Together for Early Childhood Evidence

Consortium on Pre-Primary Data and Measurement in Africa

Webinar: Measuring Child Development

March 25, 2021

ECD measure

University of Nebraska Medical Center

USAID FROM THE AMERICAN PEOPLE

Together for Early Childhood Evidence

Consortium on Pre-Primary Data and Measurement in Africa

Convene	Host virtual and in-person meetings for networking and knowledge exchange
Build capacity	Support USAID and country teams to accelerate country-level action to improve ECE systems
Research	Small, targeted grants for country-level research to test and apply new data-driven approaches in ECE, answer country-specific questions
Virtual Hub	**Together4ece.org** Share resources and tools to address interest and needs of consortium members; feature country work and best practices

Goals for today

- **Guidance and discussion of best practices in child development measurement**
  - Dr. Abbie Raikes
- **Learn from ELOM team in South Africa**
  - Ms. Linda Biersteker, Professor Andy Dawes, Dr. Temi Ogunyoku
- **Q&A**

Themes and Best Practices in Child Development Measurement

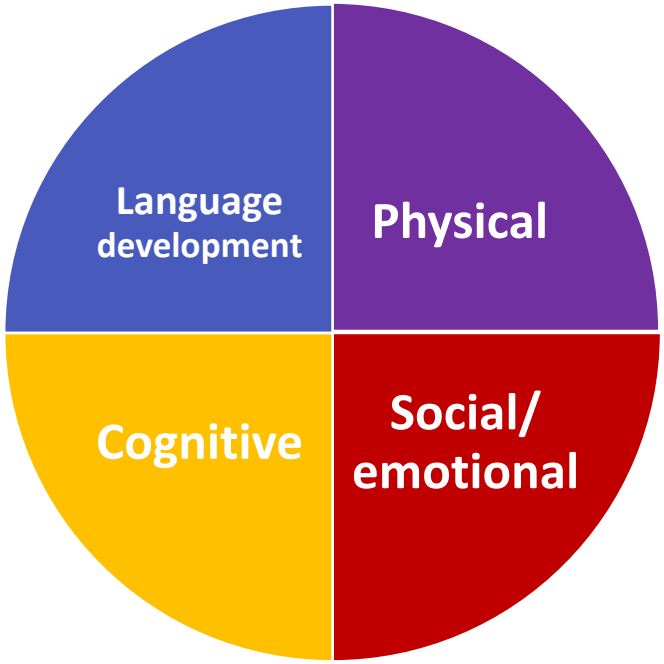
- Trends and challenges in population-level measurement
  - Examples of new and revised instruments
- Focus on feedback loops: What impact do the data have?

ECD measure

Basic Ideas of Developmental Science

- Child development arises through biologically-driven behaviors and environmental influence (and culture)
- Neurological development is stimulated by environmental inputs
- Child development is holistic and reflects multiple influences
- Most of the research still comes from a few countries

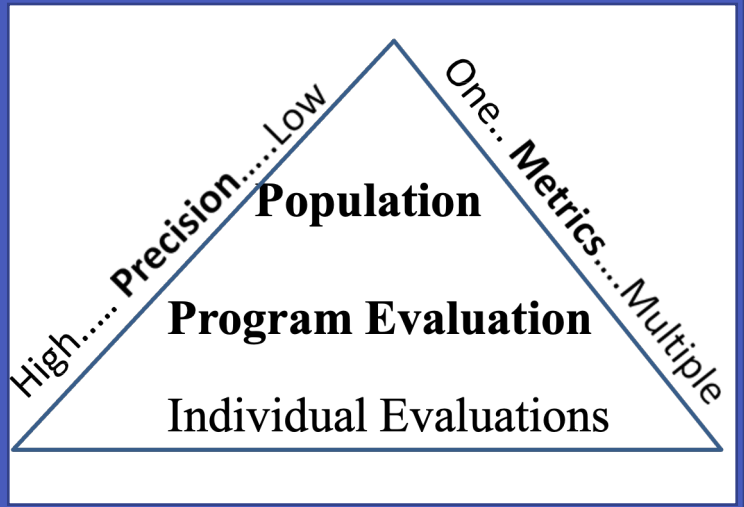
Domains of Development



- Tightly interconnected in early years, become more differentiated over time
- Development in one area can spur development in other areas

What's Population-Based Measurement?

- Population-based measurement is typically less specific but is feasible to collect with representative samples
- Measures for program evaluation should be aligned with what changes you want to see as a result of the program
- Measures for diagnostics and screening are designed to determine how to best support that specific child's development



ECD measure

Tracking Progress for All Children

- Global:
  - SDGs: Target 4.2
    - Measurement of “developmentally on track”
    - UNICEF: MICS Early Child Development Index (ECDI2030)
  - Global accountability and country comparisons

ECD measure

Tracking Progress at the Regional/Country Level

- National and Regional Tools
  - Creation of tools that are based on (more) local populations
  - Generate ongoing data for national policies and program improvement
- Measure selection is one part of getting reliable data

Poll: **Is there a population-level monitoring tool of child development used in the country where you live?**

Tool	Where it is used	How to Access	Data Collection
MICS ECDI	UNICEF administered, mostly low- and middle-income countries	https://data.unicef.org/resources/early-childhood-development-index-2030-ecdi2030/	Household survey, parent report
East Asia Pacific – Early Child Development Scale	Regional tool for East Asia/Pacific	https://arnec.net/ecd-scales	Direct assessment of children
Early Development Instrument	Globally	https://edi.offordcentre.com/	Teacher report
IDELA	Globally	https://idela-network.org/	Direct assessment of children
MELQO MODEL	Globally	http://www.ecdmeasure.org/what-is-melqo/	Direct assessment and teacher/parent report
World Bank Core Items	Globally	https://blogs.worldbank.org/education/measuring-early-childhood-outcomes-comparably-across-countries-without-sacrificing-local?cid=SHR_BlogSiteShare_EN_EXT	Parent/teacher report
Caregiver Reported Early Development Index (CREDI)	Globally	https://sites.sph.harvard.edu/credi/	Parent report for children birth to age three
Global Scale for Early Development	Globally (in validation)	Not yet available	Parent report for children birth to age three

Poll: **Have you used one or more of these tools?**

Questions in Population-Level Measurement

- Can this tool be used to compare between groups?
  - Linguistic and contextual diversity
  - Defining “on track” across populations
- Are all populations included in the sampling?

Questions Continued

- How well are the items aligned with national standards and cultural expectations for child development?
- How feasible is it to use the tool over time?
- How are the data used? Who is the primary audience and does it lead to impact for children?

Data Use: How to Ensure Data Lead to Change?

- Clarify purpose of data at the start
  - Specific policy questions (i.e., what effects on child development does one year vs. two years of ECCE have?)
  - Inform teacher training (i.e., what areas of learning are children mastering vs. where do we need more support?)

Using Data

- Define feedback loops in advance
  - Who is the primary stakeholder for the data? How are the stakeholders engaged in designing the tool/study?
  - How frequently do the data need to be produced to meet the users' needs?
  - Who is likely to change their behavior in response to data?

Using Data

- Ensuring cultural alignment
  - Do items on assessment match expectations held by teachers and parents?
  - Are children given every opportunity to master the items – using items they know and in a language they understand?

Conclusions

- Many tools available to generate data at the population level
  - Also can be used as program evaluation tools
- Key to impactful data is not just the measure, but the work to define why the data are needed, how the data will be used, and the cultural/contextual fit

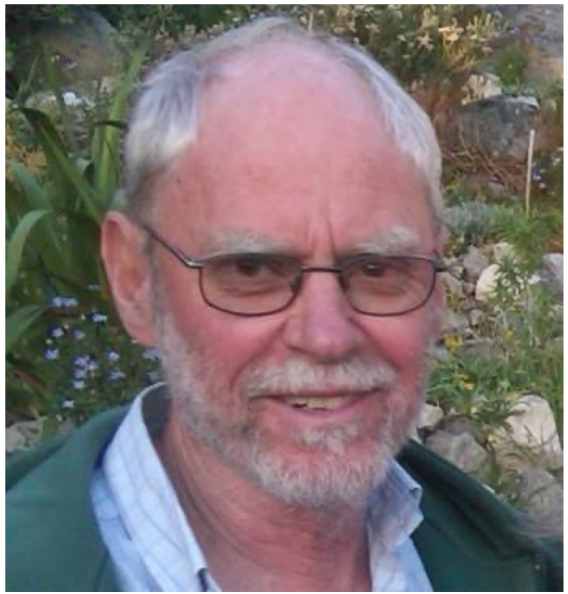
Participant's ideas on best practices in early childhood measurement (from Jamboard)

Early Childhood Measurement Tools:

March 25, 2021

Linda Biersteker

Co – Principal Investigator of ELOM



Prof. Andy Dawes

Co – Principal Investigator of ELOM

Temi Ogunyoku, PhD

Head of Data Strategy at Innovation Edge

AGENDA

01 | ELOM

Why, What, How

02 | The Development Process

What it took to build ELOM

03 | ELOM at Scale

Funding, Processes, Systems

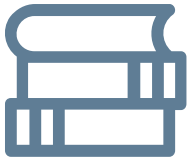
01

ELOM

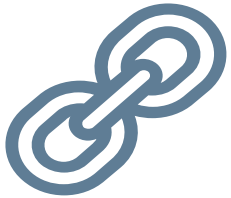
Why, What, How

Why Develop a Measurement Tool?

South Africa: Lacked a reliable, valid, standardised instrument for the measurement of ECD programme effectiveness for children in the year prior to Reception Class that:



Covered key domains



Linked to SA curriculum & stds

Inexpensive

elom

early learning outcomes measure

ELOM is a reliable, standardised population level tool that provides fair assessments of children from across the socio-economic spectrum and across 11 South African language groups

ELOM 2016 is standardised on two age bands:
50-59 months
60-69 months

Children's scores are classified in three bands:
Achieving the ELOM Standard
Falling behind the Standard
At Risk of not reaching the Standard

ELOM Components

Direct Assessment: 23 items

1. Gross Motor Development
2. Fine Motor Coordination & Visual Motor Integration
3. Emergent Numeracy & Mathematics
4. Cognition & Executive Functioning
5. Emergent Literacy & Language

Plus: 4 *Task Orientation* items to assess reliability of assessment (attention, concentration, care, interest)

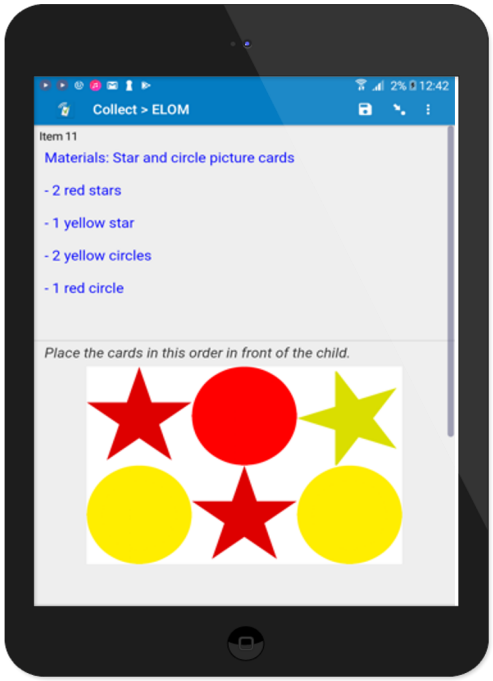
Teacher Assessment

1. Self- Care (ability to self toilet)
2. Social Relations with adults & peers (6 items)
3. Emotional Functioning (6 items)

Administration Requirements of ELOM

- Accredited Assessor

- Test kit



- Tablet for data collection

Example of an isiXhosa ELOM Assessment

Application of ELOM

Est. effectiveness of different ELPs

Informing ELPs programming choices

Programme monitoring & support for improvement

Describing performance for at-risk learners

Area-based population level surveillance

Application outside of South Africa

Summary of ELOM Usage

Programme monitoring and support [40 organisations]

Research [9 Studies] and Programme Evaluation [11 studies]

Open access data repository to enable and encourage research [local and intnl]

Informing development of DBE Grade 1 assessment tool [ELNA]

Population level surveillance [FNB Early Years Index]

Over 6000 child assessments conducted 2016-2020

Key Insights (selected)

- Economic wellbeing is the main driver of early childhood outcomes in South Africa
- Children with higher height-for-age scores perform significantly better on all ELOM domains and on the ELOM Total score
- Socio-emotional wellbeing is significantly correlated with better ELOM scores across all quintiles
- A need for curriculum and/or training focus on certain developmental domains
- Higher programme exposure is associated with significantly better performance

02

The Development Process of ELOM

What it took to build ELOM

The Development of the ELOM Direct Assessment

Phase 1

- **Development of content validated ELDS, pilot item selection, and piloting**

Phase 2

- **Field work in 3 provinces; 5 school quintiles; 5 languages; random representative sample**

Phase 3

- **Psychometric analysis, standardisation, development of standards**

PHASE 1: CONTENT DEVELOPMENT & VALIDATION

1. **Funding secured**
2. **Content Validation**
    - **Selected Domains & ELDS** based on literature & SA policy documents (NELDS, NCF & CAPS)
    - **Consultation with Educators** on priority measurable capabilities for Grade R which enable effective participation; predict early school success
3. **Sourced valid reliable instruments** for measuring ELDS appropriate for our context
4. **Consulted with local & international experts** on draft ELDS, Indicators and Measures
5. **Piloted ELOM with 42 children** (English, Afrikaans, Xhosa)
6. **Analysed and finalised items**

PHASE 2: TWO STAGE CLUSTERED SAMPLING DESIGN

Stage 1: In each School District, probability proportional to Grade R population size sampling was used to randomly selected public schools within each of the 5 School Quintile bands: Languages: Zulu, Xhosa, Setswana, English & Afrikaans

- Two schools in traditional more rural areas were recruited independent of this exercise so as to examine ELOM performance for this group of children.

Stage 2: Children: simple random sampling within Grade R classes at commencement of school year.

Sample n = 1473 children in 173 Reception year classes.

PHASE 3: PSYCHOMETRY & STANDARD SETTING (n = 1331)

- **Age validity established** (older do better)
- **Construct validity established:** Domain items correlated (Confirmatory Factor Analysis).
- **Reliability** established at 95% confidence interval
- **Fairness (IRT)**: items did not advantage or disadvantage children of particular backgrounds (culture or SES);
- **Range of performance:** normal distribution of item and domain performance;
- **Item difficulty:** items reliably discriminated between children of different ability**;**
- **Age appropriate:** we split the sample into two groups - 50-59 months and 60-69 months.
- **Norms**: Derivation of Standard (Z) Scores.

ELOM PSYCHOMETRY (Cont.)

ELOM Total Test – Retest Reliability: (n=49):
r = .90 (p < .001)

ELOM Total & WPPSI IV FS Concurrent Validity (n=62):
r = .64, (p < .001).

Teacher Assessment

Reliability (n=261):

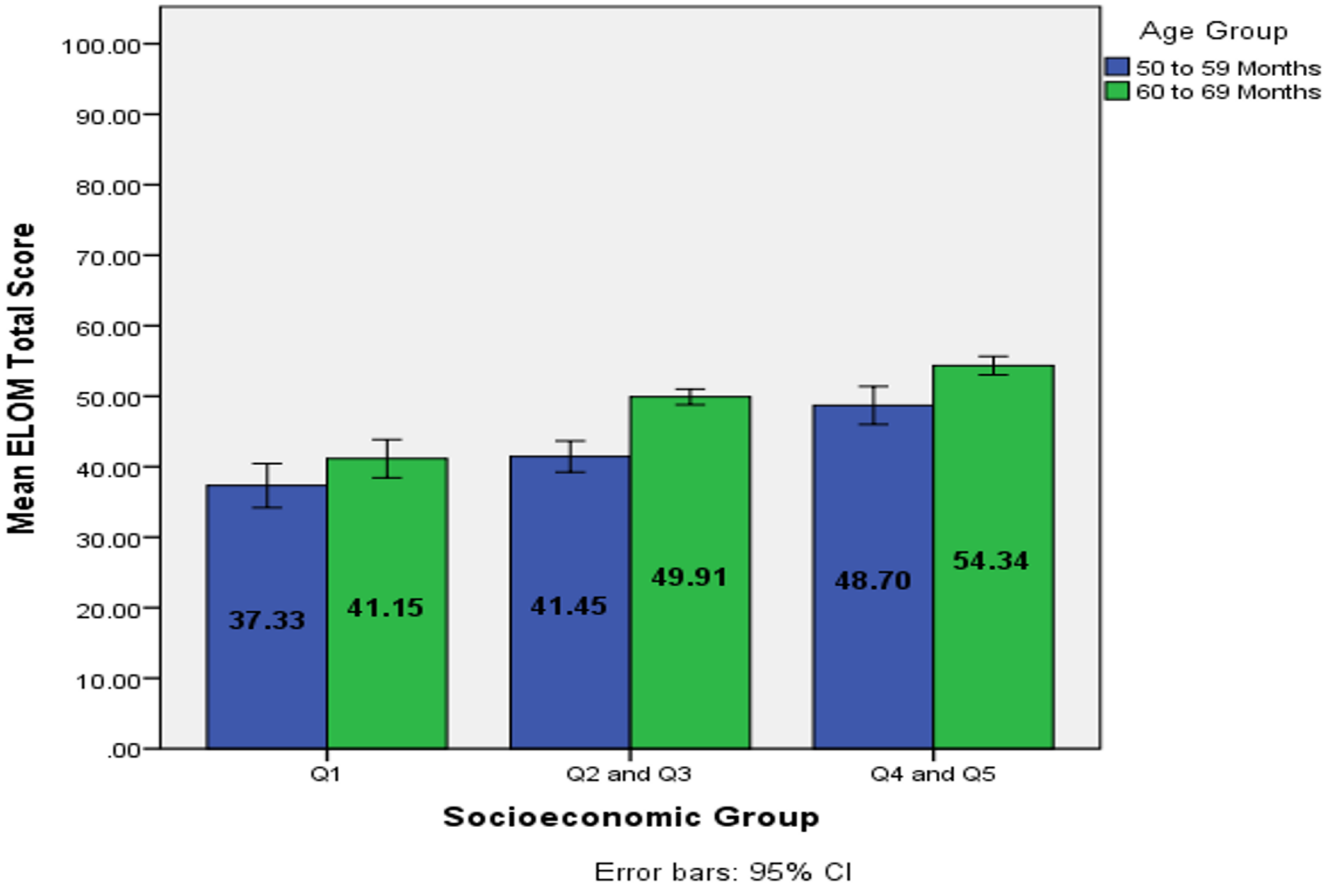
- Social Relations Scale (SRS) Alpha = .78
- Emotional Functioning Scale (ER) Alpha = .80

Concurrent Validity: (n=59)

ER & SDQ (Emotional Problems): r = -.58 (p < .001)

SRS & SDQ Total: r = -.53 (p < .001)

SOCIOECONOMIC STATUS AND AGE GRADIENTS (AGE VALIDITY) ON ELOM TOTAL

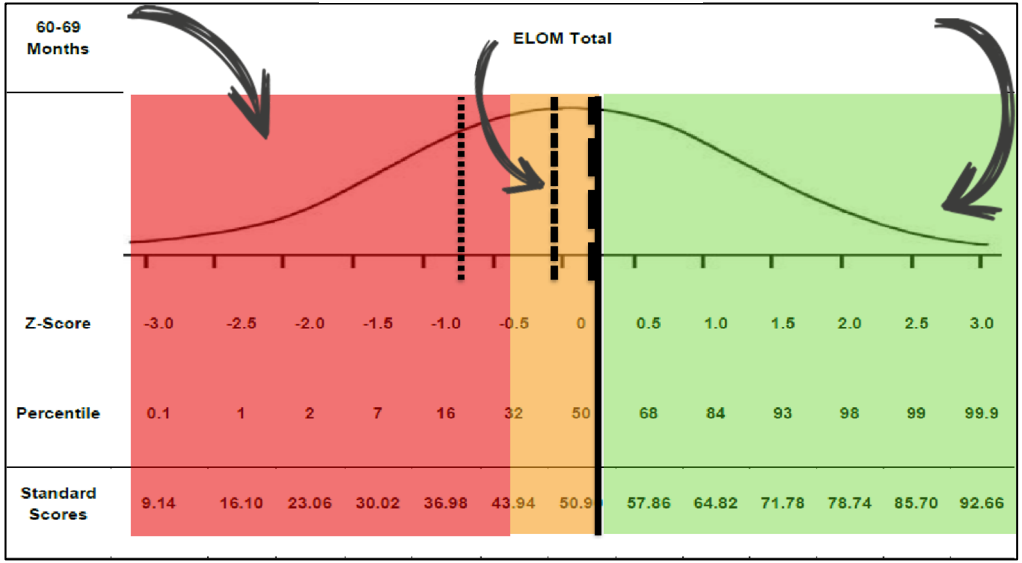


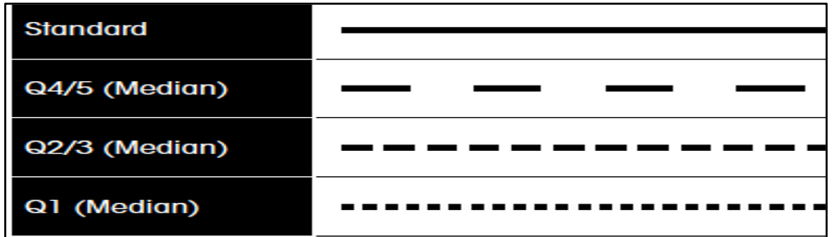
ELOM Standards profiles based on standardisation sample

AT RISK
(<32nd percentile)

FALLING BEHIND
(32nd – 59th percentile)

ACHIEVING THE STANDARD
(> 60th percentile)





Advice to Others

Govt. buy-in

Funds for the work

Scan for local ECCE stds

Consult widely

Draw from others

Pilot

Test

Set stds w/ key govt SH

03

ELOM at Scale

Funding, Processes, Systems

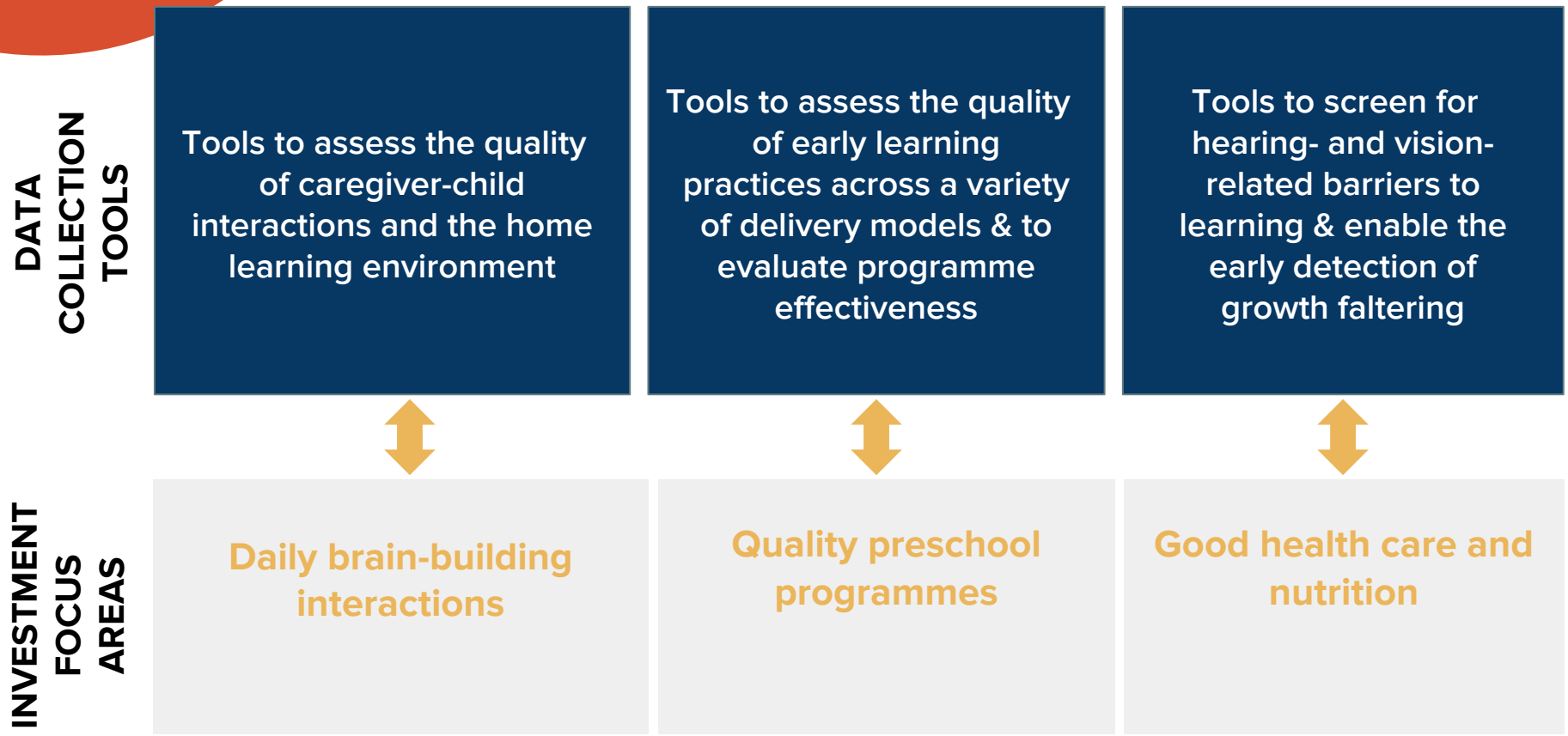
INNOVATION EDGE

invest early

We support innovations that aim to drive outcomes in four focus areas

- Daily brain-building interactions
- Quality preschool programmes
- Good health care and nutrition
- Safety and protection

Invested Data Tools Linked to Focus Areas



ELOM Suite of Tools

ELOM Direct Assessment 23 items

(all SA languages)

ELOM Teacher Assessment of child Social & Emotional Functioning

(all SA languages)

Home Learning Environment Assessment Interview

(all SA languages)

ELOM Short Form 5 Item Targeting Tool

Identifies children in particular need of early learning support

Early Learning Programme Quality Rating Scale

In development

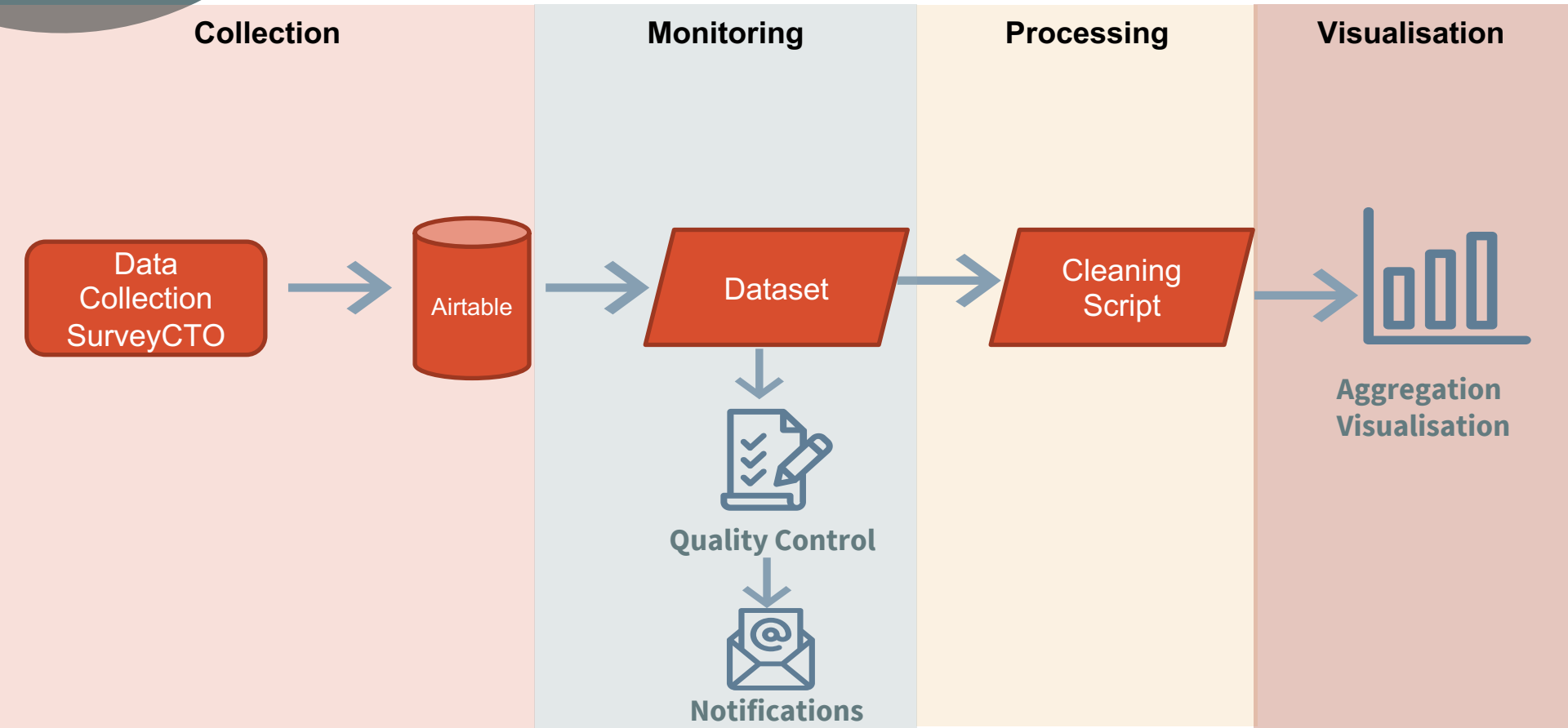
<u>Other resources</u>

Evaluability checklist
Programme support resources
Costing tool
Age calculator

Strategy for Scale

TOOL DEVELOPMENT		SYSTEMS TO SUPPORT USE OF TOOLS AT SCALE AND FOR QUALITY ENHANCEMENT					
Research & Development	Establishing standards	Development of data systems to ensure reliability and validity	Process guidelines & tools	Build & maintain a workforce for tool administration	Operational support to users	Generate reports & consult to assist w/ interpretation & use of data	Identify trends on open access data & formulate additional tools & research

Systems that enable scale: Data Management



Systems that enable scale: Assessor management

REFRESHER COURSE

ELOM Refresher

Curriculum | Bulk importer | Settings | Drip | Pricing | After purchase | Publish

+ ADD LESSON | COPY LESSON FROM

Gross Motor Development

- Introduction
- Reminder Video
- Full Administration Video
- Assessment Tool Screencast
- Common Mistakes
- Mini Quiz
- Activity
- Summary

+ ADD LESSON | COPY LESSON FROM

Fine Motor Coordination & Visual Motor Integration

ADD CHAPTER

Full Administration Video

Draft | DISCARD CHANGES | SAVE

Title: Full Administration Video

Content
Click the text below to edit

Full Administration Video

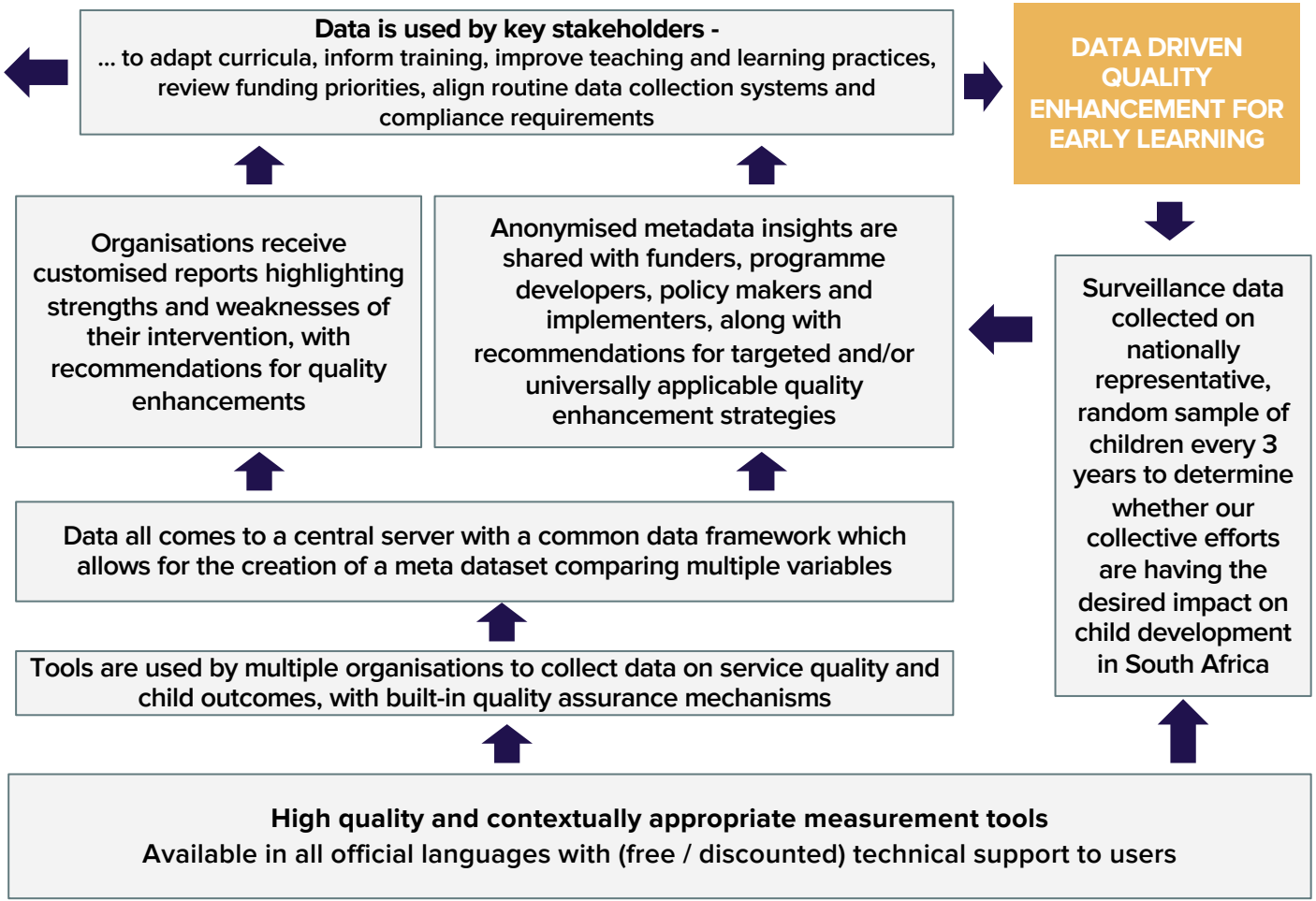
Click on the video to watch a good demonstration of how the four Gross Motor Development items should be administered.

In the video, you will see:

- Item 1: Stand on one leg for 10 seconds
- Item 2: Catch bean bag with both hands
- Item 3: Catch bean bag with preferred hand
- Item 4: Catch bean bag with non-preferred hand

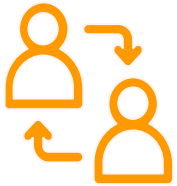
Video credits: Inge Sonn and Buhle (60 months)

High level Theory of Change for data driven quality enhancement of early learning



Lessons Learned

Skill & Team Growth



Building mechanisms for feedback

Development robust data management system

Finding ways to recover cost

THANKS

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Website: www.elom.org.za

Data and screening tools developed / supported by Innovation Edge to date

	TOOLS TO MEASURE CHILD DEVELOPMENT			TOOLS TO ASSESS QUALITY OF ENVIRONMENT	
AGE (yr)	COGNITIVE, LANGUAGE, MATHS, LITERACY	PHYSICAL DEVELOPMENT	SOCIO - EMOTIONAL DEVELOPMENT	EARLY LEARNING PROGRAMME QUALITY	HOME LEARNING	CAREGIVER - CHILD INTERACTIONS
0 - 2		SLIDE&GUIDE BIRTH2TWO WHEEL			LENA
2 - 4				ELOM ELP OBSERVATION TOOL	
4 - 5.8	ELOM DIRECT ASSESSMENT TOOL ELOM SHORT FROM TARGETING TOOL	ELOM DIRECT ASSESSMENT TOOL ELOM SHORT FROM TARGETING TOOL HEARSCREEN & PEEK VISION	ELOM TEACHER & ASSESSOR RATING SCALE		LENA ELOM HOME LEARNING ENVIRONMENT QUESTIONNAIRE
5.8 - 7.5	EARLY LEARNING NATIONAL ASSESSMENT TOOL (ELNA)				