standard</i> |

In the tables below, the average ELOM domain scores are presented for each treatment group, according to their age grouping.

As can be seen in Table 5, the sample size for the 50 – 59 month groups are very small, especially within the comparison group. ELOM results are typically not analysed for groups with less than 15 children. These children cannot be combined with the 60 – 70 age group as their scores are markedly different (as seen in Table 5). An independent samples *t*-test was performed to test this, showing that the younger children are indeed significantly different from the older group ($t = 3.8; p < .001$). Consequently, we recommend removing the younger age group from final

THE ELOM STANDARDS

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% (below the 32nd percentile), and are well below the standard and need significant assistance to come up to 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. This is to be expected as 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 enhanced learning opportunities (such as participation in BCP).



endline analyses as they represent a distinct sub-population and do not meet sample size requirements for ELOM analysis.

Table 5. Average ELOM Scores for the 50 – 59 Month Age Group.

| | Comparison Group (n = 5) | Intervention Group (n = 18) |
|---|-----------------------------|--------------------------------|
| Gross Motor Development | 6.42 | 7.59 |
| Fine Motor Coordination and Visual Motor Integration | 10.64 | 11.46 |
| Emergent Numeracy and Mathematics | 11.89 | 8.41 |
| Cognition and Executive Functioning | 4.72 | 5.54 |
| Emergent Literacy and Language | 5.01 | 6.44 |
| ELOM Total | 38.69 | 39.44 |

The two treatments groups in the older age bracket perform similarly across domains. Both are *Achieving the Standard* on Gross Motor Development, and are *Falling Behind* on all other domains. The exception being Emergent Numeracy and Mathematics, where the intervention group is *Achieving the Standard*³, scoring 0.41 points higher than the comparison group.

In practical terms, there is no difference between the comparison and intervention groups. This was confirmed by an independent samples *t*-test ($t = <1.5$; $p > .05$). This will ensure that any differences in scores seen at endline can be attributed to children's involvement in BCP.

³ In order to *Achieve the Standard* on Emergent Numeracy and Mathematics, the average score needs to be 10.24 points and above. Therefore, the intervention group only just qualify for this performance band.



Table 6. Average ELOM Scores for the 60 – 70 Month Age Group.

| | Comparison Group (n = 75) | Intervention Group (n = 142) |
|---|------------------------------|---------------------------------|
| Gross Motor Development | 10.87 | 11.31 |
| Fine Motor Coordination and Visual Motor Integration | 12.97 | 13.13 |
| Emergent Numeracy and Mathematics | 9.83 | 10.24 |
| Cognition and Executive Functioning | 7.34 | 6.63 |
| Emergent Literacy and Language | 9.68 | 9.56 |
| ELOM Total | 50.70 | 50.86 |