UNLOCKING DATA

A FOCUS ON KENYA

EXPLORING THE FOUNDATIONAL LEARNING DATA AND KNOWLEDGE ECOSYSTEM IN SUB-SAHARAN AFRICA

Kenya's Situational Analysis

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About this document

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About the Unlocking Data Initiative

The Unlocking Data Initiative is a community of practice that connects African scholars, NGOs, national statistics offices and policymakers for the purpose of improving access to and use of education data. The **Unlocking Data Initiative: Scaling Uses and Users of Education Data** project is a collaborative work led by Zizi Afrique Foundation and supported by eBase Africa, EdTech Hub, Education Sub-Saharan Africa and the University of Malawi's Centre for Education Research and Training (CERT). The latter project, which is being implemented in Cameroon, Kenya and Malawi, aims to scale up uses and users of data to address the knowledge gap of how to adaptively scale up the effective use of existing education data by policymakers and researchers in Africa.

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Abbreviations and acronyms

ADB	Asian Development Bank
ADEA	Association for the Development of Education in Africa
AKF	Aga Khan Foundation
APHRC	African Population and Health Research Centre
CBC	Competency-Based Curriculum
CDE	County Director of Education
CEMASTEA	Centre for Mathematics, Science and Technology Education in Africa
CERT	Centre for Educational Research and Training
CSOs	Civil society organisations
DEAF-OP	Deaf Outreach Program
eBase	Effective Basic Services
ECD	Early Childhood Development
ECDE	Early Childhood Development and Education
ECE	Early Childhood Education
EDT	Education Development Trust
EE4A	Education Evidence for Action
EFA	Education for All
ELANA	Early Language & Literacy and Numeracy Assessment
ESSA	Education Sub-Saharan Africa
EYC	Elimu Yetu Coalition
FAWE	Forum for African Women Educationalists
FBOs	Faith-based organisations
FCDO	Foreign, Commonwealth and Development Office (UK)
FGD	Focus Group Discusion
FKE	Federation of Kenyan Employers
FL	Foundational learning
FLANA	Foundational Literacy and Numeracy Assessment
GPE	Global Partnership for Education
GRIC	Grassroots nest for Innovations and Change
IPA	Innovations for Poverty Action
IREX	International Research & Exchanges

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JKF	Jomo Kenyatta Foundation
KeNADA	Kenya National Data Archive
KERD	Kenya Education Research Database
KICD	Kenya Institute of Curriculum Development
KII	Key Informant Interview
KIPPRA	Kenya Institute of Public Policy and Research Authority
KISE	Kenya Institute of Special Education
KNATCOM	Kenya National Commission for UNESCO
KNBS	Kenya National Bureau of Statistics
KNEC	Kenya National Examination Council
KPSEA	Kenya Primary School Education Assessment
KU	Kenyatta University
KUB	Kenya Union of the Blind
KUPPET	Kenya Union of Post-Primary Education Teachers
MDGs	Millenium Development Goals
MCF	Mastercard Foundation
MoE	Ministry of Education
NACONEK	National Council for Nomadic Education in Kenya
NACOSTI	National Commission for Science, Technology and Innovation
NCPD	National Council for Population Development
NESSP	National Education Sector Strategic Plan
NGOs	Non-governmental organisations
NMIS	National Management Information System
NRF	National Research Fund
PALN	People's Action for Learning Network
PEA	Political Economy Analysis
RELI	Regional Education Learning Initiative
RTE	Right to Education
RTI	Research Triangle Institute
SAGAs	Semi-Autonomous Government Agencies
SDGs	Sustainable Development Goals
TaRL	Teaching at The Right Level
TSC	Teachers Service Commission

TPAD	Teacher Performance Appraisal and Development
TVETA	Technical Vocational and Training Authority
UDI	Unlocking Data Initiative
UNHCR	United Nations High Commissioner for Refugees
WB	World Bank
WERK	Women Educational Researchers of Kenya
ZAF	Zizi Afrique Foundation

Executive summary

This situational analysis includes a comprehensive mapping of the foundational learning ecosystem in Kenya, with outcomes including the nature of existing initiatives, policies, stakeholders, and flow of evidence that facilitate and support foundational learning. The mapping exercise seeks to identify gaps, challenges and needs, similar data initiatives, and the existing direction of the flow of evidence in terms of data access and sharing. The mapping exercise has five core objectives:

i. To identify policies in the foundational learning ecosystem;
ii. To identify data and data systems in the foundational learning ecosystem;
iii. To identify key stakeholders with the potential to influence the use of evidence in foundational learning;
iv. To understand how 'evidence' flows between stakeholders.

The mapping exercise employed mixed methods, including a desk review of existing literature, a systematic search and review of research outputs available in various databases, key informant interviews, and focus group discussions to get a clearer picture of the ecosystem.

Regarding data and data systems, the mapping exercise revealed that the Kenyan Ministry of Education (MoE) and its departments have, and continue to collect and store, considerable data on foundational learning. Data on foundational learning is also collected and stored by non-state actors. The ecosystem map underscores the existence of many government policies as well as stakeholders generating data and evidence on foundational learning. In Kenya, there is no *comprehensive policy* or guidelines on foundational learning. However, several pieces of legislation govern the foundational learning space, presenting an opportunity to consolidate the relevant ones into a single and comprehensive foundational learning policy. The thematic areas researched include school leadership, curricula, teacher professional development, assessments, EdTech initiatives, and evidence collection, including value-based evidence, development of learning materials, and policies and standards. There is a sizeable collection of grey and academic publications, but they are located in various and diverse repositories. Most notably, the flow of data and evidence on foundational learning between the MoE and its departments is strong and mainly upward, while the flow of data between the MoE and non-state actors is weak. The biggest barriers identified as hindering evidence and data flow are organisational, systemic, technical, and legal.

The core objectives of the Unlocking Data Initiative are to enhance the supply of data and evidence by consolidating these in the foundational learning ecosystem *and building the capacity of the MoE at both national and sub-national levels to increase the demand for evidence.* The aim is also to enhance targeted evidence generation and the utilisation of the evidence*.* The Unlocking Data Initiative looks at the various barriers to data and evidence access and ways to unlock them

in a collaborative framework between state and non-state actors. To increase the demand for and supply of evidence, the Unlocking Data Initiative will use existing frameworks such as the Education Evidence for Action (EE4A) network and communities of learning and practice. Therefore, based on the mapping exercise, we make the recommendations listed below.

Key Findings

Despite the progress made in refocusing foundational learning, especially in the legal and regulatory framework, notable challenges remain, such as too many policies and regulations but none specifically addressing foundational learning.

Kenya, despite being a signatory to UNESCO's 2012 Paris Declaration on Open Education Resources, has not embraced open access in the foundational learning ecosystem, especially the MoE and its departments. While the education system generates data at scale, the data is not accessible to non-state actors, and it is hardly analysed to bring out important trends and insights that can inform foundational learning.

The mapping exercise also identified the barriers to evidence flow in the foundational learning ecosystem, classified as organisational or socio-economic, systemic, technical, and legal. Organisational barriers include working in silos, a culture of not sharing data, and the absence of a dissemination or communication loop regarding data and evidence. The technical barriers to data and evidence sharing in the foundational learning ecosystem include challenges surrounding data security, quality, and trust in data usage. A sub-category also includes stakeholders' concerns about data privacy and security, as well as technological challenges. Among the systemic barriers identified are a lack of trust between stakeholders and complex power imbalances. Systematic barriers also include a fear of politicising data, where policymakers cherry-pick data or research that supports their pre-existing beliefs or agendas rather than considering a range of evidence. Legal barriers include the inadequacy of the Data Protection Act, which is too restrictive, especially on data sharing.

With regard to a knowledge base, areas such as policy and financing, access to education by children left far behind and children with special needs, students' learning and assessment, and information and communication technologies had limited products

Most of the knowledge generated is not disaggregated by learners' by inequality measures, particularly gender. Disaggregation, especially by gender, enables understanding of trends and patterns but, more importantly, helps develop gender-based policies and targeted interventions.

Related situational analyses from the Unlocking Data Initiative

The Unlocking Data Initiative has published two further situational analysis reports from Cameroon (⇡Pambe et al., 2025) and Malawi (⇡Kadzamira et al., 2025), as well as a political economy analysis on all three countries (⇡Moustafa et al., 2025). Full bibliographic details are included at the end of this report. Clicking the in-text citations included here will take you directly to the Unlocking Data Evidence Library, where all the reports are accessible.

1. Introduction

This country situational analysis, including an ecosystem mapping, was developed through the Unlocking Data Initiative (UDI), a multi-country effort involving Kenya, Malawi, and Cameroon to enhance the accessibility, utilisation, and impact of education data in sub-Saharan Africa for improved foundational learning. The ecosystem mapping was part of the initiative's first phase and involved researching pathways to scale data utilisation while taking a country-specific approach. This report, therefore, provides detailed documentation of the foundational learning ecosystem in Kenya. Examining the state of evidence, identifying data sources, mapping stakeholder interactions, and analysing gaps and opportunities for building a more effective and inclusive data ecosystem on foundational learning. The findings will inform the subsequent phases of the initiative, driving actionable strategies to scale up the use of education evidence for improved foundational learning outcomes.

1.1. Background

Foundational learning serves not only as a critical pillar in education, but is also the base from which all subsequent learning stems. The absence of foundational learning presents significant hurdles for learners on their journey to realise their optimal potential. Investing in foundational education sets the stage for individuals to succeed in school, work, and life, thereby creating a ripple effect of positive outcomes for families, communities, and nations. Learning poverty, which is a measure of the number of children who are unable to read and understand a simple text by age 10, is still a grave challenge globally. Simply put, all children should be able to read by age 10 (⬆World Bank, 2022b). Despite this assertion, most children continue to be in school without acquiring critical foundational skills, and achieving Sustainable Development Goal 4 (SDG 4) is therefore under threat (⬆World Bank, 2022b). To put this in context, nearly 60 per cent of 10-year-olds in low- and middle-income countries suffer from learning poverty (⬆World Bank, 2022a). Between 2015 and 2030, more than a billion children may grow up without learning to read or write by the age of 10, missing a crucial milestone that shapes their futures. Without these basic skills, they could lose the chance to build better lives — whether that means earning a decent income, pursuing their dreams, or contributing to their communities. In 2021 alone, this heartbreaking reality affected over 70 million children — a number as large as the combined populations of Senegal and Kenya. The hardest hit are children in the world's poorest countries, especially in sub-Saharan Africa, where nearly 40% of these children live. In low-income nations, the situation is even more dire: more than 9 out of 10 children are unable to reach this essential milestone, leaving them trapped in a cycle of poverty and unfulfilled potential. These aren't just statistics — they're millions of young lives waiting for a chance to thrive (⬆Save the Children International, 2021).

In sub-Saharan Africa, learning poverty is already estimated at 89% (↑UNESCO, 2024), with the situation in Kenya being termed a crisis. Usawa agenda assessment (↑FLANA, 2023) found that generally, only 45% and 60% of the learners aged between 6 and 17 years at least met expectations in reading a Grade 3-appropriate text and solving a Grade 3 numeracy problem, respectively.[1]

Kenya has made great strides towards achieving foundational learning outcomes to improve the learning ecosystem. The Constitution of Kenya (↑Republic of Kenya, 2010a) in Articles 43(f) and 53(1) (b) provides for the right to education and the right to free and compulsory basic education, respectively, hence providing for the right to quality education and training for all. Kenya's development blueprint, Vision 2030 (↑Republic of Kenya, 2007), aims to transform Kenya into a newly industrialising, middle-income country that provides a high quality of life to all its citizens by 2030, with education and training recognised as enablers. The Constitution of Kenya (2010) provides for the devolution of early childhood development and education (ECDE) to the county governments to bring the service close to people but also address contextual realities.[2]

There is an increasing acceptance that education systems require structural shifts to achieve the intended learning outcomes concerning cognitive and soft skills applicable in a highly dynamic environment. One approach to understanding the education ecosystem is to create a map of the learning ecosystem. Mapping a learning ecosystem involves using an interdisciplinary model that moves away from standardised, top-down systems towards a more integrated and personalised approach that includes a broader cast of educational providers.

Therefore, there is a need for a comprehensive understanding of the ecosystem to identify the challenges and guide improvements. Mapping foundational learning ecosystems is crucial for fostering effective data sharing. It helps identify key stakeholders — such as schools, policymakers, education technology providers, and research communities — and clarifies their roles in the learning process. The relationships between schools and their environments are mutually beneficial and underpin an ecological vision of learning and schooling (↑Falk et al., 2018) "learning ecosystems"). A well-mapped ecosystem supports transparency, collaboration, and innovation, ultimately enhancing the equity and quality of education.

This mapping report, therefore, gives an overview of the foundational landscape in Kenya, with outcomes including the nature of existing initiatives, policies, stakeholders, and flow of evidence that facilitate and support foundational learning.

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[1] The assessment included those enrolled in Grade 4, those completing primary (Grade 6 and class 8), and those out of school (having dropped out or have never enrolled).

[2] Kenya has a devolved system of governance, with some services such as education run at the national level. However, ECDE is devolved to the counties. The devolved functions rely mainly on funding from the national government (Ksh 370 billion in 2022/23 [↑Republic of Kenya, 2024c]).

The report concludes with proposed recommendations based on the research outcomes.

1.2. Research objectives

The mapping exercise seeks to identify gaps, challenges and needs, similar data initiatives, and existing policies and guidelines on data access and sharing in Kenya and has five core objectives:

   i.   To identify policies in the foundational learning ecosystem;
  ii.   To identify data and data systems in the foundational learning ecosystem;
 iii.   To identify key stakeholders with the potential to influence the use of evidence in foundational learning;
 iv.   Understanding how 'evidence' flows between stakeholders.

1.3. Report structure

This ecosystem mapping report and country situational analysis is structured into five sections, including Section 1, this introduction section. Section 2 outlines the methodology adopted, particularly for searching and analysing data and data sources. Section 3 presents the findings, while Section 4 maps stakeholders and how evidence flows between them in the ecosystem. Section 5 highlights the barriers to the flow of evidence in the Kenya ecosystem. Finally, Section 6 proposes recommendations for improving the flow of evidence in the ecosystem.

1.4. Related situational analyses from the Unlocking Data Initiative

The Unlocking Data Initiative has published two further situational analysis reports from Cameroon (⇧Pambe et al., 2025) and Malawi (⇧Kadzamira et al., 2025), as well as a political economy analysis on all three countries (⇧Moustafa et al., 2025). Full bibliographic details are included at the end of this report. Clicking the in-text citations included here will take you directly to the Unlocking Data Evidence Library, where all the reports are accessible.

2. Methodology

The UDI consortium co-created a protocol, key informant interview (KII) and focus group discussion (FGD) guides that guided the methodological approach for the mapping exercise. The protocol laid out the design of the ecosystem map, the methodology for the desk reviews, online data searches for the education datasets, the systematic review of existing knowledge, the development of data collection instruments, and the data quality assurance. Following the *Mapping Education Data in Sub-Saharan Africa* (↑Lawson & Heady, 2021) note, desktop research and systematic reviews were also used to set out the mapping question, contextual and agency diagnosis, and gap identification.

2.1. Literature search

Foundational learning data exists in various repositories and databases, microdata portals, and institutional administrative data portals. Varied approaches were applied to maximise searches on foundational learning. These methods included Google dataset search, systematic review, stakeholder consultations and primary data collection.

The mapping exercise involved searching the Google Dataset Search[3] using the subset of the following search string:

 "Kenya" AND (foundational learning OR early childhood development OR early childhood education OR pre-primary education OR preschool education OR primary education OR kindergarten OR nursery school OR literacy OR numeracy OR cognitive development OR social-emotional learning OR play-based learning).

However, while academic databases offer a single, powerful search, Google requires crafting multiple queries to capture all relevant research, potentially leading to information overload. To tackle this, the above search string was truncated to limit the number of hits while ensuring exhaustive results.

The mapping exercise also leveraged Google's ranking system to prioritise promising results initially, establishing a consistent number of pages to screen per search, ensuring efficient time management. The research has compiled multiple datasets to support the mapping and analysis, including data from the African Population and Health Research Centre (↑APHRC, 2025), (↑CEIC 2025), and the ↑World Bank (2025), among other sources.

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[3] Google Dataset Search is a tool designed by Google to help researchers, journalists, and other stakeholders discover and access publicly available datasets online. It complements Google Scholar, another Google product focused on searching for academic publications.

2.1.1. Screening and eligibility criteria

The knowledge search followed the following strategy for mapping data:

STEP 1: A search for foundational learning researches;

STEP 2: Screening empirical foundational learning research;

STEP 3: Country-level stakeholders and consultations;

STEP 4: Metadata presentation.

A systematic literature review was conducted using the EBSCOhost research database. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) methodology was used. The methodology employs an evidence-based checklist corresponding to four phases: identification, screening, eligibility, and inclusion (⇡Sullivan et al., 2024).

Identification criteria: The identification query included the combination of synonyms for 'foundation skills', 'basic skills', 'literacy', 'reading', 'writing', 'vocabulary, and 'speech', for literacy and 'alphab', 'numeracy', 'math, 'arithmetic', 'calculation', and 'proficiency level' for numeracy. Other synonyms included 'learning achievement', 'learning outcome', 'learning level', 'learning gain', 'learning loss', and cognitive skills'. Several combinations of search terms were tested before the final query was selected as yielding the highest number of applicable results. The final query used in the databases was:

("foundation* skills" OR "basic skills" OR "literacy" OR "reading" OR "writing" OR "vocabulary" OR "speech" OR "alphab*" OR "numeracy" OR "math*" OR "arithmetic" OR "calculation" OR "proficiency level*" OR "learning achievement" OR "learning outcome*" OR "learning level*" OR "learning gain*" OR "learning loss*" OR "cognitive skills")

 AND

("basic education" OR "early grade" OR "elementary school*" OR "primary school*" OR "primary education" OR "second chance" OR "alternative education" OR "complementary education" OR "accelerated learning" OR "non-formal education" OR "primary-age*")

Keywords were searched within the articles' titles, abstracts, and keyword lists to ensure a return of as many applicable results as possible. The use of wildcard ("*") allowed for the inclusion of words with different endings (e.g., "alphab*" to capture both 'alphabet' and 'alphabetical'). The search criteria were open to return results on journal articles, conference papers and Master's and PhD theses. Due to time and personnel constraints, only papers covering literacy and numeracy were used, ensuring no papers on these areas were excluded. Conference papers and abstracts were essential in understanding some of the existing grey literature that may not

have been fully published online. The EBSCOhost query was conducted on 9 August 2024, and resulted in 548 studies published from 2010 to 2023. This period was selected due to the high volume of data available in the databases and the time set aside for this work while also taking into consideration education reforms in Kenya.

2.2. Stakeholder consultations and primary data

The stakeholder consultation meetings were purposive, and hence, key decision-makers were earmarked and invited. These stakeholders were Ministry of Education (MoE) officials (from the Directorates of Policy and Information, Communication and Technology) and civil society organisations (CSOs) already working in the foundational learning space; organisations collaborating with the MoE were prioritised.

A workshop format was deemed preferable because findings could be presented in a plenary, and a participative approach could be adopted to get feedback and input. For instance, members could break into small groups for discussions while adding their input or validating the findings and reporting back to the plenary. Key informant interviews were conducted with subnationals involving four County Directors of Education in Kirinyaga, Machakos, Kajiado and one County Director of Quality Assurance. As principal data collectors in the education system, the views of Education Officers are critical to the ecosystem map. The workshop programme, key Informant interviews, and focus group discussion guides are provided below in Annex 2 and Annex 3, respectively.

Table 1. *Research participants*

Activity type	Stakeholder group	Number of participants (male)	Number of participants (female)	Total number of participants
Workshops	MoE (national and sub-national)	11	7	18
	Civil society organisations (CSOs)	7	6	13
Key informant interviews	MoE	2	0	2
	Sub-nationals	2	3	5
	CSOs	3	3	6
	Teachers	3	2	5
Total number of participants		**28**	**21**[4]	**49**

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[4] While every effort was put to ensure inclusion of women, gender parity could not be achieved because of the structure of the MoE where the heads of policy, research and ICT are male.

2.3. Limitations

1. Limited data is available in the public domain, and even in such instances, only databases and datasets within the researcher's reach were accessed. In addition, some databases are not open source and require licences. This restricts the data available for analysis.

2. Some administrative data and selected reports at the MoE, which form the core of decision-making, are not digitised and are hence inaccessible. For instance, some classroom observations are done with paper and pen. Some of the reports include supervision reports, rapid appraisal reports and reports of task forces and various committees formed by the MoE. Such reports are crucial to making conclusions about the use of evidence in decision-making and are safeguarded products by the MoE.

3. Key findings: Thematic analysis

3.1. Foundational learning in Kenya

There appears to be no current, agreed definition of foundational learning in Kenya. While participants provided diverse descriptions of foundational learning during the co-creation workshop, they coalesced towards three themes: 'basic literacy', 'early learning', and 'lifelong skills'. Further probing showed that respondents reacted to the different definitions because the term 'foundational learning' is foreign to the Kenyan context. More commonly used terms in Kenya are 'early learning' and 'basic education'. It is essential to ensure that any data or evidence collector uses the same definition of foundational learning that is acceptable to the ecosystem.

The Basic Education Act 2013 defines 'basic education' in Kenya as:

> *"The educational programmes offered and imparted to a person in an institution of basic education includes adult basic education and education offered in **pre-primary** educational institutions and centres."* (⬆Republic of Kenya, 2013)

The Global Partnership for Education (GPE) refers to foundational learning as:

> *" [...] basic literacy, numeracy, and transferable skills such as socio-emotional skills"* (⬆Global Partnership for Education, 2023).

3.2 Foundational learning policy framework

Ecosystems rely on sources of energy (⬆Stewart et al., 2019), and Kenya draws evidence of ecosystem energy from the 2010 Constitution. The governance of basic education under the Constitution is a shared function between the National government and the 47 county governments, and it also involves the Teachers Service Commission as a constitutional body. While the national government has responsibility for education policy, standards, curricula, examinations, primary and secondary schools, special education institutions, and the promotion of sports and sports education, the county governments are responsible for pre-primary education and childcare facilities within their jurisdictions. The Teachers Service Commission (TSC) is charged with registering, employing, promoting, disciplining and paying teachers to teach in basic education institutions ⬆Munavu, 2023). The TSC is also mandated to be responsible for the professional development of in-service teachers and performance appraisal.

Generally, the education ecosystem legal framework in Kenya has seen several education reforms involving the work of various education commissions, task forces, and working groups. These include the Kenya Education Commission (⬆Ominde, 1964); the National Commission on Educational Objectives and Policies (⬆Republic

of Kenya, 1976); the Presidential Working Party on the Second University in Kenya (↑Mackay, 1981); the Presidential Commission on Development and Employment in Kenya: A Strategy for the Transformation of the Economy popularly known as the (↑Kamunge, 1988); and Totally Integrated Quality Education and Training: Commission of Inquiry into the Education System of Kenya (↑Koech, 1999).

These key reforms aim to make education more responsive to the needs of the country and in alignment with international declarations such as the ↑UNESCO (1990) World Declaration on Education for All (EFA), where nations asserted that "everyone has a right to education". This was followed by the signing of the ↑United Nations (2000) Millennium Development Goals (MDGs), which targeted that by 2015, children everywhere would be able to complete a full course of primary schooling. Lately, a Presidential Working Party on Education Reform, 2022 Committee was formed and mandated to investigate education-related issues.

Over the years, the evolution of the education policy framework in Kenya has been multifaceted, demonstrating the nation's commitment to its labour needs and development aspirations. The main focus of these policies has been to ensure increased access to education, improved quality of learning outcomes, and enhanced equity in the education system. The most notable policies focusing on expanding access to basic education include introducing free primary education in 2003, the 100 Per Cent Transition Declaration in 2018, the Basic Education Act 2013, which operationalises the right to education as enshrined in the Kenya Constitution, and committing Kenya to providing basic education to all children. While these policies have led to a significant increase in primary school enrolment rates, the acquisition of basic literacy and numeracy skills has remained largely unchanged. Other policies, such as the Persons with Disabilities Act 2003, the National Special Needs Education Policy Framework 2009, and the National Policy Framework for Nomadic Education 2010, have focused on enhancing inclusive education for learners left far behind and those with special needs. Concerning ensuring quality education, the government introduced the Competency-Based Curriculum (CBC) in 2017, which focused on developing skills and competencies among learners; the Mentorship Policy for Early Learning & Basic Education 2019 that aims to produce ethical, empowered, and engaged citizens by nurturing each learner's potential, and the Early Childhood Education (ECE) Act 2021 that ensures quality assurance in ECE. While the CBC has been in place for the last nine years, recent assessments by Usawa Agenda still show high levels of learning poverty, with only 36% of Grade 4 learners who met expectations reading a Grade 3 appropriate English text and solving a Grade 3 appropriate numeracy task.

Though laudable, these policy initiatives have faced challenges in implementation, particularly around ensuring the quality of learning outcomes and equity in the system. For instance, the Basic Education Curriculum Framework on which the CBC is anchored did not capture education for out-of-school youth, adults, and other disadvantaged groups. In addition, the framework lacked critical linkages and

transition mechanisms. Moreover, well-structured, demand-driven and coordinated strategies have been lacking to implement programmes that address equitable access and inclusion in education for children with special needs, the marginalised, and for adult and continuing education, especially to promote these groups' foundational skills, self-efficacy, values and positive behaviour (⇧Munavu, 2023). There have been concerns regarding inadequate infrastructure, overcrowded classrooms, insufficient teacher supply and requisite capacity, and iniquities in access to quality education across different regions and socio-economic groups.

The 2010 Constitution's devolution of education management in Kenya provided both opportunities and introduced new challenges. For instance, it empowered communities to find local solutions and addressed unique needs such as nomadic schooling or language barriers. However, it also created complexities, such as uneven resource distribution, teacher shortages in remote areas, and mismanagement of funds. Wealthier counties have thrived, while poorer ones are struggling with widening inequalities. Teachers have been faced with pressure from new CBC curricula, often without adequate training.

While the foundational learning ecosystem is not entirely absent from the legal and regulatory framework, it is obscured because it lacks specificity, is framed differently by the various policy documents, and has duplication of functions and governance disputes over mandates and ambiguities (⇧Munavu, 2023). Despite the numerous policies, the country lacks a framework addressing the foundational part of basic education. Table 2 highlights Kenya's Foundational learning policies, key focus areas, and accessibility links.

Table 2. *Foundational learning policies and statutes in Kenya*

Policy / legal framework / statute	What does the policy or legislation address concerning foundational learning?
Persons with Disabilities Act, 2003	The act ensures that learners with disabilities in Kenya have equal rights to access educational institutions and facilities by providing equal opportunities for them (⭡Republic of Kenya, 2004).
National Early Childhood Development (ECD) framework, 2006	This policy addresses the overarching national objectives regarding the provision of care, early learning, and early stimulation services and programmes in childcare facilities and pre-primary institutions. It also addresses the challenges experienced in operationalising the National ECD policy (2006). It aligns the pre-primary education provisions with the devolved system of government under the Constitution of Kenya 2010 (⭡Republic of Kenya, 2006).
Kenya Vision 2030	Sets out a long-term development strategy for the country. It identifies education as key within the social pillars to steer Kenya towards becoming a middle-level income country in 20 years (⭡Republic of Kenya, 2007).
The Alternative Provision of Basic Education and Training Policy, 2009	The policy provides guidelines to streamline the development and management of alternative channels that provide education and training, recognising that all children, youth, and adults are entitled to basic quality education as a right (⭡Republic of Kenya, 2009a).
The National Special Needs Education Policy Framework, 2009	The framework aims to guide MoE staff and other stakeholders in the provision of education to learners with special needs. It also aims to ensure that learners with special needs fully participate and are treated equally in learning activities at all levels (⭡Republic of Kenya, 2009b).
Constitution of Kenya, 2010	This is the overarching law in Kenya that expresses education as a basic right (⭡Republic of Kenya, 2010a).
The National Children's Policy of 2010	The policy aims to ensure that children receive quality, accessible, and inclusive education. This includes prioritising resources for schools in underserved areas and marginalised communities (⭡Republic of Kenya, 2010b).

Policy / legal framework / statute	What does the policy or legislation address concerning foundational learning?
The National Policy Framework for Nomadic Education, 2010	The framework is geared towards ensuring equitable access to education by children in nomadic areas, including disadvantaged and vulnerable groups such as minorities and indigenous groups (⇡Republic of Kenya, 2010c).
Basic Education Act, 2013	This Act ensures that all children in Kenya are provided with free and compulsory primary education and that both children with and without disabilities should be treated 'equally'. The intention is that in addition to being treated equally, those children requiring special attention must be accommodated based on their needs (⇡Republic of Kenya, 2013).
County Early Childhood Education Bill, 2014	The bill provides a framework for the establishment of a comprehensive early childhood development and education system by the county governments (⇡Republic of Kenya, 2014).
Basic Education Regulations, 2015	The Basic Education Regulations of 2015 in Kenya promote and regulate free and compulsory basic education. The regulations also establish the national education board, the education standards, and the county education board (⇡Republic of Kenya, 2015b).
The National Plan of Action for Children 2015–2022	The plan of action provides a framework that outlines priorities and interventions to help children's rights in Kenya (⇡Republic of Kenya, 2015a).
National Pre-primary Education Policy, 2017	This policy addresses the overarching national objectives regarding the provision of care, early learning and early stimulation services and programmes in childcare facilities and pre-primary institutions. It addresses the challenges experienced in the operationalisation of the National ECD policy (⇡Republic of Kenya, 2006) and aligns the pre-primary education provisions to the devolved system of government under the constitution of Kenya 2010 (⇡Republic of Kenya, 2017a)
Kenya Integrated Early Childhood Development Policy Framework, 2017	The ECD Policy Framework aims to ensure that children aged 0–8 and their families have access to comprehensive ECD services and support (⇡Republic of Kenya, 2017b).

Policy / legal framework / statute	What does the policy or legislation address concerning foundational learning?
National Pre-Primary Education Policy Standard Guidelines, 2018	Operationalises the National pre-primary education policy (↑Republic of Kenya, 2018b)
Competency Based Education Training Policy Framework, 2018	The CBET framework aims to: – Develop competencies and skills that enable learners to understand concepts and facts – Nurture analytical, critical, and conceptual skills – Create a curriculum with parallel and complementary tiers for academic, vocational, and technical education – Provide a multi-track system for learners to follow tracks where they have proven competencies (↑Republic of Kenya, 2018a)
Sector Policy and Implementation Guidelines for Learners and Trainees with Disabilities, 2018	Although this policy recognises all disabilities and special needs, it now prioritises the coverage of learners and trainees who have hearing impairments, visual impairments, deafness, blindness, physical impairments, intellectual disabilities, specific learning disabilities, cerebral palsy, speech and language difficulties, multiple disabilities, autism, and albinism (↑Republic of Kenya, 2018c).
National Pre-Primary Education Policy Standard Guidelines, 2018	The guidelines are intended to help ensure that pre-primary education in Kenya is inclusive, equitable, and of high quality. They also aim to help children develop holistically and be prepared for primary school. (↑Republic of Kenya, 2018b)
The 100 Per Cent Transition Policy, 2018	The policy aims to ensure that every child in Kenya receives 12 years of basic education by enrolling in primary school and completing secondary school (↑Republic of Kenya, 2024b)
The Basic Education Curriculum Framework, 2019	The BECF outlines seven core competencies that students should develop across all academic subjects (↑Republic of Kenya, 2019c)

| Policy / legal framework / statute	What does the policy or legislation address concerning foundational learning?
Sessional Paper No. 1 of 2019 on 'Reforming Education and Training for Sustainable Development in Kenya'	The paper engages with what needs to be done to meet 21st-century challenges (⬆Republic of Kenya, 2019b).
Mentorship Policy for Early Learning & Basic Education, 2019	Addresses the need for mentorship programmes to support learners' growth and development. The policy aims to produce ethical, empowered, and engaged citizens by nurturing each learner's potential. The policy also emphasises that effective mentorship is necessary for acquiring competencies such as communication, collaboration, citizenship, and self-efficacy (⬆Republic of Kenya, 2019a).
Early Childhood Education Act, 2021	The act establishes a framework for administering early childhood education (ECE) in counties (⬆Republic of Kenya, 2021).
Children's Act, 2021	The Children's Act of Kenya is the basic instrument in Kenya's laws that spells out the rights of children while taking care of their safety, protection, and development (⬆Republic of Kenya, 2022).
Presidential Working Party on Education Reform (PWPER), 2022	Made recommendations aimed at transforming the sector across the basic tertiary and university level of education (⬆Republic of Kenya, 2023).
National Education Sector Strategic Plan 2023–2027	The NESSP for 2023–2027 aims to provide quality education and training to all citizens, regardless of their background or circumstances (⬆Republic of Kenya, 2024b).
Fourth Medium Term Plan 2023–2027	The (MTP IV) 2023–2027 includes education reforms as one of its priorities (⬆Republic of Kenya, 2024a).
The National Curriculum Policy, 2018	Informs the competency-based curriculum implementation process (⬆Republic of Kenya, 2019d).

3.3 Data and data systems

Data and data systems existing in the foundational learning ecosystem were evaluated based on whether the data contained therein is open access or has restrictions. For the purposes of this report, data systems were defined as frameworks, including repositories, processes, and methodologies used to collect, store, process, and analyse data. The data systems were categorised as 'national' (held by national bodies), 'international', or 'other' (e.g., held by CSOs and NGOs).

Figure 1. *Data systems[5]*
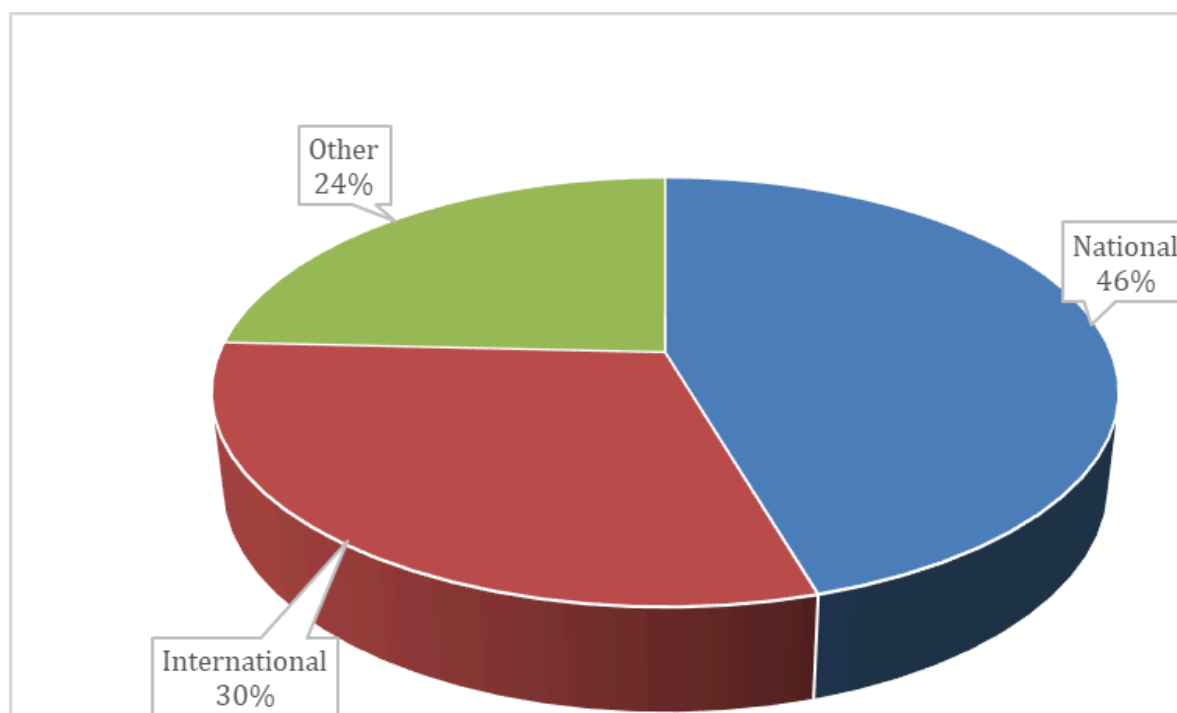
As demonstrated in Figure 1 above, most of the data systems on foundational learning in Kenya are national, numbering 15 (46%), followed by international data systems, numbering 10 (30%), while other data systems, such as microdata portals held by CSOs, included 8 (24%).[6] Based on accessibility, all the international and other data systems are open access,[7] while only 3 (20%) of the national (government-owned) data systems are open access. A comprehensive list of the data systems reviewed is presented in Annex 1.

There are two extremes regarding the accessibility of foundational learning data and datasets. On the one hand, non-government data systems are open access and

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[5] International data systems get their data from the national data systems.

[6] While every effort was made to search databases, this list may not be an exhaustive list of all existing databases.

[7] Open access is "free access to scientific information and unrestricted use of electronic data for everyone" (⇧UNESCO, 2025).

freely available. However, their use is curtailed by limited capacity among key stakeholders, awareness of the existence of such platforms, or even the lack of resources to leverage this data. Expanding stakeholders' capacity to access, manage, and transform this open data could unlock significant value and lead to new insights and applications that were not originally anticipated. On the other hand, government data systems, often seen as the most authoritative and comprehensive data sources, are frequently closed off and difficult to access due to perceived security concerns, misaligned incentives, and a general lack of trust. A new social contract is needed to bridge this divide. One that enables responsible use and reuse of data, ensures equitable access to the value generated, and fosters trust that data will not be misused in harmful ways.

3.4 Similar mapping initiatives

The Kenya Education Research Database (KERD), a repository of all research on basic education, is an example of a similar initiative to collect and identify data on foundational learning. Notably, even though the database uses the categories 'Pre-Primary (ECD)', 'Primary Education (PE)', and 'Secondary Education (SE)', it does not recognise 'foundational learning' as a category. ⇑Lawson & Heady, (2021) also mapped foundational learning in Kenya between 2010 and 2023. A study on data use in Kenyan secondary schools (⇑Ndirangu, 2016) found that while schools collect a wide range of data, this data is often not used effectively to inform decision-making and improve learning outcomes. Similarly, the review on data-based decision-making for school improvement identified key barriers and enablers of data use, including data literacy and leadership, which need to be better understood and addressed (⇑Schildkamp, 2019). Other studies, such as (⇑Thoutenhoofd, 2018), have also highlighted the growing emphasis on data collection and management, but with varying degrees of success in leveraging this data for meaningful decision-making and functional improvements.

3.5. Knowledge on foundational learning

The mapping exercise followed a systematic review of studies in databases that feature published and unpublished research papers, books, and book chapters that can be filtered using keywords. Following the identification and selection of existing studies, we evaluated their contributions to analyse, synthesise, and report our findings in a way that allowed us to make reasonably clear conclusions about the evidence gaps.

3.5.1. Knowledge generation

After identification, the next phase was screening. Once duplicates were removed, the number of articles decreased from the initial 548 to 298. Initial screening and selection were based on reading titles and abstracts to ensure the papers fell within

the scope of the systematic review. For the screening exercise based on title and abstract, we read the full text of 170 papers to ensure they met the following criteria:

1. Original research (not a review paper)
2. Study related to literacy and numeracy.

The final screening resulted in 56 papers; with three additional papers added from outside the query because they were referenced in many of the selected studies. This resulted in a final number of 59 studies to be analysed for the systematic review.[8] Finally, data was extracted manually after reading the full text of the 59 papers, and the main characteristics were recorded. A set of variables included whether or not the papers address or cover:

- literacy or numeracy
- gender of the author(s)
- gender of learners
- grade
- learners with disability
- a county.

Figure 2. *Visual representation of the screening process for the systematic review and inclusion criteria*

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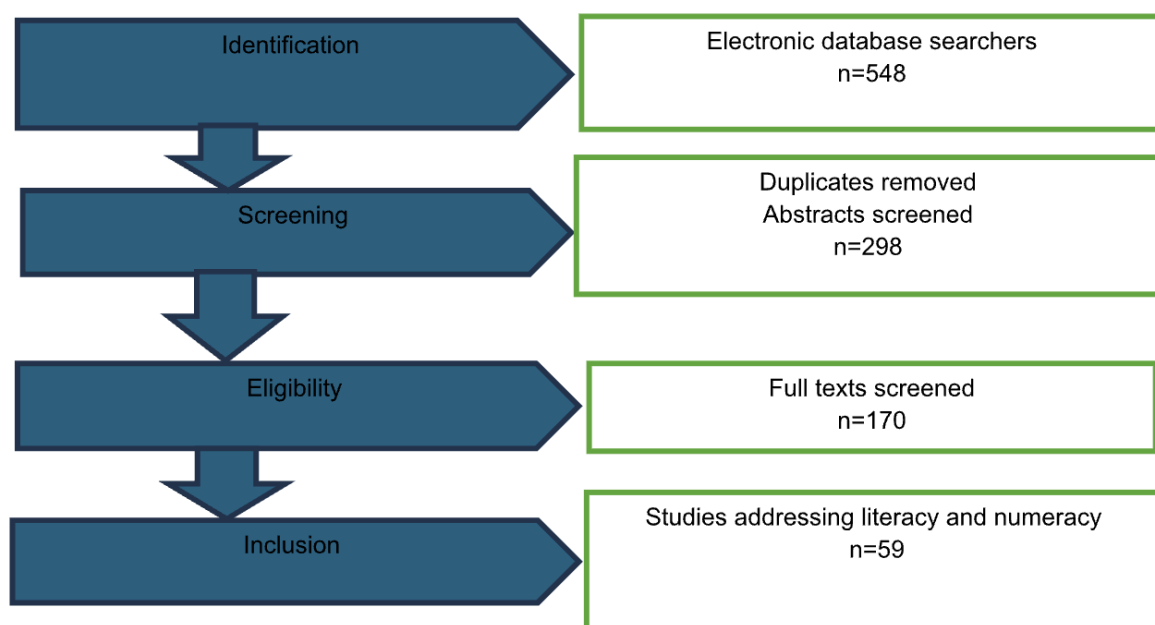
[8] The mapping scope was significantly narrowed given that the definition of foundational learning goes beyond literacy and numeracy, and because there are numerous subcomponents within this range.

3.5.2. Knowledge generation in foundational literacy and numeracy

Figure 3. *Knowledge generation by foundational literacy and numeracy*
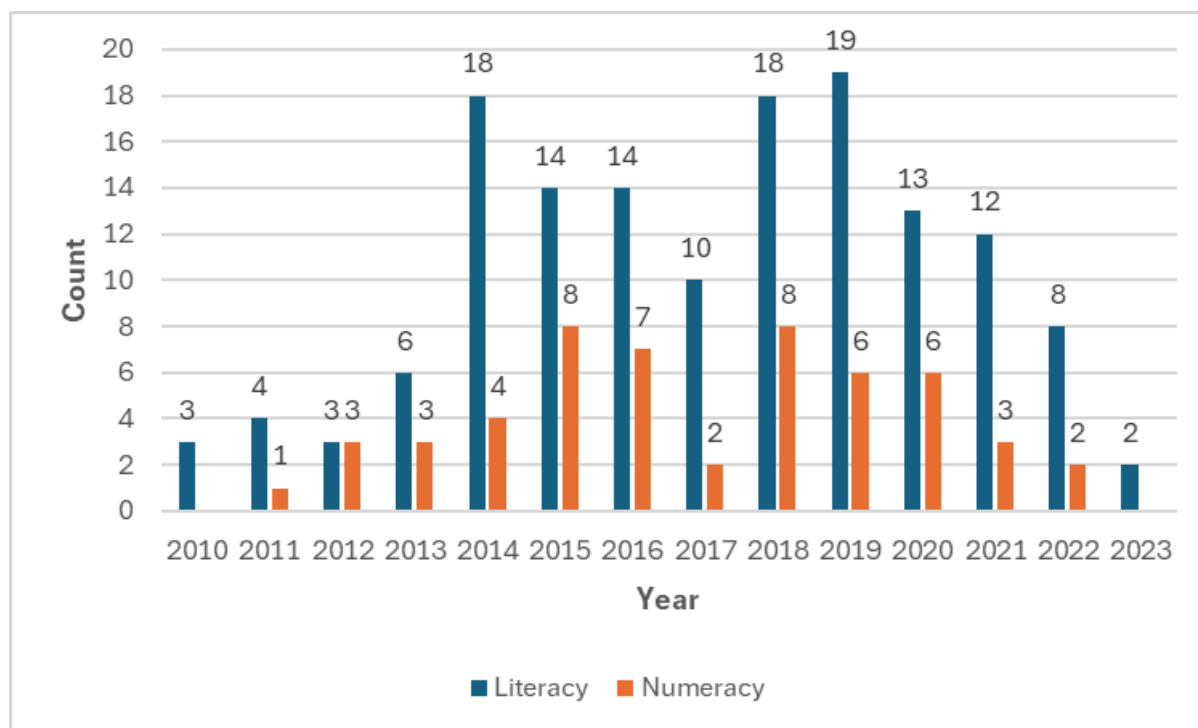
According to (⇧Lawson et al., 2024), many of the topics researched in foundational learning relate to literacy rather than numeracy. The years between 2010 and 2013 saw a moderate rise in research on foundational learning and an acceleration in 2018 that peaked in 2018/19. ⇧Lawson et al. (2024) attribute this acceleration to a growing awareness of the key role that foundational literacy and numeracy play in the country's educational and socio-economic development and its commitment to the SDGs. In 2020, the research output on foundational learning dropped below the 2014 level. This is attributed mainly to the Covid-19 pandemic and the ensuing closures that hindered movement. These closures curtailed all activities, including learning and research activities such as data collection.

Based on Figure 3, we conducted three key informant interviews to understand the possible reasons behind the higher number of studies on literacy compared to numeracy. Some interviewees attributed the trend to the Matthew effect,[9] whereby initial learning success leads to more advanced learning.

"Considering the majority of the knowledge in literacy and numeracy is based on University Masters and PhD theses which are later published, students and other researchers find it easier to get literature to review (which is majorly on literacy) and hence continue writing on literacy". (Zizi Afrique KII respondent.)

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[9] A phenomenon whereby initial ability to read can compound over time into more reading and other skills.

"Literacy comes in many languages, unlike numeracy, which is taught and assessed in English in Kenya." (APHRC, KII Respondent.)

Other studies include a 2020 study involving refugee children, and 19 studies on children with special needs spread across the period.

3.5.3. Knowledge generation by grade levels

The Unlocking Data Initiative aims to address the knowledge gap between policymakers and researchers on how to adaptively scale up the effective use of existing education data, specifically on foundational learning for children aged 4–9 years. In the Kenyan context, this is from school entry age to Grade 4. The shortlisted studies were analysed by grade, and the results show that Grades 1–3 (aged 6–8 years) are the year groups about which there are the most knowledge products.

**Figure 4.** *Knowledge generation by grade*
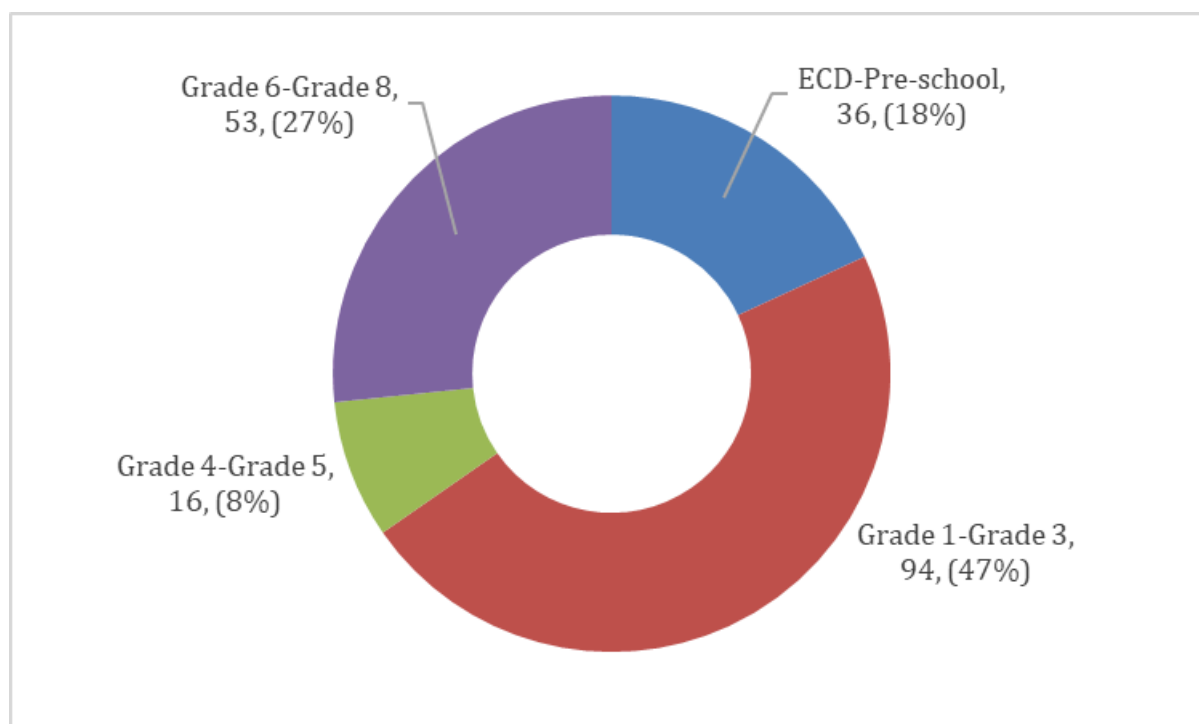
The high number of knowledge products generated about Grades 1–3 could be attributed to the learning outcomes associated with early primary. According to (↑UNICEF, 2022), children are expected to acquire foundational literacy and numeracy skills before completing Grade 2. This fact may, therefore, draw researchers to study these grades to generate evidence in literacy and numeracy, while Grade 1 might attract researchers interested in the readiness of these skills as the learners transition from pre-primary to primary schooling.

"Though informal, learners would forgo pre-school, but it was unlikely that a learner would jump Grade 1 to Grade 3." (CSO, KII participant).

Most of the knowledge generated is not, however, disaggregated by the learners' gender, presenting an evidence gap since the acquisition of literacy and numeracy is not gender-neutral (⇧Borgonovi et al., 2021). Furthermore, as many as 19 studies in our shortlist focused on children with a form of disability, while only one focused on refugees.

3.5.4. Knowledge generation by gender of author

Figure 5. *Knowledge generation by gender of author*
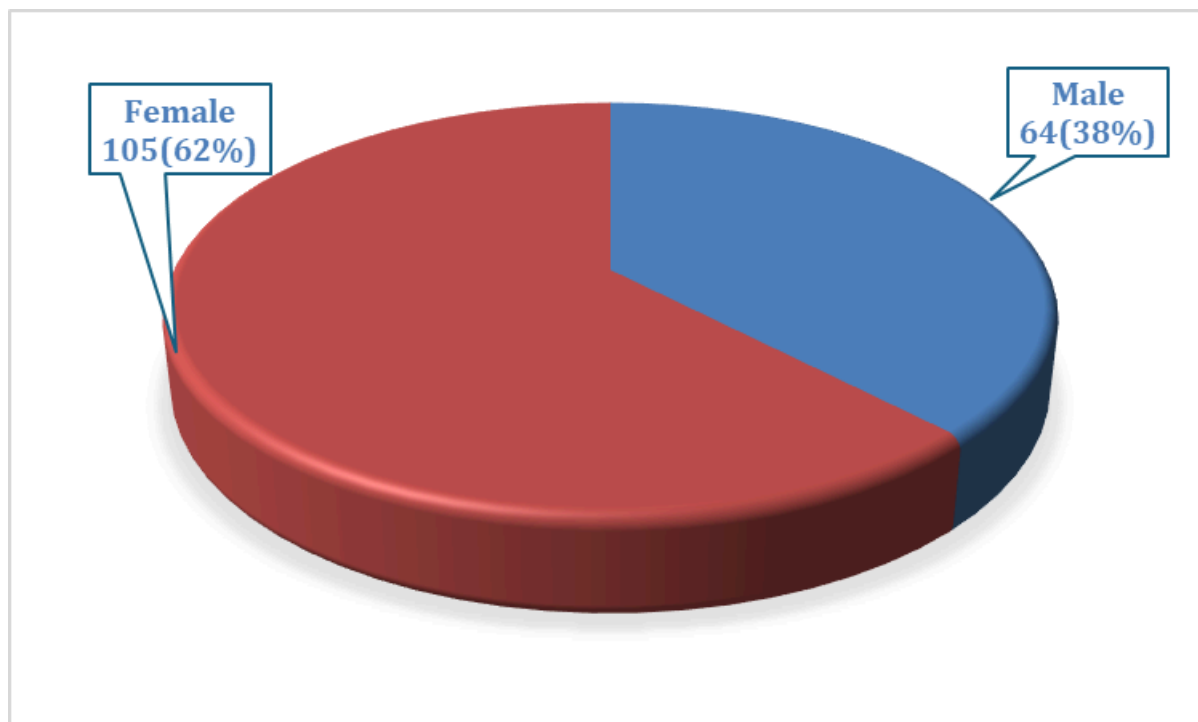
Based on the names of the first authors,[10] it was evident that more women (62%) than men (38%) were involved in generating knowledge on studies focusing on foundational learning. This finding is similar to that of Research for Equitable Access and Learning (REAL) Centre review (⇧Williams & Rose, 2024) that found Kenya's ECD space to be dominated by female researchers, unlike other participating countries like Ghana (36%) and Uganda (40%). While the reason for this might not be clear, over the years, the teaching workforce and investment in early childhood and caregiving lean more on women than men.

3.5.5. Knowledge generation by county

The studies were further analysed to isolate knowledge affiliated with universities from other studies. One limitation of this analysis is that student theses are also published, especially PhD theses, hence they appeared in university repositories and as published studies. Due to this limitation, the analysis was restricted to university repositories to check the distribution of knowledge generated by

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[10] Use of first author could bias the findings and therefore should be treated as a limitation.

universities with the counties where the research work took place. The purpose of this analysis was to determine the scope of coverage and contribution of universities to knowledge generation. Out of the 47 counties, the knowledge covers 38 (81%) counties in Kenya. The analysis did not include studies that did not cover a specific county.

Figure 6. *Knowledge generation by region*
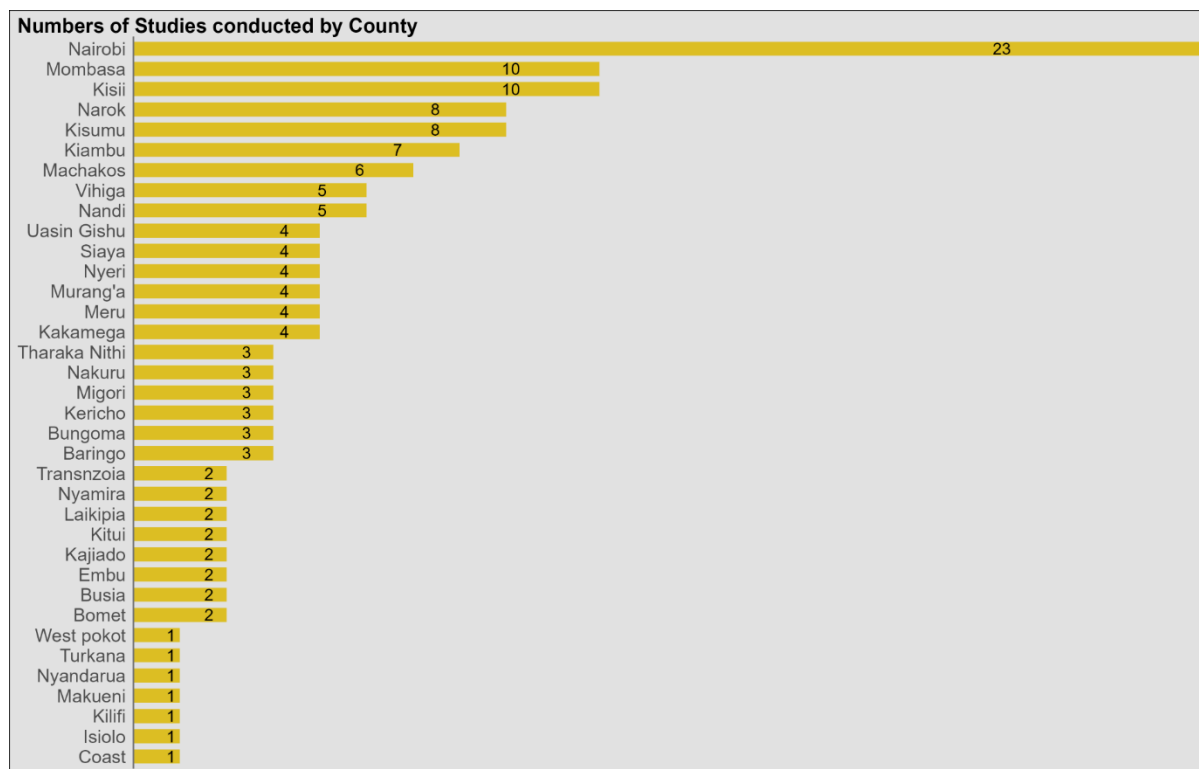
As Figure 6 illustrates, there is more foundational learning knowledge generated by universities for Nairobi, Mombasa, Kisii, Narok, and Kisumu. Nairobi hosts several universities and hence has more resources for research, more researchers than the other counties, and a large clustered population to study. Nairobi also offers convenience for data collection due to its size and, hence, the number of learners to sample from. A further explanation could be that Nairobi offers diverse demographic clusters of the population, and hence can be studied variedly. While it is not easy to verify why researchers prefer to focus on certain areas for data and knowledge generation, the question this trend raises is why university-affiliated studies use primary data covering small isolated areas (counties) when the same data exists for much broader areas (national data). One of the reasons could be a lack of awareness that the data exists, which creates an opportunity for evidence and data generators to publicise their data to increase users and uses. Another explanation could be the cyclical use of data, such that areas that have been studied before provide literature for review and researchers are then inclined to study the same areas.

4. Stakeholder mapping and evidence flow

This section identifies and examines the organisations, cultures, and politics that affect the generation, sharing, and utilisation of evidence in the foundational learning ecosystem.

4.1. The evidence ecosystem

The foundational learning ecosystem has an array of players who are classified into the following stakeholder groups based on broad areas that their work covers (see Figure 7 below).

1. Assessments — tests and other forms of assessment.
2. Policy and standards development — development of laws, standards, and regulations.
3. Evidence — generation of evidence, including implementation of innovations. This is further split into those stakeholders who have invested in values-based evidence.
4. Learning resources — generation of learning resources.
5. Curriculum and teacher training — development of curriculum, teacher training, and teacher professional development.
6. Infrastructure development — stakeholders whose main focus is the development of classrooms and school infrastructure.
7. School leadership — stakeholders involved in the role of school leadership and management in foundational learning.
8. EdTech initiatives — education-based technology, including software and platforms.

The concept of 'value education' has gained significant traction. Its design enables individuals to develop their social, moral, aesthetic, and spiritual aspects while also teaching them to protect and transfer their cultural values (⇡Cengizhan, 2021). We therefore conducted a trial to isolate organisations that focus on this emerging category of values (and life skills).

Notably, more stakeholders are in the category 'evidence', especially when 'values-based evidence' is included. We also note that although Figure 7 is a somewhat simplistic representation of stakeholder activities, stakeholders are often active in unique niche areas within each classification. In addition, some duplication should not be ignored.

Figure 7. *Stakeholders in the foundational learning space[11]*

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[11] The figure was developed using the information provided on the websites of the organisations. Figure 7 includes several acronyms for space reasons. All acronyms are listed under 'Abbreviations and acronyms' in this report.

4.2. Use of evidence in decision-making

The use of evidence about foundational learning in the policymaking process is rare, and regulatory frameworks are often slow to respond to emerging evidence (e.g., on 'what works') and technological advances. This absence of an evidence-based approach means policymakers use intuition, ideology, or conventional wisdom — or, at best, rely on theory alone, leading to policies that are not effective (⇡Banks, 2020). This disconnect between the data available and its actual use is a significant barrier to unlocking the true potential of data initiatives.

Identifying key stakeholders, organisations that produce evidence, and those that utilise evidence in their work or policy formulation was relatively easy. However, it was more difficult to determine organisations with whose data and evidence MoE officials engage meaningfully during policy formulation. One of the main reasons for this is that it is difficult to describe what 'effective engagement with the government' looks like.

To understand how the MoE uses evidence to inform policy, participants from key institutions, including officials from the MoE, in the foundational learning space were requested to **indicate whether they think evidence is used in decision-making**. The participants included MoE officials. It was made clear that decision-making means policy formulation, budgeting, and making other administrative decisions on education. While there is an agreement that the government collects evidence from the school level, using that evidence to make decisions is challenging because it varies based on the requested need. The interactions with evidence generators indicated that the lack of evidence use can be attributed to changing uses of the same evidence, suggesting that data collectors predict the data usage and, hence, adjust the evidence provided. For instance, county governments use data on the size of ECDE centres (other than those in established public schools) to determine the amount the centre pays for a business permit. This situation sends a signal to ECDE centre owners to underreport or not provide education officers with any data since they know the data will be shared with revenue officers. In other cases, the number of ECDE learners and centres is used to determine the employment or maintenance of ECDE field officers. As a demonstration of performance, the field officers inflate numbers by a certain margin every reporting period to justify their employment status. In terms of assessment, established schools, especially privately owned ones, tend to teach beyond what is prescribed in ECDE to show excellence in teaching as a marketing tool. Further, the stakeholders agreed that although evidence collected through Kenya Primary School Education Assessment (KPSEA) collected at Grade 3 and Grade 6 is used by the government for administrative purposes such as capitation and the distribution of textbooks, the same evidence is not used to assess achievement of literacy and numeracy skills at earlier years.

Another scenario is where subnationals send arbitrary (guessed) figures without actual collection of data because they view it as ministry-requested data and not

their data for their use, rendering the data unsuitable for decision-making. These scenarios illustrate the problems with the availability of data and evidence for decision-making — even where the data is available.

4.3. Flow of evidence and stakeholder experiences

This subsection documents how evidence flows between stakeholders and around the MoE as the policymaking organ on foundational learning. In Figure 8 below, the flow is classified as active (bold arrows) or passive (broken arrows). A bold arrow with arrows on both sides implies a strong bidirectional (active) flow of evidence, while a double, broken line implies a passive but unidirectional flow.

Figure 8. *Representation of active and passive flows of evidence between the Kenya Ministry of Education and other stakeholders.**
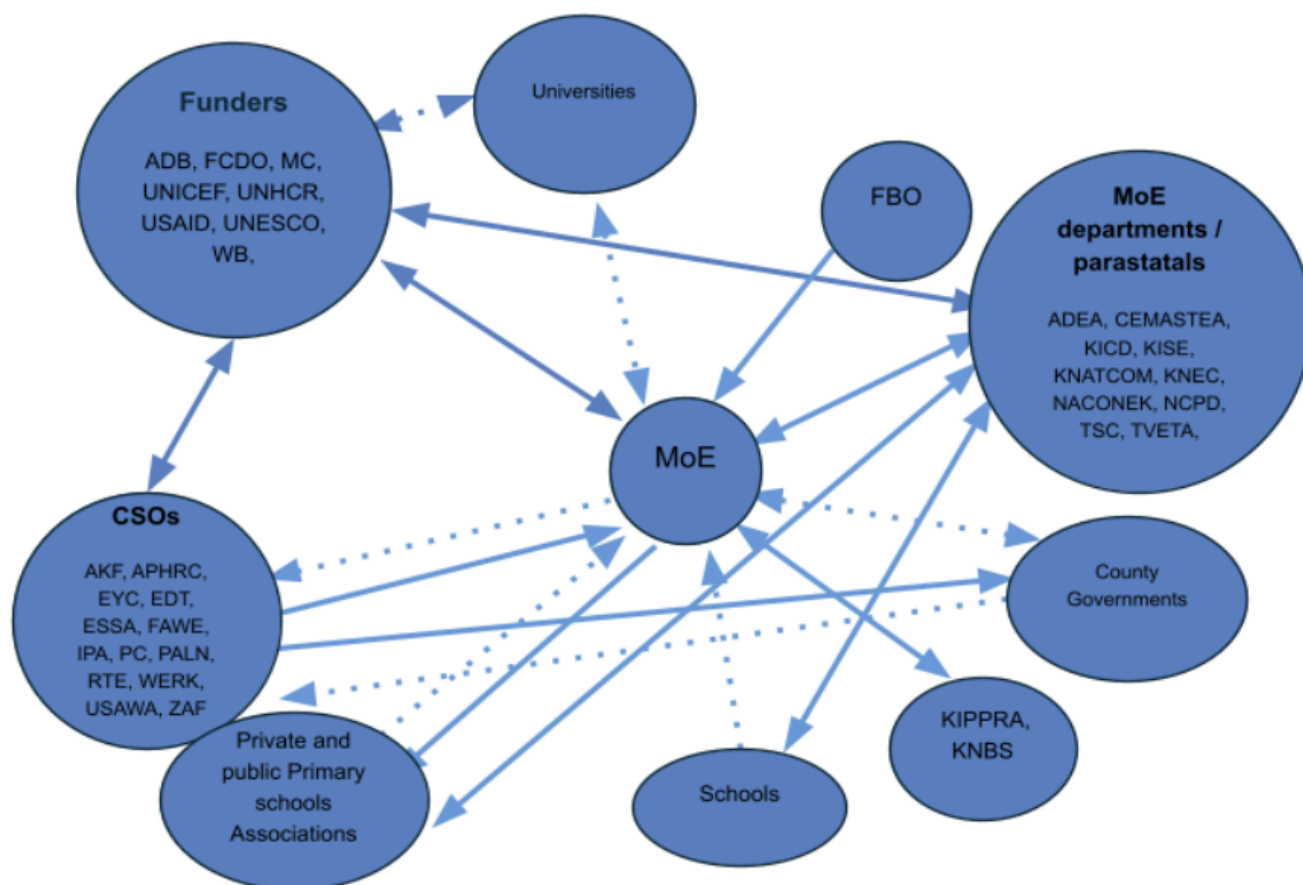
*Note: Acronyms and abbreviations have been used because of limited space. See 'Abbreviations and acronyms' for full forms.

Our analysis is based on stakeholders' perceptions of the flow of evidence within the ecosystem.[12] The mapping exercise established a strong unidirectional (active) flow of evidence between the MoE and the departments / Semi-Autonomous Government Agencies (SAGAs) associated with it (i.e., Kenya Institute of Curriculum Development (KICD), Teachers Service Commission (TSC), Kenya Institute of Special Education (KISE), Kenya National Examination Council (KNEC), Kenya National Commission for UNESCO (KNATCOM), Technical Vocational and Training Authority (TVETA), Centre for Mathematics, Science and Technology Education in Africa (CEMASTEA), Association for the Development of Education in Africa (ADEA), National Council for Nomadic Education in Kenya (NACONEK), National Council for Population Development (NCPD), Kenya National Bureau of Statistics (KNBS), and Kenya Institute of Public Policy and Research Authority (KIPPRA). In addition, the MoE and funders (UNICEF, United Nations High Commissioner for Refugees (UNHCR), the UK Foreign Commonwealth and Development Office (FCDO), Mastercard Foundation (MCF), USAID, UNESCO, World Bank, and Asian Development Bank).

The flow of evidence is also evident from funders to the MoE departments and parastatals. Uniquely, there is a weak unidirectional flow of evidence between the MoE and the universities. There is a notably disjointed flow of evidence between county governments and the national government. According to key informants, primary schools (under the national government) do not rely on results from the ECDE (under county governments). There is a separation of posts where a county has a County Director of Education (CDE, MoE), who is under the national government, and a County Government Director-ECDE (under the county government). Each of the County Directors holds on dearly to their data, and they hardly speak to each other. There is, however, a multiplicity and duplication of information, particularly regarding national players operating at the county level. For instance, the CDE separately holds similar information from basic learning institutions as the County Director of TSC, including the systems of submission to the respective headquarters that are not shared.

The mapping exercise also notes the ad hoc way evidence is collected, especially in schools. Due to a lack of standardised and agreed variables, the MoE (identified as the body that asks for evidence) asks for data at any time. Sometimes, this data is from the same head teacher and is repetitive.

> *"The ministry can ask for data on the number of learners per class, and then in the following week or month, they ask for data on the same learners by gender or date of birth. But since they cannot ask for gender only, they send a request with the number and gender, yet they have the numbers."*
> (Key Informant)

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[12] Not all stakeholders participated, and hence the analysis is based on those we were able to contact. Perceptions also change rapidly, and therefore this representation cannot be taken as a true position over time. However, it is useful as a snapshot of a general scenario.

Unlocking Data

Effective implementation of education policies requires a connection with classroom instruction, the commitment of local resources, and the integration of initiative into regular activities. Teachers and policymakers often have the same goals, but research shows that the implementation of new policies fails to work out as planned due to a lack of resources or political goodwill. Centralised policy initiatives are often disconnected from the reality of local educational practice. Insights from (↑Lipsky, 1969) indicate that teachers may also act as "street-level bureaucrats"[13] who are constantly called upon to interact with citizens in the regular course of their jobs; have significant independence in decision-making at their station, and have a potentially extensive impact on the lives of their clients. Their working conditions and capacity are strongly affected by inadequate personal and organisational resources, clear physical and / or psychological threats, and ambiguous, contradictory, and in some ways unattainable, role expectations. For policies to be effective, there is a need to establish connections between policy and these "bureaucrats", bearing in mind these characteristics and work conditions. Each policy has its sponsor, which may be the government or an NGO, and NGO sponsorship depends on the focus of their operations. For example, stakeholders engaged in higher education are more inclined to participate in higher education policies.

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[13] Street-level bureaucrats are those men and women who, in their face-to-face encounters with citizens 'represent' government to the people (↑Lipsky, 1969).

5. Levers of evidence flow in foundational learning

Although there is some level of evidence flow, it does not happen as regularly as it should for various reasons. These reasons include a lack of resources (financial and human) and insufficient demand for the actual use of data for evidence-based decision-making and policymaking. Other criteria like politics are used to support decisions, not evidence.

Another issue is data illiteracy, especially among key evidence generators such as teachers. Their inability to understand and interpret the evidence they collect in their day-to-day activities, such as error analysis in assessment, hinders the use of the evidence.

"*Most of the evidence I collect is asked for by my supervisor and I cannot analyse it in a way that I can use it for my administrative work.*" (Sub-National Key Informant)

Furthermore, the quality of data collected by unskilled personnel cannot be guaranteed. Barriers to evidence sharing, and particularly to data[14] within the ecosystem, were explored. The main barriers unearthed were chiefly organisational cultures of not sharing data and lack of capacity to share evidence, systemic barriers that included the politics of data, technical barriers, and lack of governance structures. The barriers are grouped in Figure 9 below, following (↑Sullivan et al., 2024).

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[14] There were indications of a lack of understanding of what constitutes evidence; hence most responses were related to data sharing.

Figure 9. *Enablers and barriers to data sharing in the Kenyan foundational learning ecosystem*
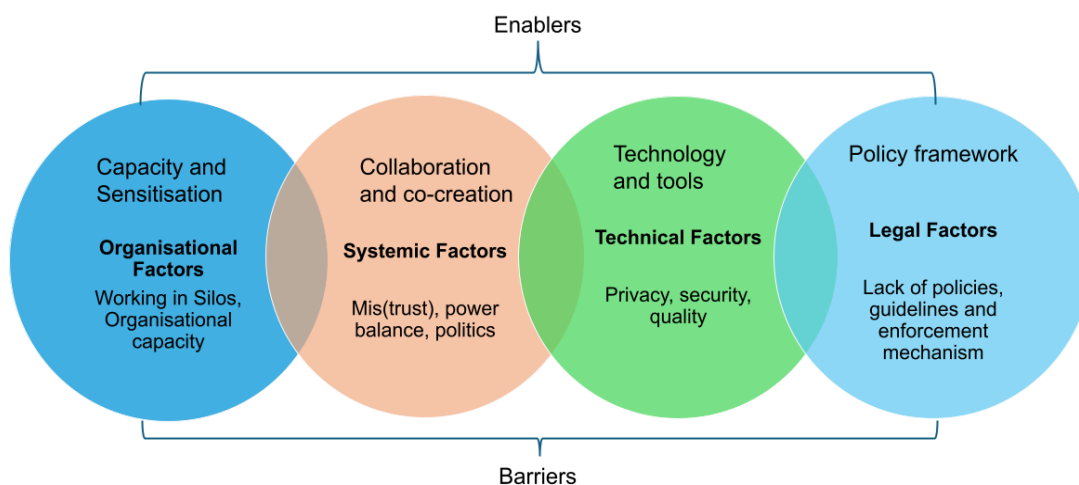
5.1 Socio-economic / organisational barriers

Socio-economic barriers include the failure to share research outputs. Many organisations do not consider sharing of research resources and outputs such as data as an important aspect as they tend to hold on to their data even after completing or closing out the initiatives, yet data should be a public good. Moreover, others create access barriers to such data. As a result, organisations are often left to deal with data access, curation, and usage challenges. In addition, institutions that fund data own the accountability to make data widely accessible and usable, hence, strengthening their role is critical to unlocking data's potential for public good. In most cases, existing governance frameworks that support research are not well-equipped enough to deal with the complexities of data sharing (⬆Kaye et al., 2018).

The most common organisational barrier in the ecosystem is **'working in silos'**, a practice that hinders the sharing and flow of data between and across stakeholders. This was partly attributed to a culture of not sharing and **'holding on to data'**. This culture is fuelled by the reasons for collecting data and evidence. Participants indicated that data changes depending on the data collector's rationale, e.g., there is substantial data on sanitary towels and capitation compared to other classroom data, yet they relate to the same learners.

Cultures that act as barriers also take the form of **secrecy or a lack of cooperation among institutions**, and can be related to institutional capacity. Capacity gaps were

identified in areas where evidence users cannot search for evidence, meaning that evidence could be made available for use, but the potential users are not aware of its existence. The evidence may also not be available in a format or system that is usable to users. In other cases, evidence in the form of data is available, but the users do not know how to put it into use.

Another organisational barrier is **the complexity of the policymaking process**. Policymakers must consider a range of factors when developing and implementing policies, including economic, social, and political considerations. This can make it difficult to identify and prioritise the most important evidence and ensure that it is integrated into the policymaking process meaningfully. Furthermore, respondents expressed the challenge of the **'last mile' of data and evidence that involves dissemination**. Most funding does not incorporate synthesis, dissemination, and sometimes analysis, leaving institutions with raw data. Funders continue to finance additional data-collection initiatives, disregarding the evidence generation and collection they have previously funded, which could contribute information to the new initiatives.

5.2 Systemic barriers

The lack of trust between stakeholders and complex power imbalances are two interrelated barriers (⬆Stewart et al., 2019). Respondents expressed uncertainty and concern about the fate of the data they generate once it leaves their organisations, creating a sense of 'loss of control', especially regarding the sharing of government data with non-state actors. This mistrust is attributed to not knowing the intended uses for the data. In many cases, trust in data sharing and fear of misuse is based on the power balance between the generator and the requester. For example, CSOs are comfortable sharing data with other CSOs and the government or government departments, but the government does not trust CSO data. There were reported fears of politicisation of data. In select instances, policymakers may cherry-pick data or research that supports their pre-existing beliefs or agendas rather than considering a range of evidence. This can lead to the distortion or manipulation of research to misrepresent a sector or form unjust policies, misusing data, using data for surveillance, and fitting political objectives rather than using it to inform policy decisions. On the other hand, some stakeholders, such as the government, feel CSOs may use the data to undermine political efforts, or that the data sample is not representative, or feel that the data or evidence does not align with the politics of the day, hence has no buy in.

5.3 Technical / capacity constraints

The technical barriers to data and evidence sharing in the foundational learning ecosystem identified by respondents relate to challenges surrounding data security and quality. The sub-category included stakeholders' concerns about data privacy

and security, as well as the technological challenges of ensuring privacy protection. The issues of data security are closely related to trust issues. Respondents indicated mistrust among organisations; for instance, there was a feeling that the government doesn't trust data from non-state actors, while non-state actors themselves do not trust their peer's database or question its validity. Security issues involve the intentional or non-intentional misrepresentation of data by requestors and the uses of the data requested. According to the respondents, the mistrust breeds more inefficiencies.

"It is not uncommon to find a headteacher with more than three requests from different entities of the same data from the same learner." (MoE respondent)

Concerning quality, there is also the challenge of availability and accessibility of high-quality research and data.

5.4 Legal constraints

The final barrier identified by respondents relates to legal issues involving the policies and regulatory frameworks governing data sharing. While a policy on data and information sharing exists, it seems more concerned with personalised data than data for general research and analysis. In other arrangements, data collection funders indicate in their contracts that the data cannot be shared. Consequently, organisations are often left unclear about what data can or cannot be shared and the associated risks.

6. Conclusion and recommendations

The main objective of this mapping exercise was to identify gaps, challenges and needs, similar data initiatives, and existing policies and guidelines on data access and sharing in the foundational learning ecosystem Kenya. The methods used for the exercise included desk review, key informant interviews, and workshops. Data research was conducted from various databases and repositories. Based on the mapping exercise the following recommendations are proposed.

1. The need to formulate a foundational learning policy

Despite the progress made in refocusing foundational learning, especially in the legal and regulatory framework, notable challenges remain, such as too many policies and regulations but none specifically addressing foundational learning. There have been concerns regarding inadequate infrastructure, overcrowded classrooms, insufficient teacher supply and quality, and iniquities in access to quality education across different regions and socio-economic groups. In addition, some laws are inconsistent in the framing, duplication of functions, and governance disputes over mandates and ambiguities. A policy of guidelines on promoting foundational learning would elucidate and provide a vision for supporting all learners irrespective of their background, besides refocusing interventions that promote the acquisition of these basic skills.

2. Embracing open data access and protocols for data sharing

Kenya is a signatory to the UNESCO 2012 Paris Declaration on Open Education Resources, hence all stakeholders in the foundational learning ecosystem, especially the MoE and its departments, need to embrace open data policy. This can be attained through the establishment of data governance structures such as data sharing agreements, establishment of data portals, and regular generation of education reports. Such structures will facilitate more uses of the data available. The MoE and its agencies can learn from the KNBS that has created a culture of sharing data and evidence with the public through its portal, including a 10% random sample of the census data. This has increased the utility of the data to inform further analysis and research.

3. Eliminate the barriers to data sharing

(a) Organisational barriers such as working in silos, a culture of not sharing data, and the absence of a dissemination or communication loop regarding data and evidence can be eliminated by fostering a culture of transparency and trust through regular dialogues and interactions between stakeholders to understand each other's perspectives, concerns, capacity, and data needs. Embracing co-creation initiatives should be encouraged to break the data silos and spur collaboration. Using

intermediaries (also called 'infomediaries') can be an important enabler for mediating data flows between data producers and users (individuals or research communities). Investing in capacity building of stakeholders, especially in data analysis and use, to improve data literacy and empower them to engage meaningfully with data is also needed, alongside the capacity to ensure data is conserved for future use, is reproducible and sharable, and that findings are reusable. Other funding mechanisms around data sharing incentives or mandates could also be explored to incentivise organisations to shift towards more open and transparent data practices.

(b) The technical barriers such as challenges surrounding data security, quality, and trust in data usage, privacy and security, as well as the technological challenges can be addressed through collaboration and co-creation.

(c) The systemic barriers identified can be overcome by establishing standardised data governance frameworks, including clear guidelines on data access, use, and sharing, with robust enforcement mechanisms. Funders should also demand the use of existing data and provide mechanisms for sharing the data they finance. Internally, the MoE should require the use of data in the development of policy and decision-making. In addition, promoting interoperability of data systems and building linked data repositories to facilitate data aggregation and sharing can overcome the power imbalance barrier. This includes harmonising data variables and using compatible data systems.

(d) New legal and policy frameworks that strike the right balance between privacy, security, and the public good must be developed to address these challenges. This could involve rethinking data ownership and rights, establishing clearer guidelines for appropriate data usage, and enhancing transparency and accountability around data access and use. Incorporating data-sharing agreements at the funding or engagement level can also help to address legal barriers and facilitate more open and collaborative data initiatives.

4. Change in culture and mind shifts

All the stakeholders in the foundational learning ecosystem must view data as a global public good to be shared. All elements of data and data systems must therefore incorporate a sharing component, making repositories interoperable, and changing university policies towards embracing data collected by other entities for use by academics and students as primary data. This ensures that their studies are credible and findings can be synthesised for decision-making.

5. A call for more research

The knowledge base in areas such as policy and financing, students' learning and assessment, and information and communication technologies is sparse. This calls for a discussion with researchers and research funders to ensure that evidence covering all the areas of the foundational learning space is made available and

accessible, and also to commit resources to continuously generate data through the system to inform actions by stakeholders. For instance, the CBC provides a greater opportunity for the MoE and its agencies supported by partners to adopt research schools that vigorously test the elements of the curriculum while also providing feedback on how to improve its implementation.

6. Disaggregation of research by inequality measures

As the mapping exercise demonstrates, most of the knowledge generated is not disaggregated by learner gender among other equity measures. Disaggregation, especially by gender, enables understanding of trends and patterns but, more importantly, helps develop targeted interventions and policies.

In conclusion, unlocking the value of data for the public good calls for a multi-stakeholder and multipronged approach that addresses institutional, systemic, technical, and legal barriers. The full potential of foundational learning data can only be realised through a collaborative framework that incentivises the drivers of data sharing by building trust, balancing power, and addressing privacy and security concerns through an inclusive data governance model.

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Annex 1: List of the data systems reviewed

Entity	Data system	Data	Accessibility**
1. National			
MoE	Kenya Education Management Information System (KEMIS) **formerly NEMIS**	Student enrolment data, examination results data (**literacy and numeracy**), and teacher data, curriculum data, special education data, attendance data, dropout and retention data, school safety and security data	No
Kenya National Examinations Council	National Assessment System for Monitoring Learner Achievement (NASMLA)	Learner assessment data (**Numeracy and Literacy**), school background data, learner background data, teacher data, assessment instruments, learner progress data, policy impact data	No
	Kenya Primary School Education Assessment (KPSEA)	Student data, subject scores (**literacy and numeracy),** teacher data	No
	Candidate Registration System	Candidate details, subject choices, special needs requirements	No
	Results Transmission System	Examination results and mark sheets	No
Teachers Service Commission	Teachers Management Information System (TMIS)	Teacher identity, name, qualifications, certification status	No
	Teacher Performance Appraisal and Development (TPAD) System	Teacher details, teacher performance appraisal data, areas for improvement, professional development needs	No
	Teacher Deployment and Transfer System	Teacher details and transfer history	No
Kenya Institute of Special Education (KISE)	Organisations data library	Student identity, type of disability, support services, educational progress, teacher training records	No
Kenya Education Management Institute (KEMI)	Education Management Information System (EMIS)	School Identity, management practices, performance metrics, monitoring dates, improvement actions	No
KNBS	KeNADA	KNBS data sets	Yes
ICT Authority of Kenya	Kenya Open Data Initiative	Enrolment data by gender for all private primary schools in Kenya by county, enrolment by residence, Population, 3 years and above by Sex and Highest Level of Education Reached up to District Level — 2009, number of	Yes

Entity	Data system	Data	Accessibility**
		overloaded desks in **primary schools** per county	
Kenyatta University	Kenya Education Research Database	Basic education research in Kenya and searchable by education levels	Yes
County Governments	Excel spreadsheet	Data on ECDE learners, teachers, and infrastructure	No
Other Data holders			
2. International*[15]			
Kenya Red Cross	Humanitarian Data Exchange	List of schools in Kenya (primary, secondary, and tertiary) and education facilities.	Yes
UNICEF	UNICEF data	Pre-primary, primary, secondary, learning and skills, remote learning and digital connectivity	Yes
UNESCO	UNESCO Institute for Statistics	Education indicators for Kenya. Contains data from the UNESCO Institute for Statistics bulk data service covering the following categories: SDG 4 Global and Thematic (made 2024 February), Other Policy Relevant Indicators	Yes
World Bank	World Bank Open Data (edstats)	Student ID, assessment dates,(**Grade 2 literacy and numeracy scores)**, learning levels, demographic information, project ID, activity logs, progress metrics, milestones, implementation challenges	Yes
World Bank	Data catalog	primary and secondary schools locations.	Yes
Code for Africa (CfA)	openAfrica	Record of primary schools in Kenya (2013) with details on: name, constituency, ratios on boys / girls, teaching staff,type e.g., day / boarding, mixed, public or private	Yes
World Bank	Energydata.info	Comprises primary and secondary school locations in Kenya.	Yes
Education Sub Saharan Africa (ESSA)	Research / Knowledge database	All research materials on education	Yes
	SUBAK data catalogue	School locations in Kenya. It comprises Primary and Secondary Schools	Yes
3. Other data			
PAL Network	Early Literacy and Numeracy Assessment (ELANA)	Learner progress in literacy and numeracy, school profiles, school management profiles, teacher allocation data	Yes

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[15] There are organisations that have invested in data and evidence on foundational learning such as RTI, fhi360, EDT, AKF, and ADEA among others. Other dataset are with programmes such as KPEEL in the MoE, and Uwezo. Although their data is cited in various publications, it is not openly accessible.

Entity	Data system	Data	Accessibility**
USAWA Agenda	Foundational Literacy and Numeracy Assessment (FLANA)	Learner progress in literacy and numeracy, school profiles, school management profiles, teacher allocation data	Yes
Zizi Afrique Foundation	Organisation Microdata	Learner grade, learner progress in literacy and numeracy	Yes
Teaching at the Right Level (TaRL)	Organisation Microdata	Learner name, age, grade, gender, learner progress in literacy and numeracy	Yes
RTI (Tusome)	Organisation microdata	Learner name, age, grade, baseline and endline assessment data on literacy and numeracy, progress monitoring on literacy and numeracy, attendance data, training session identity, dates, content covered, participant records, pre- and post-training assessment scores	Yes
EIDU	Organisation microdata	User identity, name, age, gender, school identity, role (student / teacher), registration date, student identity, assessment scores (literacy, numeracy), learning levels, date of assessment, monitoring data of learners	Yes
APHRC	Organisation microdata	Learner literacy and numeracy levels	Yes
RELI	Organisation microdata	Learner literacy and numeracy levels	Yes

These organisations get their data from the Kenya National Bureau of Statistics
**Accessibility implies unrestricted availability of data sets

Annex 2: Key informant interview (KII) guide

Instructions to the interviewer:

· Introduce yourself to informant and state the purpose of the study

· **Disclose the content of the informed consent form and obtain consent**

· Make sure that the voice recorder works properly and that the place is quiet and discrete

· Start the discussion!

General information:

1. Name of the interviewer: _____

2. Date: ___/___/___/

3. Country (Customize based on the levels of governance):_____

4. Informant Type: 1= Ministry official; 2 = Donor; 3 = Decentralized local authority; 4 = Researcher in FLN; 5 = CSO lead; 6 = community leader; 7 = parent; 8 = school administrator; 9 = teacher; 10 = other (specify)

5. Gender of informant: 1=Male; 2=Female

6. Is the informant an 1= Evidence producer 2= Evidence User

Part I. Opening Questions (Building Rapport)

7. Could you please describe your role and responsibilities within your organization/institution/community?

8. How does your work/organization connect to education, specifically foundational learning (basic literacy and numeracy)?

Part II. Key Questions (Exploring Core Topics)

● **Data Collection and Management**

9. What specific types of data related to foundational learning does your organization collect? *(e.g., assessment results, attendance records, teacher qualifications)*

10. Can you elaborate on why those specific types of data are prioritized for collection?

11. Is the data stored in a system? *(probe whether the data is accessible and reasons behind the response)*

12. Who are the main consumers of your data?

13. What are the potential consequences of not having access to certain data?

14. What are the primary challenges you face in collecting and managing this data? (probe too along capacity gaps).

15. Are there any formal agreements or processes in place for sharing data?

16. Do you think the foundational learning data is used within your organization to inform decision-making? *(probe areas where this is used)*

17. Are you aware of an institution that uses your data for decision-making*? (probe areas where this is used)*

● **Needs and Challenges**

18. Are there any major barriers that prevent you from accessing or using foundational learning data effectively?

19. How can these barriers be addressed?

20. Are there any informal practices or workarounds you use to address data gaps?

21. How does the political context influence decisions about foundational learning data in education?

Part III. Closing Questions (Summarizing and Expanding)
  22. Is there anything else you would like to share about foundational learning data in Kenya?

Annex 3: Focus group discussion (FGD) guide

Introduction (5 minutes)
  ● **Welcome and Introductions:** Welcome participants, thank them for their time, briefly introduce yourself and your affiliation.
  ● **Purpose of the FGD:** Explain that the goal is to gather insights and perspectives on how foundational learning (FLN) data is collected, shared, and used to inform policy and practice.
  ● **Ground Rules:** Establish ground rules for the discussion (e.g., confidentiality, respect for diverse opinions, active participation).
  ● **Informed Consent: Explain content of informed consent form and obtain consent**

Key Discussion Topics (45–50 minutes)

Common definition
  1. What comes to mind when you hear the term "foundational learning data"? *(This allows participants to share their definition and understanding of foundational learning.)*

Data Collection
  2. *(Referring to their data collection templates which they had been asked to carry along where applicable)* Based on the templates, What are the main variables related to foundational learning that you think are important to collect data on? (Limit your answers to five)
  3. What are the current practices and challenges in *collecting* foundational learning data?
  4. Who are the main actors involved in collecting foundational learning data? (*Categorise collectors and users)*

Data Sharing
  5. On a scale of 1 (most restricted) to 5 (most fluent) how would you rate data flow/sharing in the foundational learning ecosystem? *Explain your rating*
  6. What are the barriers that prevent effective data flow/sharing? (e.g., lack of trust, technical limitations, policy restrictions)
  7. What incentives/enablers can be put in place to improve the data flow/sharing?

Data Utilization
  8. Which **policy/strategy/framework** etc are you are of that utilized foundational earning data?
  9. What are the challenges in using data to inform policies and practices?

10. What steps could be taken to encourage greater collaboration and sharing between different actors? (e.g., establishing common data standards, creating data sharing platforms, building trust through transparency)

Wrap-Up and Closing (10 minutes)
- **Summary and Reflections:** Briefly summarize the key points raised during the discussion.
- **Open Floor:** Invite participants to share any final thoughts or questions.
- **Appreciation:** Thank participants for their valuable contributions and time.