

UNDERSTANDING WHOLE CHILD DEVELOPMENT

IN THE CONTEXT OF URBAN INFORMAL SETTINGS IN NAIROBI, KENYA | MARCH 2021

eUSAWA AGENDA

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Contents



1
Forward



3
Acknowledgements



9
Early Years of Development in Kenya



13
Study Methods



41
Conclusion



42
Recommendation



5
Executive Summary



7
Introduction



17
Results



38
Discussion





43
References

List of Tables

Table 3.1 Summary of measures for Whole Child Development 8
Table 4.1 Ownership of mapped centres 12
Table 4.2 Enrolment by gender and ECDE level and type 13
Table 4.3 Number of learners assessed by centre type 16
Table 4.4 Ownership of centres participating in the WCD study 17
Table 4.5 Registration status with MoE by centre type 18
Table 4.6 Attendance by level, gender, and centre type 18
Table 4.7 Gender of ECDE teachers by type 20
Table 4.8 Teachers' highest level of education by ECDE type 20
Table 4.9 Highest professional training of ECDE teachers 20
Table 4.10 PTR levels by ECDE type and sub-counties 21
Table 4.11 Teachers' highest professional certification by ECDE type 22
Table 4.12 Teachers' main curriculum of ECDE training by centre type 23
Table 4.13 Perception of teachers' preparedness by centre type 24
Table 4.14 Frequency of updating work and health records centre type 25
Table 4.15 Means of transport to school among ECDE teachers' by centre type 26
Table 4.16 Availability of playground by centre type 26
Table 4.17 Security measures and friendliness of the environment by centre type 27
Table 4.18 Availability of play materials by centre type 27
Table 4.19 Provision of workbooks in different learning areas by centre type 28
Table 4.20 Enforcing health habits and regulations by teachers 29
Table 4.21 Regular teacher-parent meetings before and during Covid-19 30
Table 4.22 Classroom facilities by centre type 31
Table 4.23 Availability of seating and writing spaces for learners by centre type 32
Table 4.24 Proportion of centres with conducive learning environment based on different aspects by type 32
Table 4.25 Types of toilet by centre type 33
Table 4.26 Main source of drinking water at the ECDE centre 34
Table 4.27 Proportion of ECDE feeding programmes by type and sub-county 34
Table 4.28 Sponsors for the feeding programmes in Nairobi informal settlements 35
Table 4.29 Household background characteristics by centre type 35
Table 4.30 Opportunities for early learning while at home by centre type 37
Table 4.31 Type of homework support by centre type 37
Table 4.32 Pre-numeracy and executive functioning assessment skills 38
Table 4.33 Pre-literacy assessment skills 40
Table 4.34 Mean scores in the various domains by centre type 42
Table 4.35 Score in the various domains by gender 42

List of Figures

Figure 2.1 Distribution of Nairobi population by sub-county (KNBS, 2019) 4
Figure 4.1 Distribution of ECDE Centres reached by sub-county 11
Figure 4.2 Spread and distribution of mapped ECDE centres by type 12
Figure 4.3 Gender parity index 14
Figure 4.4 Existence of Board of Management 15
Figure 4.5 Centre level final decision maker 15
Figure 4.6 Proportion of caregivers of sampled learners reached 17
Figure 4.7 Inclusion of learners with special needs or refugees 19
Figure 4.8 Teachers' age distribution by ECDE type 22
Figure 4.9 Teaching years of experience 23
Figure 4.10 Availability of work and health records 25
Figure 4.11 Teachers perception of the friendliness of the ECDE environment by Centre type 27
Figure 4.12 Sources of learning materials by centre type 29
Figure 4.13 Percentage of parents/guardians of the learners engaged by centre type 30
Figure 4.14 Proportion of teachers assessing learners on the three core domains by centre type . 31
Figure 4.15 Pupil toilet ratio 33
Figure 4.16 Frequency of telling stories at home by centre type 37
Figure 4.17 Pre-numeracy and executive functioning mean scores 39
Figure 4.18 Pre-literacy domains mean scores 40
Figure 4.19 Social-emotional domain mean scores 41
Figure 4.20 Gross motor mean scores by centre type and gender 42



Abbreviations

APBET	Alternative Provision of Basic Education and Training Policy
BEQI	Brief Early Quality Inventory
BOM	Board of Management
CBC	Competency Based Curriculum
CBO	Community based Organization
DICECE	District Centre for Early Childhood Education
ECD	Early Childhood Development
ECDE	Early Childhood Development and Education
ECE	Early childhood Education
EMIS	Education Management System
FBO	Faith Based Orgnanizations
IDELA	International Development and Early Learning Assessment
KICD	Kenya Institute of Curriculum Development
KNBS	Kenya National Bureau of Statistics
KSRAT	Kenya School Readiness Assessment Tool
LFPS	Low Fee Private Schools
MELQO	Measuring Early Learning Quality and Outcomes
MoE	Ministry of Education
MoEST	Ministry of Education, Science and Technology
NACECE	National Centre for Early Childhood Education
NACONEK	National Council for Nomadic Education in Kenya
NGO	Non-Governmental Organization
PP1	Pre-Primary One
PP2	Pre-Primary Two
PTR	Pupil Teachers Ratio
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
WCD	Whole Child Development



Forward



Are the pre-primary school centres the nurseries where inequities in education in Kenya are nurtured?

It is widely acknowledged that school readiness is an important education policy issue[1], owing to its implications for school attendance, retention, transition and learning outcomes. This wide recognition of the value of early childhood education is, however, starkly contrasted by the following four facts as outlined by the Global Partnership for Education (GPE)[2]:

1. Only 1 in 5 young children in developing countries is enrolled in pre-primary education.
2. The poorest children are 7 times less likely than children from the wealthiest families to attend pre-primary school.
3. 40% of countries with data allocate less than 2% of their education budgets to early childhood education.
4. Less than 1% of aid to education is invested in pre-primary education.

In Kenya, the national government has implemented many policy reforms to improve the status of ECDE in the country. These include the recently rolled out competency-based curriculum (CBC) that makes early childhood development education (ECDE) a mandatory part of the 5 early years' education and therefore part of the free and compulsory basic education. The CBC also includes a robust role for parents/guardians in the children's education. On paper, the policy speaks to the WCD concept in early childhood education. In practice, however, there are significant gaps between policy and practice. For instance, in the most recent Uwezo learning assessment carried in 2021, we found that 3 in 10 children of pre-primary school age are out

1 Sharon Wolf, Peter Halpin, Hirokazu Yoshikawa, Amy Jo Dowd, Lauren Pisani and Ivelina Borisova (2017). Measuring school readiness globally: Assessing the construct validity and measurement invariance of the International Development and Early Learning Assessment (IDELA) in Ethiopia. Early Childhood Research Quarterly. 41, 21–36.

2 https://www.globalpartnership.org/content/global-partnership-education-factsheet

of school, and 3 in 10 children enrolled in ECDE are overage contrary to the government policy. Similarly, there were many children of pre-primary school going age already enrolled in primary schools without having attended preschool[3].

These gaps are expected to be starker in urban informal settlements, where most children attend the alternative provision of basic education and training (APBET) centres due to lack of access to the better structured public and high cost private schools. Government policy on APBET has been fluid making it difficult for county governments (constitutionally charged with implementing ECDE), to plan and support children attending these centres. The Basic Education Act 2013 places APBET schools, including preschool centres under the regulation of the National Council for Nomadic Education in Kenya (NACONEK), whose core focus is on nomadic education.

APBET schools fill a huge void left by inadequacy of public primary schools in urban informal settlements. Nairobi County has an ECDE centre going population of 263,792 children as per the 2019 national population and housing census[4], against 225 ECDE centres. It is important to note that besides their limited number, most of these centres are located in the more affluent parts of the city, making them inaccessible to most children in Nairobi, who live in the informal settlements and are thus physically far removed. It is also instructive that the Sessional paper number 1 of 2019, a key policy document in education sector, mentions APBET only once and only by way of recognition that some children attend those schools. The paper doesn't provide any clarity on how the government intends to treat APBET providers and learners attending these schools. Yet most of these children come from households that are socio-economically vulnerable. This vulnerability has been compounded by the covid-19 crisis at the expense of the children. Yet the ECDE centres they attend are equally vulnerable. Most of them stand on public land and risk demolition at all times, besides the other challenges that they face including funding and qualified personnel constraints.

The key question that arises from the foregoing discussion is: what does the combination of vulnerable households and vulnerable learning centres do to the opportunities for the children in those communities to realise WCD? This survey sought to grapple with this question. The study reviewed the models of ECDE delivery in these APBET centres to determine their adequacy or otherwise in ensuring WCD of their learners. It also mapped out the vertical and horizontal linkages that these actors have within and beyond the informal settlements they operate in and analysed the constraints faced by various actors to determine which ones are more generalized and could be addressed by external policy and programming intervention, and which ones are organization-specific, requiring internal resolution.

The assessment of the drivers of whole child development among children in the informal settlements in Kenya report could not have come at a better time. It comes as we count down the last decade of two important national and global education aspirations. The world is counting down the last decade of the global agenda 2030 whose educational aspiration as articulated in the SDG 4 is to: "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.[5]" Simultaneously, Kenya is also counting down the last decade of the grant national Vision 2030, in which education is considered one of the main enablers of national development. The overall educational goal of Vision 2030 is: offer Kenyans a globally competitive, quality and relevant education and training. This report also comes out as the country marks the end of the first decade of devolution of ECDE to the counties.

It is my expectation that everyone who reads this report, whether through the lenses of the national goals of education, or the global vision of equitable quality education for ALL, will find it worth of dispassionate engagement with. The data upon which this report is based will also be shared once we have gotten the right advice on how to do it without breaching the data protection law that recently came into effect in Kenya. Once we share the data, we will encourage academics, graduate students and other researchers to mine it for non-profit courses, to generate further engagement and enhance its utility.

Emmanuel Manyasa
Executive Director – Usawa Agenda

3 Uwezo (2016). **Are Our Children Learning**? Uwezo Kenya Sixth Learning Assessment Report. Nairobi. Uwezo Kenya.

4 Republic of Kenya (2019), 2019 Kenya National Population and Housing Census, Vol IV: Distribution of population by Socio-Economic Characteristics, Government Printer, Nairobi.

5 Emphasis added

Acknowledgement



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It took a massive, dedicated team to pull off this survey. To all those whose names we couldn't list here, accept our heartfelt gratitude and know that literally, we could not have done it without you. We continue to be inspired by all who unwaveringly work every day to secure the future of our children and that of the country through education.



Executive Summary



This study examined the Whole Child Development (WCD) approach in the context of urban informal settlements. To achieve this, it was implemented in two parts: First by understanding the major players and actors in the provision of Early Childhood Education (ECE) in urban informal settings, and secondly through a focused study. The focused study utilized a random sample of centres participating in the mapping exercise to extensively examine the WCD approach. The study was cross-sectional and utilized a mixed-methods approach: Survey questionnaires and whole child assessment adapted from international tools. The following findings emerged:

Key results of the mapping ECDE actors in Nairobi

1. The mapping exercise reached 2072 centres spread across the 11 sub-counties - 7% public and 93% non-public. Among the non-public, 66% were owned by individuals while a further 17% were run by the communities and 18% by NGO and FBOs.
2. Five in every six children in the mapped centres were attending private ECDEs. Indeed, the private ECDE centres had enrolments of over 100,000 learners and thus reduced a huge supply gap left by the inadequate public provision.
3. The average centre size was 55 learners in the non-public centres while in the public centres it was 132. There were more girls enrolled in non-public centres that had a gender parity index (GPI) of 103%. The public centres had a GPI of 98%, indicating a slightly higher enrolment of boys than girls.
4. Only 50% of the non-public centres were reported to have registered with the Ministry of Education, while nearly all the public ECDEs had been registered with the Ministry.
5. Further examination of the management of the ECDE centres showed a majority of the private ECDEs did not have a functional board of management that was duly constituted as directed by the Ministry of Education.

Summary of findings from WCD study

1. There was a high attendance among learners as reported by the schools. The attendance did not vary significantly by the centre type
2. Only one-third of the centres included learners with special needs and/or refugees.
3. The majority of the teachers (82%) in both ECDE centre types were female. While a good proportion of the teachers were trained, 11% of them did not have any professional training; this was common among the public ECDE centres at 19.4% as compared to 10% in the private ECDE centres.

4. The pupil-teacher ratio in both ECDE types was low with an average of 28.8% in public and 14% in the private.
5. Among the public ECDEs, 52% had a playground that they were exclusively using as compared to 31% of the private ECDEs.
6. The private ECDEs had the lowest provision of workbooks in all the learning areas with parents being the main providers.
7. Teachers reported a very low parental engagement in both ECDE types, with 48% and 42% of them engaging with at least 70% of the parents of the learners they teach.

Home environment

1. In both ECDE types, 45% of the households reported they solemnly told stories to their children.
2. Three in every four households were helping with homework activities including singing, colouring and playing with the child.
3. Parents with children in private ECDEs were likely to check on homework (89%), communicate with the child's teacher (68%), and sign diaries (62%) as compared to 79%, 49%, and 31% of parents with children in public ECDEs respectively.

Learner WCD Assessment

1. Overall, the learners performed well in the various domains tested: executive functioning, pre-numeracy, pre-literacy, social-emotional, self-awareness, and gross-motor.
2. Learners performed well in the pre-numeracy activities, scoring over 90% of the tasks in this domain, with an exception of puzzle completion (59%).
3. In pre-literacy, expressive vocabulary was highly performed and while listening comprehension had the lowest scores of 75%.
4. Learners showed a high degree of socio-emotional and gross motor development based on the results of the assessment.
5. Other than pre-numeracy, the other domains did not differ significantly by school type. There were also no gender differences in all the domains.

Recommendations

- The government should extend efforts to register and regulate ECDEs in informal settlements, and possibly construct and equip public ECDEs that provide quality learning environments.
- There is a need to create connections and linkages between parents and schools, particularly with teachers to nurture the learners holistically.
- Empowering parents to support the learners, particularly in promoting the whole child development and early learning is critical and of priority



1. Introduction



The purpose of this report is to present the findings from an assessment of Early Childhood Development and Education (ECDE) in Nairobi, Kenya from a survey conducted between June and July 2021. The report also presents the models of Early Child Development (ECD) in informal settlements for an in-depth understanding of WCD in these settings. The early years of development, and particularly, the first five years, form a critical part of human development. These years are characterized by the rapid development of the brain (Haartsen et al., 2016), while at the same time being very responsive to early experiences and environments (Tierney & Nelson, 2009). Thus, experiences during the early years of development are crucial and have a bearing on early learning, schooling, and potentially their future wellbeing. For this reason, the emphasis on improving comprehensive early childhood care and education has gained prominence (Melhuish et al., 2015; Richter et al., 2017).

Child development is viewed in terms of the changes that occur as the child transits from early years into teenage (Balasundaram & Avulakunta., 2021; Richter et al., 2017). These changes are either behavioural, psychological or biological and measured in early years mainly in terms of acquisition and development of language, cognitive skills, social-emotional skills, and motor skills, commonly known as domains (Kagitcibasi, 2004). The acquisition and development of these domains are influenced by various factors that either act alone or interact (Tierney & Nelson, 2009). These factors can be broadly classified as either biological or environmental.

Early childhood development and education (ECDE) remains one of the major ways to instil the various developmental domains and prepare learners for schooling (Richter et al., 2017). That is, over time, ECDE programs have evolved to ensure the formation of a holistic foundation that promotes children's wellbeing and positive experiences

(Black, Walker, Fernald, Andersen, DiGirolamo, Lu, McCoy, Fink, Shawar, Shiffman, Devercelli, Wodon, Vargas-Barón, Grantham-McGregor, et al., 2017). Furthermore, ECDE can be an essential tool for bridging potential differences associated with diverse environments to which children are exposed and promoting school readiness (Black, Walker, Fernald, Andersen, DiGirolamo, Lu, McCoy, Fink, Shawar, Shiffman, Devercelli, Wodon, Vargas-Barón, Grantham-McGregor, et al., 2017). To this end, investments in the early years have been noted to have both short and long term benefits that can lead to positive returns in education, economic, social and health wellbeing (Sayre et al., 2015; Vegas & Santibáñez, 2010). Thus the role of ECDE and related programs cannot be overemphasised. In Kenya, ECD is construed as from conception to the age of 8 years (Republic of Kenya, 2006). The competency-based curriculum envisions that ages 4 and 5 are spent in ECD centres.

To this end, Usawa Agenda conducted an analysis of the status of ECDE in the informal settlements in Nairobi County and how they promote WCD.

The study aimed at determining the contribution of the legal and policy frameworks and actors to the WCD of children attending ECDE centres in Nairobi County. This was achieved by first mapping and understanding the actors and then drawing a sample of ECDE Centres for a detailed examination of WCD. Since the WCD encompasses various elements and stakeholders, the implementation of this study was elaborate and included the formation of a technical committee to guide it, specifically, on the development of assessment tools.

The successful development and implementation of the study involved close engagement with technical committee members. The technical committee was drawn from officials in the Ministry of Education, the National Assessment Centre, the Kenya Institute for Curriculum Development and practitioners (ECDE teachers). The committee had unique expertise and understanding of ECDE provision in Kenya, local conditions including the curriculum, policy framework as well as grounding in the requirements for learners and ECDE Centres.



2. Early Years of Development in Kenya



This section provides an overview of two key areas that largely overlap and are of interest in this study: whole child development and early childhood development and education in the context of Kenya. The chapter provides an overview of the development of two areas in Kenya, highlighting key challenges and opportunities to support children reach their developmental potential.

2.1 Whole Child Development in Kenya

The whole child development approach centres on the cognitive, mental, social, emotional, and physical development of the child (Slade & Griffith, 2013). These domains form a basis for evaluating whether the child is developing holistically right from conception, through birth, and early years of development (up to 8 years). According to Association for Supervision and Curriculum Development (ASCD) in the USA, WCD moves beyond the heavy focus on academic achievement, a traditional approach adopted in Kenya, to encompass these other domains of development. Globally, the WCD is gaining traction, with initial focus from the mid-2000s as serialised by the Lancet, underscoring the need to support up to 250 million children who were at risk of not reaching their developmental potential (Lake, 2011). However, in the Lancet series, developmental potential is centred around nutrition, stimulation, and physical development of the child which has a bearing on the cognitive development and schooling of children (Daelmans et al., 2017). More recent development focus on the nurturing care framework that promotes holistic development of the child through nutrition, health, responsive caregiving, security, safety and early learning (Black, Walker, Fernald, Andersen, DiGirolamo, Lu, McCoy, Fink, Shawar, Shiffman, Devercelli, Wodon, Vargas-Barón, & Grantham-McGregor, 2017). The

framework emphasises the need to promote positive experiences during the early childhood years of development as foundations for success during adolescence through adulthood.

With the development of the nurturing care framework, the concept of WCD is taking shape globally including in Kenya. While the 2006 National ECD framework underscored that all children have the same developmental needs ranging from nutrition, health, stimulation and care among others, the provision of the needs varied (Republic of Kenya, 2006). As a result, children were grouped in terms of their age which defined the responsibilities and mandates of the respective ministries and entities. The initial focus and efforts in Kenya were thus disjointed, with the Ministry of Health focusing on children under the age of five and more so just on their nutrition, health, and maternal outcomes on the one hand. On the other hand, the focus of the Ministry of Education and devolved units related to the educational needs of children from the ages of four. The parents are expected to provide the child with their daily living, care, and support – without any legal framework, awareness creation and support.

Despite little progress made in addressing these disjointed efforts that do not promote whole child development, there are ongoing positive discourses. The recent developments underscore the child as central to the efforts of the different players (stakeholders) and thus aim to explore coordinated opportunities that promote the whole child. To this end, the 2006 ECDE policy is currently undergoing review to offer guidance on how to implement and promote the development of a holistic child. The policy defines a child as an individual aged between 0 and 8 years and provides a broader scope for supporting children to develop right from home to pre-school and early years of schooling. The revision envisages creating linkages and overlaps with the National Pre-Primary Education Policy of 2017 which provides directions on the education and training services for preschool learners, and where WCD is heavily placed (MoE, 2017). The pre-primary policy has been instrumental in guiding counties on the provision of ECD with a focus on teacher training, early stimulation and learning and provision of services and programs such as school feeding to pre-schoolers.



2.2 Early Childhood Development and Education in Kenya

Basic education according to the Constitution of Kenya 2010 is recognized as a human right of every child where they are entitled to receive free and quality education regardless of their social conditions, gender, regional background and disabilities, as enshrined in Article 53 (1) of the constitution of Kenya (Laws of Kenya, 2013). The Government has mainstreamed the policy to implement free and compulsory pre-primary education for all 4 to 5-year-olds. One of the most recent policies is the Basic Education Act of 2013 which repealed the Education Act of 1980 (last revised in 2012). This Basic Education Act was formulated to help streamline the provision of education in institutions of basic education, in line with the 2010 Constitution. The implementation of the Act has resulted in a significant increase in enrolment of learners, especially in the early year grades. For instance, according to MOE statistical booklet 2016, the number of ECDE centres increased from 40,775 in 2015 to 41,248 representing a 1.2% growth in 2016 while the average size of a centre maintained an average of 78 (85 in public centres and 66 in private); ECDE enrolment increased by 1% between 2015 and 2016 slowing down from a growth of 4.9% between 2014 and 2015 (MoE, 2016).

Since 2003, when the government made basic primary education a must and free, the education sector has gone through a significant transformation that has led to improvement in learning. For instance, free primary education led to a significant increase in enrolment in all parts of the republic (Abuya et al., 2015; Muyanga et al., 2010). Another significant change was experienced after the promulgation of the new constitution in 2010. The constitution guaranteed free and compulsory basic education for all. Under the constitution operationalized through related legislations (basic education act of 2013, Sessional paper 1 of 2020 among others) the government is mandated to make provisions for equitable, quality education to marginalized, hard-to-reach, and vulnerable groups. In line with this, the government developed a coherent education strategy and implementation plan that was meant to address the needs of marginalized, hard-to-reach, and vulnerable groups. This was to ensure access, increase retention, and completion rates and reduce gender disparities in education.

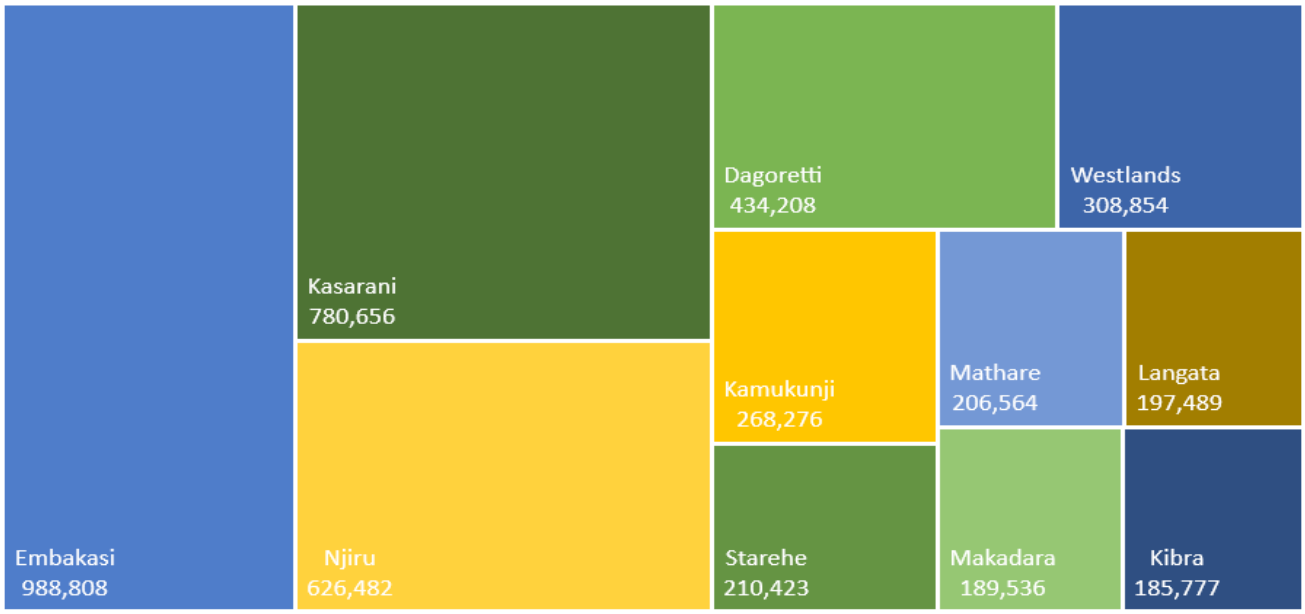
The implementation of the 2010 constitution also led to the creation of 47 devolved county governments. ECDE was devolved from the Ministry of Education

to the counties. The county government collaborates with the national government on policy in curriculum training and education issues. The devolvement was a measure to address the challenges ECDE centres had while the schools were managed by the national government. The challenges included and were not limited to understaffing, lack of professional development for the teachers, poor working conditions and remuneration (Murunga, 2015). With regard to these, the county governments employ ECDE teachers and provide in-service training for them. Some selected counties like Nairobi also provide free education to the ECDE learners who no longer have to pay for their tuition fees. This is a departure from the previous model where the ECDEs were attached and managed by the headteachers in the nearest primary schools which were not receiving any support from the national government.

To address issues of nutrition, some counties introduced feeding programs. Such programs (in form of either snacks and porridge or hot lunch) have led to increased enrolment and retention of ECDE learners, especially from low socio-economic backgrounds. For instance, in 2018, the county government of Nairobi introduced free milk to public ECDE centres to promote nutrition, access, and retention (Otieno, 2018). To enhance access and retention, the county government of Nairobi also enacted and implemented the free ECDE policy (Omulo, 2021). These are positive moves that underscore the role of counties in expanding access to and promoting WCD in Kenyan pre-schools.

According to the 2019 Kenya Population and Housing Census, Nairobi had about 184,000 individuals of pre-school ages (ages 4 and 5 years) of the over 4M of its population as shown in Figure 2.1 (KNBS, 2019). However, the 2019 basic Education statistics painted a gloomy picture of low gross enrolments of 39.22%, large class sizes of 105, and one teacher for every 54 learners (MoE, 2019a). A vast majority of the children in Nairobi live in poverty (Wanjiru-Mwita, 2021). Populations, especially ages 4 and 5, living in urban informal settlements in Nairobi are undeserved with social amenities including education and health. For instance, existing evidence states that more than one-half of school-going children in these settlements attend non-state schools due to limited supply and access to available public schools (Ngware et al., 2013). Indeed, children from the informal settlements attend low fee private primary (LFPS) schools and centres. The majority of the LFPS are not registered with the Ministry of Education, meaning they do not make any returns to the ministry. This could potentially explain the low gross enrolment rates observed in the county (NACONEK, 2020). These ECDE centres do not offer adequate services such that the children may end up having a poor start. Following this, the government formulated guidelines like the Alternative Provision of Basic Education and Training Policy (APBET) in 2015 to help register and extend support to the low-cost centres (MoEST, 2015). The policy defines

Figure 2.1: Distribution of Nairobi population by sub-county (KNBS, 2019)



Basic Education as a wide range of educational activities offered in formal, informal and non-formal setups to expand access and offer opportunities for growth and development to children in different contexts.

While there are several models of ECDE practices in Kenya such as Montessori and NACECE, the Kenya Institute of Curriculum Development (KICD) has largely been responsible for developing curriculum. With the coming of the Competency-Based Curriculum (CBC) in the country, KICD now has a broader mandate to guide the development of curricula for ECDE and the development of necessary support materials. Following this, county governments, given their central role in ECD with the support of KICD, have the responsibility of implementing the curriculum. However, due to resource constraints and competing priorities, the implementation has been varying from one county to another. Currently, there are efforts in the spirit of harmonizing the implementation of ECD across counties and reviewing the 2006 ECD policy framework.

The framework was developed before the 2010 constitution came into effect and thus does not take into consideration the devolved functions. The framework underscores the importance of coordinating the different actors (parents, communities, and government in the provision) by defining their roles to ensure the holistic provision of ECD services (Republic of Kenya, 2006).

Despite the efforts, a study by the National Council for Nomadic Education in Kenya (NACONEK) found the majority of the schools and Centres in low social-economic settings of Nairobi to face insurmountable challenges in terms of infrastructures, staffing, quality, and sanitation among others (NACONEK, 2020). The report also found that only 13% of the non-public education providers including ECDE were registered with the Ministry of Education and that they were not regulated, and lacked quality assurance both in terms of the environment they operate in and the quality of early learning (NACONEK, 2020). However, this study did not examine how the centres were promoting the WCD approach nor did it assess development in key domains of literacy, numeracy, and social-emotional dimensions.

To this end, Usawa Agenda conducted an analysis of the status of ECDE in the informal settlements in Nairobi County. The overall objective of the study was to analyse the relevant legal and policy frameworks as well as ECDE actors in the informal settlements. The study also aimed at determining the contribution of the legal and policy frameworks and actors to the Whole Child Development (WCD) of children attending ECDE centres in Nairobi County.



13%

of the non-public education providers including ECDE were registered with the Ministry of Education

3. Study Methods



3.1 Study design

This was a cross-sectional study implemented in two parts: a mapping of all the actors in urban informal settlements and the implementation of a detailed study using selected ECDE Centres in Nairobi urban informal settlement. The survey was quantitative and involved the administration of survey and assessment tools both at the school and household levels. The study first targeted various learning institutions in the urban information settlements that are providing ECDE centres. This was achieved by conducting a complete canvassing to identify and collect key information about the centres. The second part of the study targeted pre-primary two (PP2) learners in selected centres. The PP2 learners were targeted because they were in a grade that was to join primary school the following academic year. Therefore, the study provided a greater platform to understand actors and school readiness in the context of the Competency Based Curriculum (CBC).

3.2 Sampling approaches and sample size

The study was split into main parts: Mapping of ECDE actors in Nairobi (census) and a focused study to understand WCD. The scope of the mapping exercise was to include and map all ECDE actors (complete census) in the county irrespective of whether they were located in formal or informal settings. However, due to the focus of the study on low socio-economic settings, deliberate efforts were made to intensely target players found in the urban informal areas and their surroundings. The study attempted to also map the public ECDE centres in these settlements as well as those in other areas in Nairobi. The exercise involved a snowballing approach given the absence of a sampling frame. This part of the study aimed at understanding the various models of providing ECDE in Nairobi, Kenya and also provided a sampling frame in which to anchor the WCD component. ECDE centres were defined as those offering at least pre-primary one grade.

To establish the number of centres and learners to participate in the WCD focused study (Part II), we employed robust sampling techniques for cross-sectional surveys making various assumptions. The number of ECDEs selected took into consideration the availability of resources, the probability of ECDE centre declining to participate in the assessment, and the number of learners to be targeted per ECDE centre. The key outcome of interest was the WCD captured by the learner assessment. We found Tayari, an interventional study conducted between 2006 and 2008 and implemented by Research Triangle Institute in collaboration with the African Population and Health Research Center as a close

study that can provide estimates for sampling (Ngware et al., 2016). Tayari was implemented in four counties of Nairobi, Laikipia, Siaya, and Uasin Gishu. The intervention targeted ECDE centres and learners enrolled in PP1. In Nairobi, the project targeted both APBET and public ECDEs.

$$n = \frac{Z_{(1-\propto/2)*\delta^2}}{\Delta^2} * DE$$

The baseline information from the project showed that the standard deviation for school readiness score among PP2 learners was 20.7 with an intraclass correlation of 0.29 (Ngware et al., 2016). Using these parameters and taking into consideration a confidence level of 95% and a power of 80%, we estimated to target a minimum of 239 ECDE centres using the formula below. Where 'n' is the required minimum sample size, alpha is the 95% level of confidence, delta is the standard deviation and **'Δ'** is the margin of error and DE is the design effect computed from the intraclass correlation and number of learners to be sampled per centre. We assumed sampling 10 learners per ECDE for inclusion in the assessment survey. The selection of the centres was stratified by the sub-county as computed from the mapping exercise to ensure representation across the counties. This was done through the proportionate to size sampling approach.

3.3 Study instruments

The development of the study instruments took place in two-stage, namely: i) Rapid review of literature and potential study tools and ii) involvement of a technical committee.

Rapid review of literature and potential study tools: The review focused on the WCD approach to developing a framework on which to base the development of the study tools, identify and map the key actors based on the framework and necessary tools for engaging each of the actors. The review identified WCD to include physical (gross and fine motor), socio-emotional (interactions, empathy, conflict resolution, self-confidence), cognitive (problem-solving, learning and abstract thinking in numeracy and literacy), executive functioning (inhibition, attention control, and working memory) and communication (expressive and receptive) as the essential domains which formed the focus in this study (García & Weiss, 2016; Slade & Griffith, 2013). Further, the review highlighted the acquisition of the skills during brain development, which happens mainly in the first 5 years of life (optimally at two years), underscoring the importance of investing in the early years of development (Grantham-McGregor et al., 2007).

Moreover, effective child development and particularly the nurturing of both cognitive and non-cognitive skills calls for the participation of various players including the schools, families, communities as well as policy environment (Farnsworth et al., 2014; García & Weiss, 2016). The outcome of the review is summarized in Table 3.1. Specifically, in understanding the WCD it is critical to understand what is happening to the child and the environment in which they are growing up (school and home) and related actors mainly teachers and parents. Understanding the WCD was identified to involve assessing the child in the various domains, interviews with teachers, ECDE heads and parents, and the review of the policy environment.

The review was followed by the compilation of existing tools both locally, regionally, and internationally and establishing how they had been used or adapted for low-income countries (LMICs) and urban poor populations. Model tools exist, with the critical ones to measure WCD developed by IDELA by Save the Children (D'Sa et al., 2017), MELQO by UNESCO, UNICEF, and the World Bank (UNESCO et al., 2017) and the KSRAT by the Ministry of Education, Kenya (MoE, 2019b). These tools take into consideration both cognitive and non-cognitive skills and largely overlap. The MELQO and IDELA have been widely used and adapted in different contexts including Kenya and Tanzania (Fernald et al., 2017; Ngware et al., 2016). These were presented to the technical committee with proposals and agreed to guide the development of the project assessment tools.

Table 3.1: Summary of measures for Whole Child Development

Level	Child	Teacher	Centre	Home	Policy
Target	Child	Teacher	ECDE Head	Parent/caregiver	Policies
Type	Assessment	Survey and observation	Survey and observation	Survey	Qualitative
Model tools	Tayari; IDELA, IEA; MELQO; BEQI, KSRAT-MoE Kenya Others	Tayari, BEQI, Stalling tool Others	Tayari, Save the children Others	Home observation; UNICEF MICS Early Child Development Index; Others	National and county policy frameworks
Indicators	Cognitive (literacy and numeracy); social-emotional, executive functioning, communication	Background, training, pedagogies, interactions,	Centre info., the general environment, WASH, Play materials, Safety, climate	Learning materials, simulation, physical environment modelling e.t.c	Policy framework and legislation

Notes: IDELA: *International Development and Early Learning Assessment – Save the children; IEA: International Association for the Evaluation of Educational Achievement (IEA); MELQO Measuring Early Learning Quality and Outcomes by UNESCO, UNICEF, and the World Bank; Brief Early Quality Inventory (BEQI); KSRAT: Kenya School Readiness Assessment Tool, MoE.*

Technical team: The review of the available literature and study tools was followed by a formation of a technical team drawn from various departments in the Ministry of Education and practitioners. The objective of the technical team was to guide the study and particularly in developing the study tools, offering technical support and in implementing the field activities.

In developing the tools, a pool of items from various tools was developed and put to the specific domains they were measuring. The technical committee discussed each of the items and adapted them based on the expected ECD outcomes. During the adaptation, the relevance of the items, statements, and wordings were checked in the context of Kenya and provided alternatives where necessary as well as the relevance of administration materials. Prior to the joint discussions, the technical committee members individually reviewed and provided inputs. This resulted to draft tools that were piloted before coming up with the final tools. The final tools were further discussed and agreed on by the committee after incorporating the results of pilot testing. Specifically, the following tools were developed for the WCD component:

a) **ECD centre tool:** this tool targeted the ECDE centre heads to capture the environment, sanitation, and opportunities for promoting play for development and quality early learning.

b) **Teacher tool:** the tool captured teacher background information. interactions, pedagogies, and other relevant information on WCD.

c) **Child assessment tool:** the assessment tool targeted PP2 learners and assessed them on the main domains of interest including pre-numeracy (emergent literacy) and pre-literacy (emergent literacy), physical, self-awareness, and social-emotional skills.

d) **Caregiver tool:** this tool assessed parents' understanding of the WCD approach to education and the enforcement of WCD at home as well as in the home environment.

Pilot testing and psychometric analysis of the items: The draft tools were subjected to a sample of potential respondents to establish their validity and reliability as well as assess the amount of time it takes to administer each. Members of the technical committee piloted the tools. The pilot testing took place in two centres – both attracting children from low socio-economic status. The learner assessment tool was subjected to psychometric analysis using modern Rasch measurement and the classical test theory techniques. The techniques established item characteristics and their suitability for refinement and selection of the final

items for use and the development of data collection procedures and manuals. However, due to the small sample from the pilot, the results of the analysis were complemented by the observation made by the assessment administrators. This resulted in the elimination of items that appeared too easy or too difficult as well as rewording of some items. The survey tools (home, centre, and teacher) were also fine-tuned to ensure consistency as well as clarity on some of the items.

3.4 Training of field interviewers

The project team worked with Community Based Organizations (CBOs) to recruit eligible volunteers to support data collection in each of the sub-counties. The CBOs (Vision Empowerment Trust, SIFA, Kwea Centre, and St. Joseph Community Program) work with children, youth, and women on socio-economic spheres such as education, and health to achieve a stable and empowered society in and around Nairobi County. Two-day training followed the recruitment of volunteers. The training involved going through the various items in each of the study tools to create a common understanding and interpretation. Moreover, the volunteers engaged in role-plays that were essential to ensure fluency; and this was particularly critical for the administration and scoring of the assessment tool. The tools were programmed in the *KoboCollect* platform, which was also tested and arising issues fixed.

3.5 Data collection methods

Data collection took place for 10 days between June 30th and July 13th. Before the actual visit to the centres, prior arrangements were made by use of phones and/or physical previsits where it was not possible to reach them by phone. This was important to minimize callbacks in the case where centres were undertaking end of term assessments. Moreover, it helped the centres to mobilise caregivers. Enumerators administered the survey tools before noon and made followup with the caregivers of the sampled learners later in the day. An independent team of experts conducted random quality checks and sits with the volunteers. Regular meetings were also held with the lead organizations to discuss and explore solutions to issues that had arisen during the data collection.

A systematic sampling approach to identify the 10 learners from each centre was adopted. The procedure involved obtaining the PP2 class register and numbering learners starting from number one to the last. Learners that had moved out of the centre due to prolonged Covid-19 school closures were excluded from the numbering. The enrolment and attendance information was provided by the teachers and corroborated with the register. The systematic sampling interval was established by (i) dividing the last numbering with 10 and rounding downwards in the case of decimal places, to establish ***'i'***, which is the systematic sampling interval and (ii) selecting every i^{th} learner from the register. All learners were included in the case of grades that had 13 learners or fewer. In the case of multiple streams, one stream was selected randomly by a lottery system. A learner name form was developed to record the details of sampled learners and facilitate linking the information from the various tools.

3.6 Data management and analysis

The data in ***KoboCollect*** were downloaded in Microsoft Excel version and transferred to STATA Version 16.0 for management and analysis. First, the data were checked for consistency, missingness, and variable values labelled and described accordingly. The data collection platform had inbuild consistency checks hence eliminating inconsistencies and missing data. The analysis included the computation of descriptive statistics – mainly frequencies and their percentages as well as means and standard deviation. Further significance testing was done using the chi-square test for categorical variables and students' t-test for the continuous outcomes.



Most of the private ECDE centres were individual owned

(65.6%),

while 16.7% and 17.7% were owned by the communities and NGOs/ FBOs respectively

4. Results

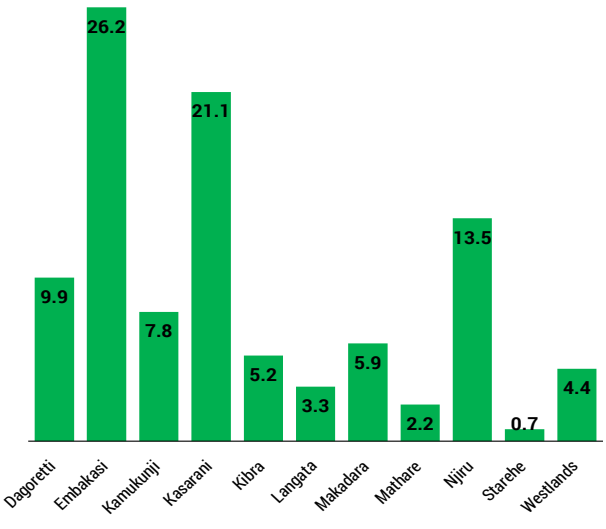


This section presents the results of both sub-studies: The first part presents the results of the mapping exercise while the second one the results from the focused study on WCD.

4.1 ECD actors

The mapping exercise reached 2072 public and private ECDE centres in Nairobi and spread across the 11 sub-counties. The private ECDEs were owned by either individual, community or other entities such as faith-based organizations (FBOs) and Non-Governmental Organizations. Figure 4.1 and Figure 4.2 show the distribution of mapped centres by sub-county, while Table 4.1 by centre ownership. Starehe had the least number of centres. The counties with the highest number of centres, also happen to have the largest population according to the 2019 Kenya population and housing census statistics (KNBS, 2019).

Figure 4.1: Distribution of ECDE Centres reached by sub-county



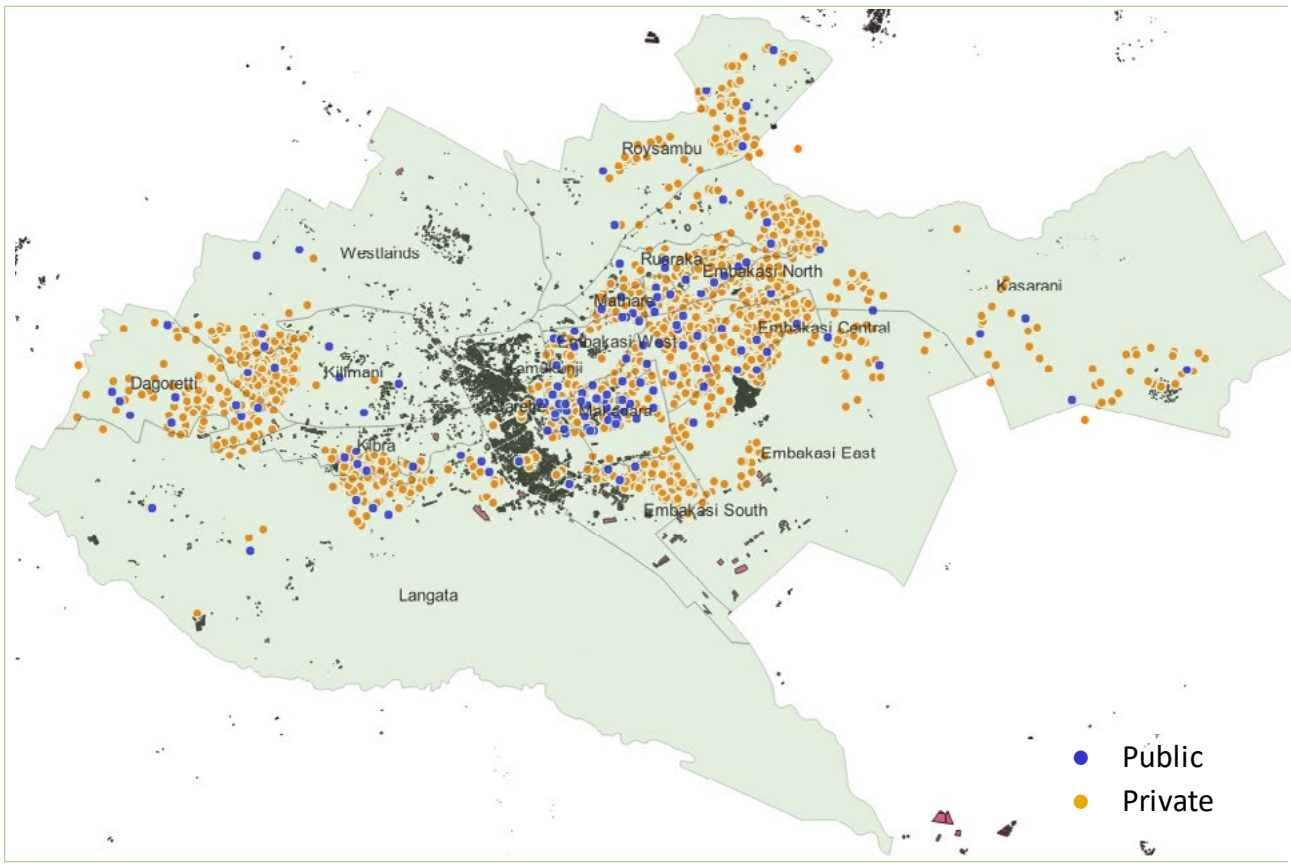
4.1.1 Type and ownership

Of the mapped centres, 6.9% were public while 93.1% were non-public and owned by either the community, individuals or other entities such as faith-based organizations. Most of the private ECDE centres were individual owned (65.6%), while 16.7% and 17.7% were owned by the communities and NGOs/FBOs respectively. Nairobi, according to the 2019 basic education statistics report, has over 210 ECDE centres spread across the various sub-counties.

While the mapping exercise intended to reach all the 225[6] public pre-primary schools, only 142 were reached. This is because efforts were put to exhaustively target centres located in the informal settlements, which was of interest to this study. Table 4.1 represents the location of the mapped centres. Overall, majority of the mapped centres were located in urban informal settlements, indicating a good coverage, and understanding of the major players in these settings.

6 The number as provided by the County Education Department

Figure 4.2: Spread and distribution of mapped ECDE centres by type



Among the private ECDE centres, 51% were commercial entities, while 36% were not for profit and 10% had a public orientation, meaning they were run by the Nairobi County government. This kind of orientation points to the commercialization of ECDE provision in the urban informal settlements, with individuals establishing such intensities as businesses.

Table 4.1: Ownership of mapped centres

Centre Ownership	ECDE mapped		Located in an informal setting	
	N	%	No	% of total
Public	142	6.9	73	51.4
Private	1930	93.1	1242	64.4
Ownership of private Centres				
Community	323	16.7	260	80.5
Individual	1266	65.6	771	60.9
Company, NGO & Faith	341	17.7	211	61.9

4.1.2 Enrolment and gender parity index

Table 4.2 shows enrolment stratified by gender, ECDE type, and level offered while Figure 4.3 show the gender parity index (GPI). Overall, the private ECDE had enrolments of 101,597 learners. The public ECDE centres had enrolments of about 18,700 learners. The average ECDE size was 55 learners in the private centres and 132 in the public centres. The 2019 basic education statistics captured enrolment in public ECDE centres in Nairobi as 23,148 learners (10,000 in PP1 and 13,148 in PP2). Thus the mapped public centres represented almost 80% of the anticipated population. The high enrolment is attributed to the fact that a big fraction of the population is located in informal settlements that are characterized by high population density. When the private ECDE enrolments were stratified by the specific categories, individually owned ECDE centres had the lowest average sizes, followed by the NGO/FBO, and the community ECDEs.

Table 4.2: Enrolment by gender and ECDE level and type

Enrolment	Private		Public	
	Number	Average	Number	Average
PP1 Boys	26,174	14.06	4,285	30.18
PP1 Girls	27,510	14.77	4,359	30.70
PP2 Boys	23,844	12.81	5,177	36.46
PP2 Girls	24,069	12.93	4,882	34.38
Total Boys	**50,018**	**26.86**	**9,462**	**66.63**
Total Girls	**51,579**	**27.70**	**9,241**	**65.08**
Enrolment	**101,597**	**54.56**	**18,703**	**131.71**

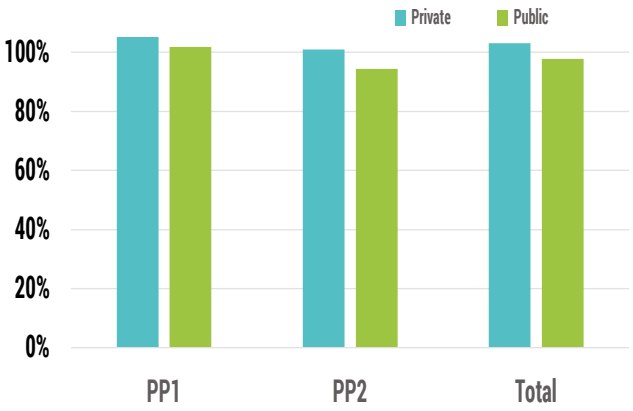
The gender parity index is expressed as the number of gross enrolments of girls to that of boys. An index of 100% shows equal enrolment of girls to boys, while that of more than 100 shows more girls are enrolled than boys. There appears a near gender parity index. However, there are slightly more girls enrolled in private ECDE than boys. In the public ECDE, PP2 had more boys than girls, which is consistent with the 2019 basic education statistics.



Private ECDE enrolments of
101,597
learners

Public ECDE enrolments of about
18,700
learners

Figure 4.3: Gender parity index



4.1.3 Pupil-teacher ratio

The average pupil-teacher ratio in public centres was 40 while in the private ECDEs was 20 learners per teacher. Among the public ECDE centres, Njiru and Embakasi had the highest pupil-teacher ratio at 50 and 61 respectively while in the private centres it did not seem to differ by sub-county.

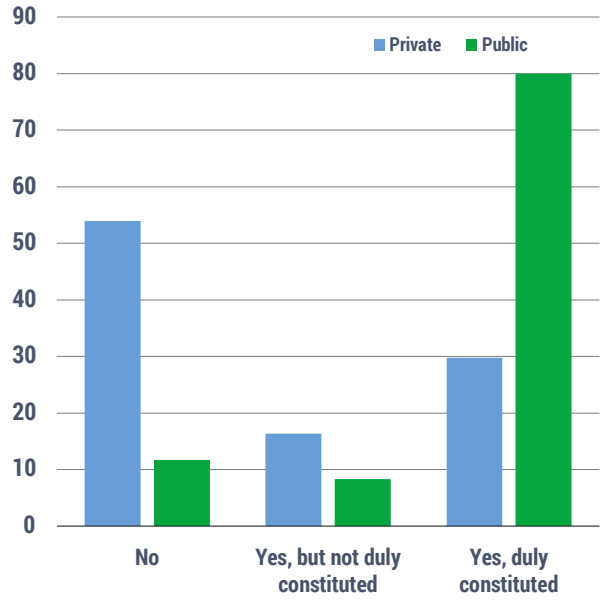
4.1.4 Registration

Nearly all (91%) of the public ECDEs were registered with the Ministry of Education, while 45% and 56% of the community and individually owned centres were registered respectively. This finding is in contrast with the available evidence suggesting low registration of education providers in informal settlements (NACONEK, 2020; Ngware et al., 2016). For instance, the 2019 mapping exercise showed that only 13% of the low-cost private schools, found in the urban informal settlements were registered with the MoE. Most of the ECDEs begin as daycare centres, progress to provide ECDE before graduating to offer primary level education and tend to be registered with other entities such as the Ministry of Gender and Social Services rather than the MoE (NACONEK, 2020).

4.1.5 Management and decision making

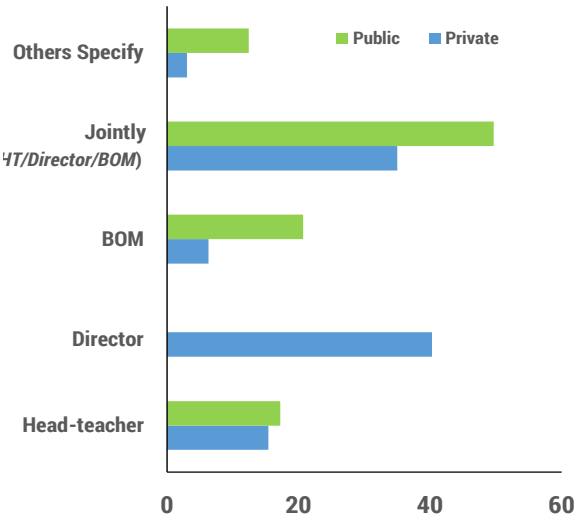
The mapping exercise also sought to establish the management of the ECDE centres (Figure 4.4). Nearly all the public ECDEs had a functional Board of Management (BOM) that was duly constituted according to the Basic Education Act 2013. The guidelines for constituting BOMs calls for diverse presentation including parents, the clergy, persons with special needs, and representation from the county education board, which is also the appointing authority under MoE.

Figure 4.4: Existence of Board of Management



The duly constituted board draws members from various stakeholders including the community, parents, the sponsor, and special needs and it is appointed by the county education board. Less than one-third of the private centres had a duly constituted board, and these tended to be community and NGO owned. Notably, the boards of 19% and 5% of the private and public centres respectively, had not met in the last two months when the centres were in session. The study also sought to understand whether the centres had parents' associations. Overall, 43.7% of the centres reported having structured/functional parents' associations. The parental association were, however, more common in public ECDE centres (60%) than in private ones (42.5%).

Figure 4.5: Centre level final decision maker



In both public and private centres, decision making seemed consultative and jointly made by the different parties responsible for running the institutions (Figure 4.5). We, however, found out that in 40% of the private centres, the directors make the final decision. This is occasioned by the absence of boards of management in these centres since they operate as commercial entities. There was also some level of control by head teachers from the primary schools to which the centre was affiliated.

The next section presents in detail the findings of the WCD. The section is organized to present information on the sample, headteacher and school characteristics, as well as teacher, home, and assessment results. The headteacher and school characteristics present in detail information of the mapped schools including some of the characteristics reported in the entire mapping data. This is necessary to corroborate the information collected during mapping with that of the WCD focused study.

4.2 Sample description of the WCD study

In total, the survey reached 234 ECDE centres, of which 88% were private. In Langata and Starehe sub-counties, all the centres sampled were private, this was because there was no public ECDE centre in the informal settlement found in these two sub-counties. Public centres were only sampled if only they were located in an informal settlement. Overall, 2140 PP2 learners participated in the study (Table 4.3). Since the exercise targeted low-cost private centres, 87% of the learners were drawn from these centres. As anticipated, the sub-counties with more ECDEs also had more learners. The survey targeted 10 randomly sampled learners from each centre. 51% of the learners were female. Since the study adopted a systematic sampling, the distribution by gender indicates a near gender parity in enrolment.

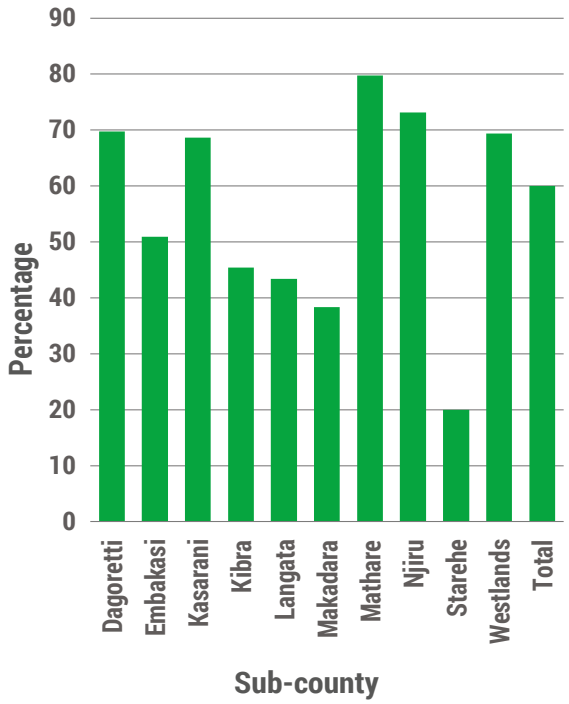
Table 4.3: Number of learners assessed by centre type

		Private		Public	
	Total	No.	%	No.	%
Dagoretti	268	239	12.87	29	10.25
Embakasi	623	551	29.67	72	25.44
Kasarani	399	359	19.33	40	14.13
Kibra	187	177	9.53	10	3.53
Lang'ata	76	76	4.09	0	0.00

		Private		Public	
	Total	No.	%	No.	%
Makadara	94	51	2.75	43	15.19
Mathare	94	54	2.91	40	14.13
Njiru	227	198	10.66	29	10.25
Starehe	15	15	0.81	0	0.00
Westlands	157	137	7.38	20	7.07
Total	**2140**	**1857**	**86.8**	**238**	**13.2**

The survey also targeted caregivers of the sampled learners. After assessment in schools, enumerators visited the homesteads of the sampled learners to conduct home observations. Overall, the exercise reached 60% of the anticipated caregivers, with up to 80% in Mathare (Figure 4.6). Starehe, Makadara, and Langata with the least number of caregivers reached also tended to have fewer children.

Figure 4.6: Proportion of caregivers of sampled learners reached



4.3 ECDE characteristics

The ECDE characteristics were drawn from the centre managers' or headteachers' responses. In total, 229 headteachers of the 234 surveyed centres participated in the study, representing a 98% response rate. The centres are distributed between public (12%) and non-public (88%). Embakasi county contributed the highest (64 schools) and followed closely by Kasarani (44), Dagoretti (30) and Njiru (24). Starehe had the least number of ECDE centres (2) followed by Lang'ata (8) and Makandara (9).

Table 4.4: Ownership of centres participating in the WCD study

Ownership	N	Proportion
Public schools	27	11.8
Private schools	202	88.2
Ownership of private centres		
Community	63	31.2
Private individual	105	52.0
NGO	1	0.5
Faith-based organisations	32	15.8
Other	1	0.5

The data also indicate that none of the public schools in Langata and Starehe was interviewed. Among the public schools, Makadara had the highest share of public schools (44%) followed by Mathare (27.3%) and Westlands (16.7%). Table 4.4 shows the distribution of ECDE centres by ownership and type of ownership (public/non-public). The county government owns all 28 public ECDE centres participating in the study. The distribution among non-public ECDE centres varies where private ownership accounts for nearly one half (52%) followed closely by the community and faith-based ownership at 31% and 15.8% respectively.

4.3.1 Registration status

Table 4.5 shows the distribution of ECDE centres by registration status (registration with the Ministry of Education (MoE)). The results indicate that nearly all public ECDEs were registered with the MoE. The public ECDE centres not registered with MoE tended to be those recently put up by the Nairobi County Government to expand access in the informal settlements. Among the private or non-public ECDEs, only 41.1% were registered with MoE, while about half (47.6%) were registered with other bodies such as the Ministry of Gender, Children and Social Services and the Anthony General as children's centres.

Table 4.5: Registration status with MoE by centre type

Registered with MoE	Public	Non-Public	Total	N
Not registered	11.1	32.7	30.1	69
Registered by MoE	88.9	42.1	47.6	109
Other bodies	0.0	25.3	22.3	51
Total	**100**	**100**	**100**	**229**

Exploring the data by sub-county further shows that most of the MoE registered centres are in Makadara (77.8%), followed by Westlands (66.7%) and Embakasi (60.9%). Kasarani and Mathare sub-counties have the highest number of unregistered ECDE centres with 46.1% and 45.5% respectively. Due to the small number of sampled schools in Starehe (2 schools), the high registration information was not reported.

4.3.2 Curriculum

Recent changes in curriculum in Kenya have led to a switch from the old 8-4-4 to the new Competent Based Curriculum (CBC). The findings of the study indicate that all (100%) public ECDE centres use the new curriculum (CBC) compared to 98.5% reported in non-public ECDE centres. Still a few (1.5%) ECDE centres reported the use NACECE/DICECE curriculum. While the reason for not using the CBC was not established, we attribute it to the limited knowledge and exposure to the new curriculum.

4.3.3 Attendance

School attendance is a major and significant factor in improving learning outcomes among learners. The results indicate that about 93% of playgroup and PP1 learners attended school during the day of the interview compared to almost 96% of learners in PP2. Comparing girls and boys, school attendance was higher among girls in PP1 (94%) and PP2 (96.2%) compared to 91.5% and 95.5% among boys. School attendance was higher in public ECDE centres and among girls in PP1 but not in PP2. Among boys, there was higher attendance in public ECDE in PP2.

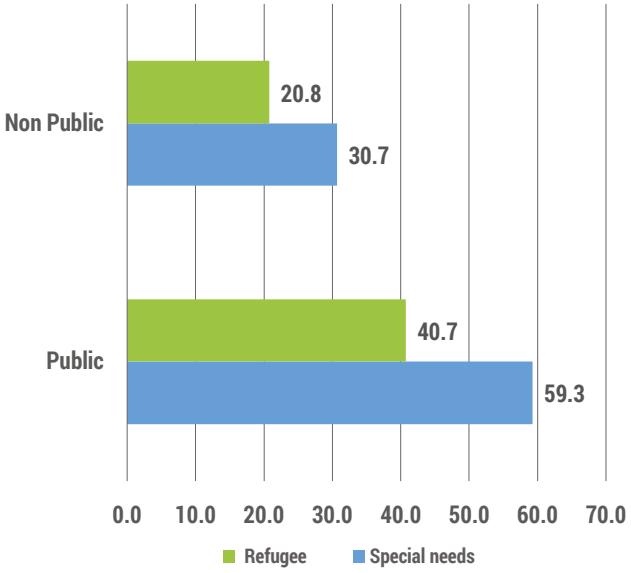
Table 4.6: Attendance by level, gender, and centre type

	PP1 level		PP2 level	
	Girls	Boys	Girls	Boys
Public	89.9	90.1	98.6	96.3
Non-Public	95.3	91.9	95.1	95.1
Total by gender	94.0	91.5	96.2	95.5
Combined - Both gender	**92.7**		**95.9**	

4.3.4 Inclusion

In addressing issues that affect learners with special needs, public schools reported higher percentages compared to non-public centres on admitting children with special needs and those from refugee communities. The results show that 59% of public ECDE centres admitted children with special needs compared to 30.7% reported among non-public ECDE centres. Admission of children from refugee communities was higher among the public ECDE centres (40.7%) compared to non-public centres (20.8%).

Figure 4.7: Inclusion of learners with special needs or refugees



4.4 Teacher characteristics

To evaluate learning among children in ECDE centres, it would be of interest to understand what is happening in classrooms and the factors that affect quality learning, particularly on the teachers' side. This includes understanding demographic characteristics among teachers, levels of education and professional training among others.

4.4.1 Gender among ECDE teachers

The results indicate more females teaching at ECDE centres (between 80-85%) compared to males (between 15-18.6%) in both public and non-public ECDE centres. The ratio between male and female teachers at public and non-public ECDE centres is almost the same.

Table 4.7: Gender of ECDE teachers by type

Gender	Public	Non-Public	Total
Female	85.0	81.4	81.9
Male	15.0	18.6	18.1
Total	**100**	**100**	**100**
N	**160**	**1,218**	**1,378**

4.4.2 Level of education of ECDE teachers

Further analysis of the findings reveals that the share of teachers with a college diploma is almost the same when we compare teachers in public and non-public ECDE centres. However, among those with only high school certificates, those in non-public centres are slightly more (14.4%) compared to those in public ECDE centres (11.1%). The results also reveal significant differences in the percentage of teachers with university degrees i.e more teachers have university degrees in public ECDE centres (14.8%) compared to those teaching in non-public centres (3.1%).

Table 4.8: Teachers' highest level of education by ECDE type

Education level	Public (%)	Non-Public (%)	Total
Secondary	11.1	14.9	14.4
College	74.1	77.4	77.0
University	14.8	3.1	4.5
Other	0.0	4.6	4.1
Total	**100**	**100**	**100**

4.4.3 Professional training among ECDE teachers

Further analysis shows that majority of ECDE teachers have ECDE certificates (55.5%) compared to ECDE diploma certificates (24.2%) and ECDE degree certificates (6.7%). The results also show that the proportion of untrained teachers is still high (11.1%) across the ECDE centres. Comparing the public and non-public ECDE centres, the findings indicate a higher proportion of ECDE degree holders teaching in public ECDE centres (10.9%) compared to those teaching in non-public ECDE centres (1.3%).

Table 4.9: Highest professional training of ECDE teachers

Training	Public (%)	Non-Public (%)	Total (%)
ECDE certificate	38.8	57.8	55.5
ECDE diploma	27.9	23.7	24.2
ECDE degree	10.9	1.3	2.4
Other training	3.1	7.2	6.7
Untrained	19.4	10.0	11.1
Total	**100**	**100**	**100**
CBC trained teachers	70.5	87.3	85.3

On the other side, there are more certificate holders in non-public ECDE centres (57.8%) compared with public ECDE centres (38.8%). We also noted marked differences in the percentage of teachers trained in the CBC curriculum. The results indicate that 87.3% of teachers in non-public ECDE centres have been trained on CBC (87.3%) compared to 70.5% teaching in public ECDE centres.

4.4.4 Pupil Teacher Ratio

The results for Pupil Teacher Ratio (PTR) for public and non-public centres indicate that the PTR for public centres is 28.3, which is more than double the PTR for non-public ECDE centres (13.6). Public ECDE centres in Westlands, Njiru, and Mathare have the highest PTR levels: 57.7, 49.3 and 46 respectively.

The three sub-counties have the highest PTR gaps when we compare PTR values for public and non-public ECDE centres. Embakasi and Dagoretti are the only sub-counties in Nairobi's informal settlement where the PTR gap between public and non-public ECDE centres does not exceed a PTR difference of 5.0.

Table 4.10: PTR levels by ECDE type and sub-counties

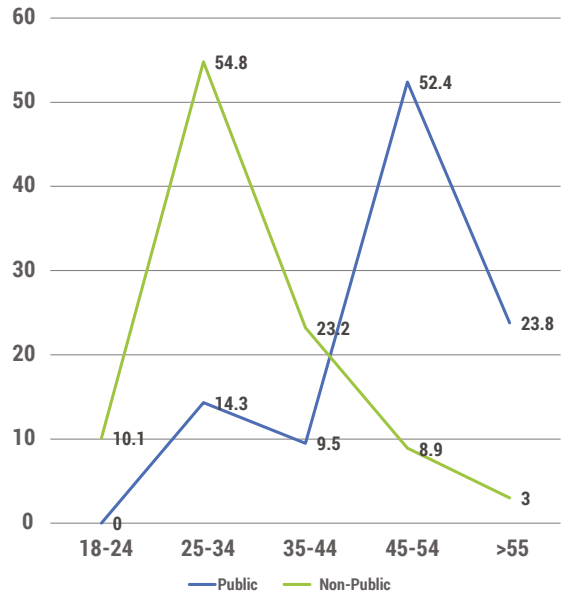
Sub-county	Public (%)	Private (%)
Dagoretti	18.2	16.8
Embakasi	15.4	11.8
Kasarani	23.0	13.8
Kibra	40.0	13.8
Langata	-	9.4
Makadara	44.3	21.0
Mathare	46.0	18.1
Njiru	49.3	13.7
Starehe	-	16.7
Westlands	57.7	15.5
Total	**28.5**	**13.6**

4.4.5 Age distribution of teachers by type of school

The age distribution of teachers teaching in public and non-public ECDE centres differ greatly. The results indicate a more youthful teaching team in non-public centres compared to public ECDE centres. For instance, none of the teachers in public ECDE centres is aged below 24 years whereas, in non-public ECDE centres, this age group accounts for almost 10%.

Most of the teachers in public ECDE centres are aged above 45 which accounts for 76% of the teachers which significantly differs from non-public schools where 82% of the sampled teachers are aged less than 44 years.

Figure 4.8: Teachers' age distribution by ECDE type



4.4.6 Professional certification of ECDE teachers

On professional certification, the results indicate that half of the ECDE teachers in non-public schools have a certificate in ECDE (50.3%) followed by those with a diploma in ECDE (23.1%). One-half of teachers in public ECDE centres teachers had a diploma in ECDE (51.9%), closely followed by teachers with a certificate in ECDE (40.7%).

As was observed before, public schools have more graduate teachers (7.4%) compared to non-public with 0.5%. Whereas there are no non-professional teachers in public ECDE centres, they account for 10,8% of teaching staff in non-public centres.

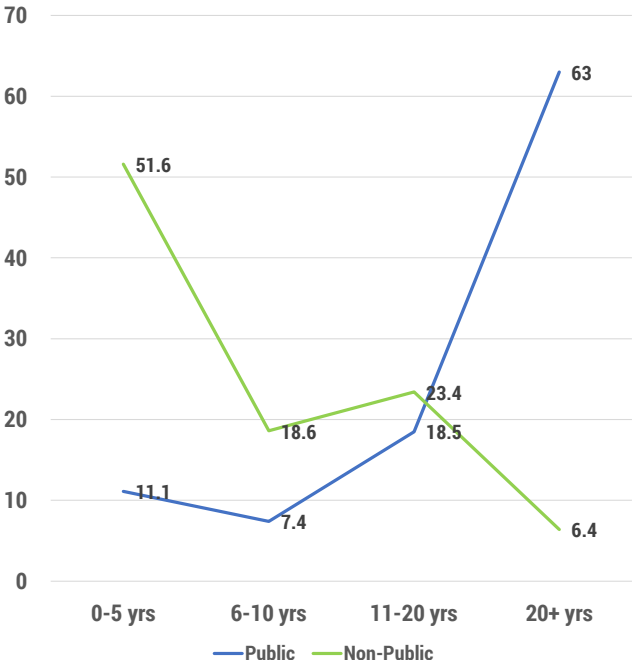
Table 4.11: Teachers' highest professional certification by ECDE type

Certification	Public (%)	Non-Public (%)	Total
No professional teacher	0.0	10.8	9.5
Certificate in education	0.0	6.7	5.9
Certificate in ECDE	40.7	50.3	49.1
Certificate in DICECE	0.0	1.0	0.9
Diploma in education	0.0	2.6	2.3
Diploma in ECDE	51.9	23.1	26.6
Diploma in NACECE/ DICECE	0.0	0.5	0.5
Degree (Bachelor of Education)	3.7	0.5	0.9
Degree in ECDE	3.7	0.0	0.5
Other	0.0	4.6	4.1
Total	**100**	**100**	**100**

4.4.7 ECDE teachers' years of experience

There are more experienced teachers in public ECDE centres where 63% of the teachers have taught for at least 20 years as compared to non-public centres with just 6.4%. About half (51.6%) of teachers in non-public ECDE centres have taught for utmost 5 years compared to 11.1% in public centres.

Figure 4.9: Teaching years of experience



4.4.8 Curriculum used in training ECDE teachers

On the main curriculum of ECDE that the teachers were trained on, the results show a high proportion of those who went through CBC curriculum (70.3%) compared to those who were trained on NACECE/ DICECE (21.2%). The percentages of public and non-public teachers trained on both curricula are almost the same although those trained on CBC are slightly higher (74.1%) in public ECDE centres as compared to those teaching in non-public ECDE centres (69.7%).

Table 4.12: Teachers' main curriculum of ECDE training by centre type

Main curriculum of ECDE	Public	Non-Public	Total
NACECE/DICECE	25.9	20.5	21.2
CBC	74.1	69.7	70.3
MONTESSORI	0.0	1.5	1.4
Kindergarten Headmistress Association	0.0	1.0	0.9
MADRASSA/ DUKSI	0.0	0.5	0.5
University	0.0	1.0	0.9
Other	**0.0**	**5.6**	**5.0**

4.4.9 Teachers' preparedness for teaching

The data indicate that teacher perceived preparedness is generally high in the sense that at least 90% of the teachers feel adequately prepared to teach. There are no significant differences between inadequate and very adequate levels in teachers' preparedness between public and non-public ECDE centres although 7.2% of teachers in non-public ECDE centres feel somehow not adequately prepared to teach.

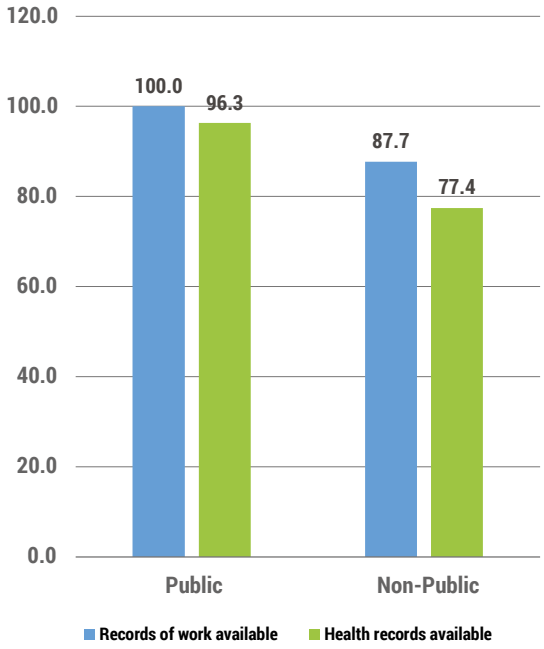
Table 4.13: Perception of teachers' preparedness by centre type

Adequacy	Public	Non-Public	Total
Very Adequate	59.3	54.9	55.4
Adequate	40.7	38.0	38.3
Somehow Adequate	0.0	4.6	4.1
Inadequate	0.0	2.6	2.3

4.4.10 Work and health records

A high sense of preparedness can be reflected in how teachers conduct their teaching activities in classrooms. The results indicate availability of higher levels of work-related records as compared to health records. Comparing availablity of records in public and non-public ECDE centres, the performance in public ECDE centres is significantly higher in both work-related and health records.

Figure 4.10: Availability of work and health records



Further probing on record updating (Table 4.14) indicates that teachers mostly update their records either daily or weekly although there is a slightly higher proportion of daily work-related updates among teachers in non-public ECDE centres (41.5%) compared to those in public ECDE centres (37%).

Table 4.14: Frequency of updating work and health records centre type

	Public	Non-Public	Total	Public	Non-Public	Total
Daily	37.0	41.5	40.9	38.5	49.0	47.5
Weekly	51.9	38.0	39.9	30.8	19.9	21.5
Monthly	7.4	8.8	8.6	11.5	10.6	10.7
Termly	3.7	9.9	9.1	7.7	15.9	14.7
Yearly	0.0	1.8	1.5	11.5	2.7	4.0
Never	0.0	1.8	1.5	0.0	2.0	1.7

The trends in updates in health records are similar when public and non-public ECDE centres are compared. Most of the teachers update health records either daily, weekly, or monthly. Unlike work-related records where most of the updates happen at either daily or weekly intervals, a sizeable proportion of teachers (about 20%) update their health records termly, yearly or never update them.

4.4.11 Means of transport to the ECDE centres

The majority of teachers in non-public schools walk to school (77%) compared to 18.5% of teachers in public ECDE centres who walk to school. A big proportion (74%) of teachers in public ECDE centres use public vehicles to get to school compared to only 17% in non-public ECDE. This shows that most of the teachers in public ECDE centres live far from the centres compared to non-public schools where most teachers live within the school neighbourhood where they can walk to school.

Table 4.15: Means of transport to school among ECDE teachers' by centre type

	Public	Non-Public	Total
Walking	18.5	76.9	69.8
Motor-cycle	7.4	4.1	4.5
Public transport	74.1	16.9	23.9
Private vehicle	0.0	1.5	1.4
Others	0.0	0.5	0.5

4.5 Whole Child Development

This section presents the aspects of the various stakeholders that support or promote early child development – from the perspectives of the schools, teachers, and parents (home environment). The analysis is motivated by the conceptual frameworks that underscore child development to be influenced by the environment that they closely interact with and the support provided by the ecosystem (Farnsworth et al., 2014; García & Weiss, 2016).

This section, thus, focuses on ECDE learning and home environment, materials available for play, home and school connections as well as activities that promote early learning and development. The environment was studied in terms of the infrastructure and resources that support play, learning, and development. The environment should guarantee the health and safety of the learners besides being friendly.

The section also presents the availability of learning materials in the surveyed ECDE centres and elements of sanitation and nutrition. In addition, the section presents the results of the whole child assessment that focused on both cognitive (pre-numeracy, literacy, and executive functioning) and non-cognitive domains (social-emotional, physical and self-awareness).

4.5.1 ECDE environment

Table 4.16: Availability of playground by centre type

	Public	Non-Public	Total
Yes, used exclusively	51.9	31.2	33.6
Yes, shared with others	7.4	13.9	13.1
Yes, shared with primary school	33.3	16.3	18.3
Yes, public playground	3.7	17.8	16.2
No playground	3.7	20.8	18.8

The data shows that 20.8% of non-public centres do not have a playground. Half of the public ECDE centres have a playground that is exclusively theirs compared to only 31% of the non-public ECDE centres. Most of the surveyed non-public schools have shared playgrounds with either the other schools, the community, or use a public ground.

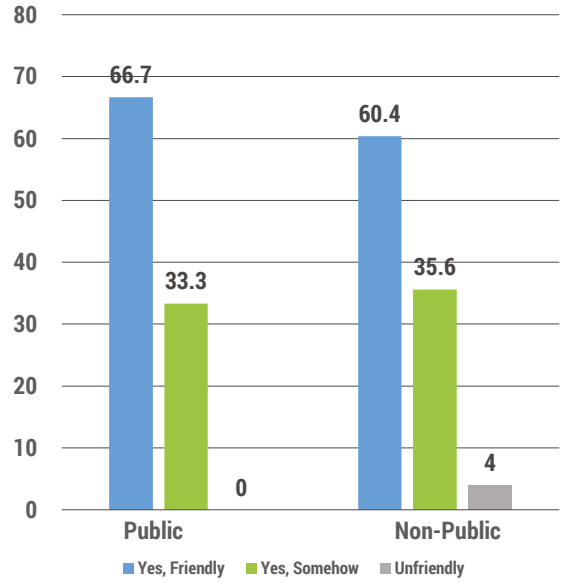
Table 4.17: Security measures and friendliness of the environment by centre type

Security measure	Public (%)	Non-Public (%)	Total (%)
Fencing	96.3	79.2	81.2
Restricted entry	63.0	56.9	57.6
Manned entry	70.4	44.1	47.2
Learners received in school	77.8	89.6	88.2

Most public ECDE centres are fenced (96.3%) compared to almost 80% of non-public ECDE centres. There is a higher proportion of public centres that have a manned entry compared to non-public centres although non-public ECDE centres have a higher percentage of learners that are received in school (89.6%) compared to 77.8% of the public ECDE centres. Besides the elevated sense of security among public and non-public ECDE centres, a big percentage of heads (60%) find the learning environment friendly. The perceived sense of a friendly environment seems the same when we compare both public and non-public ECDE centres.



Figure 4.11: Perception of teachers on the friendliness of the ECDE environment by Centre type



Play is critical during the early years of development and is a means for fostering WCD. Thus the study examined the availability of play materials in the surveyed ECDE centres. The results indicate a high presence (above 70%) of balls, skipping ropes, and tyres in both public and non-public ECDE centres. However, there is a higher proportion of see-saw swings, bar climbing, swing sets, slides, kites, mazes, and playhouses in public than in non-public ECDE centres. This can be attributed to limited space in non-public centres that can support fixing of such materials.

To understand more about learning activities, further analysis was done to find out if the surveyed ECDE centres provide workbooks to learners in different areas. Generally, most centres provide workbooks with public ECDE centres having higher percentages than non-public ECDE centres in all learning areas. Provision of workbooks for language activities, mathematics, environmental and religious activities are significantly higher in public than non-public ECDE centres.

Table 4.18: Availability of play materials by centre type

Item	Public (%)	Non-Public (%)	Total (%)
Balls	88.9	89.1	89.1
Skipping rope	85.2	81.2	81.7
Tyres	81.5	67.3	69.0
Hula hoops	40.7	25.7	27.5
Kite	48.1	24.8	27.5
Slide	48.1	19.3	22.7
Swing sets	51.9	14.4	18.8
Sand Boxes	22.2	8.4	10.0
See saw	40.7	5.4	9.6
Bars/climbing	37.0	5.0	8.7
Play house	11.1	7.9	8.3
Maze	11.1	3.0	3.9
Bouncing castle	7.4	2.5	3.1

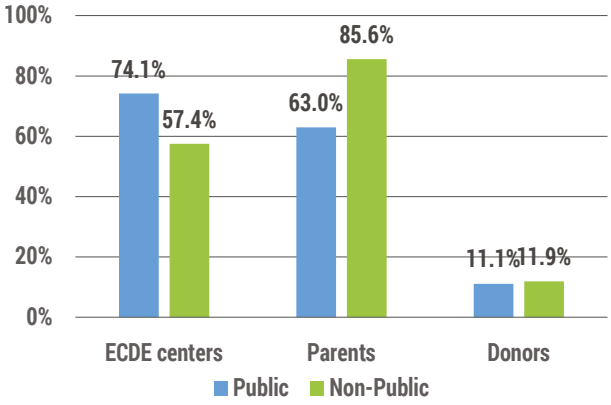
4.5.2 Learning materials and records

It was of importance to understand where learning materials are sourced. The results indicate that most public centres own their learning materials (74.1%) while most non-public ECDE centres source learning materials from parents (85.6%). Donor sourced learning materials account for 11% in both public and non-public ECDE centres hence playing a minor role in the provision of learning materials.

Table 4.19: Provision of workbooks in different learning areas by centre type

	Public (%)	Non-Public (%)	Total (%)
Mathematics activities	77.8	60.9	62.9
Language activities	81.5	62.4	64.6
Environmental activities	81.5	58.9	61.6
Psychomotor & creative activities	74.1	55.0	57.2
Religious activities	74.1	60.4	62.0
Pastoral programs	59.3	53.0	53.7

Figure 4.12: Sources of learning materials by centre type



Teachers from both public and non-public ECDE centres somehow or more often demonstrate key learning and healthy activities like hand washing, use of the handkerchief, personal grooming, and brushing teeth, among others. Positive reinforcement of these habits is crucial during the early years of development for they help children feel in control and enhance their learning, a pathway to WCD. Most of the teachers in both types of ECDE centres reported enforcing these habits. However, managing special needs seems to be inadequately enforced. This could be because most of the centres did not handle learners with special needs or possibly due to limited assessment to identify those with special needs. There is also less emphasis on healthy foods.

Table 4.20: Enforcing health habits and regulations by teachers

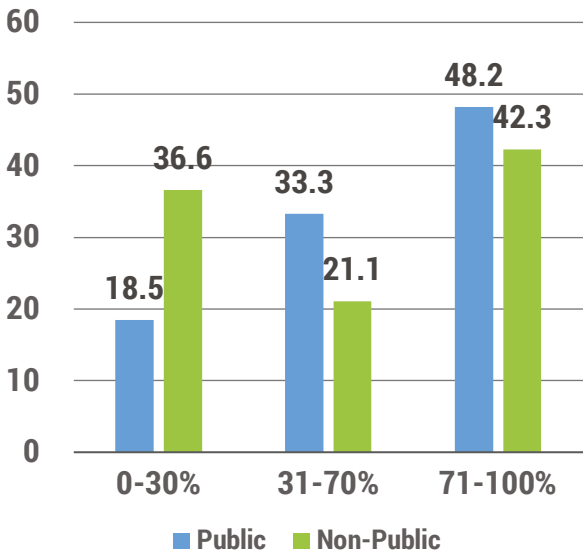
Habits	Public (%)				Non-Public (%)			
	Often	Sometimes	Rarely	Never	Often	Sometimes	Rarely	Never
How to wash hands	92.6	3.7	0.0	3.7	89.7	10.3	0.0	0.0
When to wash hands	92.6	3.7	0.0	3.7	94.4	5.6	0.0	0.0
Types of healthy foods	70.4	22.2	3.7	3.7	77.4	19.5	2.6	0.5
Safe drinking water	88.9	7.4	0.0	3.7	90.3	7.7	1.5	0.5
How to play	88.9	7.4	0.0	3.7	90.8	8.2	1.0	0.0
Handle foods	92.6	3.7	0.0	3.7	92.3	7.2	0.5	0.0
Use handkerchief	92.6	3.7	0.0	3.7	83.6	14.4	2.1	0.0
Brush teeth	88.9	7.4	0.0	3.7	81.0	16.4	2.6	0.0
Personal grooming	92.6	3.7	0.0	3.7	87.2	11.3	1.5	0.0
Use toilet	94.1	0.0	0.0	5.9	89.5	9.1	1.4	0.0
Class management/rules	88.2	5.9	0.0	5.9	87.4	11.9	0.7	0.0
Managing special needs	58.8	17.7	0.0	23.5	71.3	13.3	4.9	10.5

4.5.3 Parental engagement

Parental engagement is key to learning among children in ECDE (Roy & Giraldo-García, 2018). In this study, we sought to understand whether teachers connected and engaged with the parents of the learners they were teaching. Teachers were asked to state the proportion of parents/guardians of the learners that they had met in the last school term to discuss education matters. The results show moderately high engagement levels where 43% of the teachers reported to have met between 70-100% of the parents to discuss education matters of their children. The results also show slightly lower engagement between teachers and parents in non-public ECDE centres. The engagement between teachers and parents to support learning is crucial for it not only enhances but also promotes children's curiosity, motivation and development (Eldridge, 2001).



Figure 4.13: Percentage of parents/guardians of the learners engaged by centre type



Further, parental engagement with schools was measured based on the frequency of meetings between the teacher and parents. Having regular meetings between teachers and parents help track learners' progress in learning (Bush et al., 2021; Lambert, 2002). The results show that more teachers (96.3%) reported having regular meetings before than after the Covid-19 period (29.6%). Some of the reasons that can help explain these differences include restrictions on school visitations and the introduction of online/remote learning following the closure of schools.

Table 4.21: Regular teacher-parent meetings before and during Covid-19

	Regular meeting before Covid-19			Regular meetings during Covid-19		
	Public	Non-Public	Total	Public	Non-Public	Total
Yes	96.3	78.5	**80.6**	29.6	32.8	**32.4**
No	3.7	13.3	**12.2**	70.4	64.1	**64.9**
N/A	0.0	8.2	**7.2**	0.0	3.1	**2.7**
Total	100	100	100	100	100	100

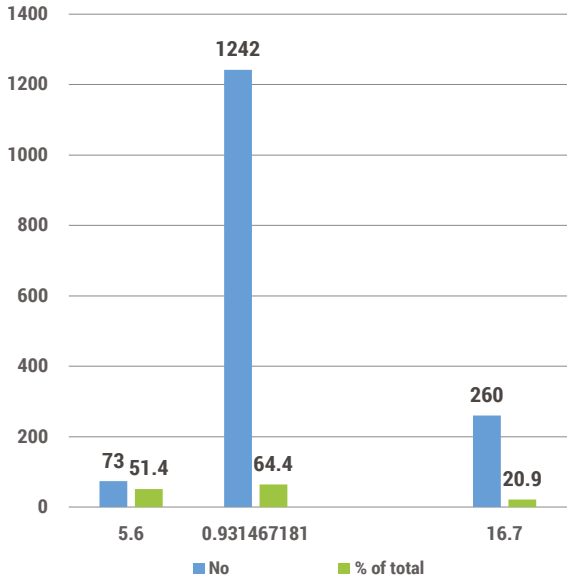
4.5.4 Learning assessment by teachers

This study sought to understand the frequency, how, and ways in which teachers assessed learners in the various competency areas. Overall, 98% of the teachers reported assessing their learners in various ways. The practices included written (96%) and oral (94%) assessment, observation (93%), checking of homework (95%), and portfolio (70%). Other than observation and portfolio, the assessment approaches are rote and do not promote play and WCD. The use of assessment practices did not differ between the public and private ECDEs. Further, teachers reported high levels of learners' assessment and feedback, with 85% of those accessing learners also providing them with feedback.

A further review indicates slight variations in reporting on learner assessment and feedback for both public and non-public ECDE teachers. Teachers in public compared to non-public ECDE centres reported higher assessment and feedback levels in all domains.

In assessing the learners, majority of the teachers considered the domains of learning as shown in Figure 4.14. There were however notable differences in the use of the learning domains when assessing learners by type, at the advantage of the public ECDE centres. This could be attributed to levels of training, particularly on CBC which promotes the holistic assessment of learners, a shift from the previous practices that focused more on the cognitive (mental) domain.

Figure 4.14: Proportion of teachers assessing learners on the three core domains by centre type



4.5.5 Classroom environment

Results show a high presence of learning materials in classrooms. Some of the items that were found more in both public and non-public ECDE centres include number wallchart, letter/alphabets, colouring materials, outdoor play materials, manipulatives, moulding materials and portable equipment. Notably, public ECDE centres reported the presence of more classroom facilities than non-public ECDE centres. Fixed play materials were notably less (31.8%) in non-public ECDE centres than in public ECDE centres (70.4%).

Table 4.22: Classroom facilities by centre type

Facility/Material	Public (%)	Non-Public (%)
Number wall chart	100.0	98.5
Letter/Alphabets	100.0	96.4
Colouring materials	100.0	97.4
Painting materials	81.5	74.9
Indoor play materials	81.5	67.7
Outdoor play materials	88.9	69.2
Real objects	77.8	64.1
Flashcards	88.9	71.8
Cutouts	96.3	79.0
Manipulatives	100.0	88.2
Moulding materials	96.3	83.6
Fixed play equipment	70.4	31.8
Portable play equipment	92.6	80.0

Half of the ECDE centres had less than 10 seating places for learners. Results indicate that majority (70%) of public ECDE centres had at least 30 seating places compared to only 3.1% of non-public ECDE centres. Writing materials were observed in most learning ECDE centres although the distribution differs when we compare the two types of ECDE centres. Most non-public ECDE centres (72.8%) reported fewer than 10 writing places for learners compared to almost 35% in public ECDE centres. 19.2% of public ECDE centres reported at least 30 writing places compared to non-public ECDE centres (1.6%).

Table 4.23: Availability of seating and writing spaces for learners by centre type

No. of spaces	Seating spaces			Writing spaces		
	Public	Non-Public	Total	Public	Non-Public	Total
< 10	18.5	59.3	54.3	34.6	72.8	68.2
between 11-30	11.1	37.6	34.4	46.2	25.7	28.1
Above 30	70.4	3.1	11.3	19.2	1.6	3.7

Although, public ECDE centres reported more spaces to accommodate more learners, further analysis as shown in Table 4.24 indicates a better conducive learning environment in non-public ECDE centres compared to public ECDE centres. This was reported in having appropriate seating spaces, writing spaces, enough seating spaces and enough writing space.

Table 4.24: Proportion of centres with conducive learning environment based on different aspects by type

Type	Appropriate seating space	Appropriate writing space	Enough seating space	Enough writing space
Public (%)	55.6	59.3	48.2	51.9
Non-Public (%)	80.5	78.5	76.4	76.9

4.5.6 Sanitation and nutrition

Sanitation was measured both in terms of the toilet facility used in the school and sources of drinking water. The study also sought to establish the adequacy of the sanitation facilities (for both learners and teachers) by computing the number of learners/teachers per toilet door and by gender. Nutrition, on the other hand, was established using the availability of school feeding programs.

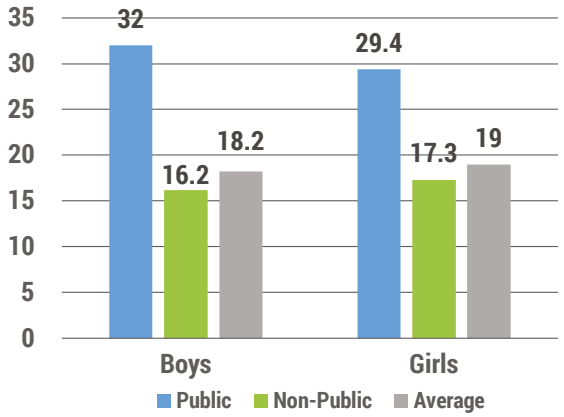
On average, 63.3% of ECDE centres in the informal settlements of Nairobi reported the use of flush toilets, with distribution varying between public and non-public centres. 88.9% of the public ECDE centres had flush toilets compared to 59.9% of non-public ECDE centres. Use of pit latrines was reported more in non-public ECDE centres (28.7%) compared to public ECDE centres (11.1%).

Table 4.25: Types of toilet by centre type

Toilet type	Public (%)	Non-Public (%)	Total (%)
Flush toilet	88.9	59.9	63.3
Pit latrine	11.1	28.7	26.6
Ventilated pit latrine	0.0	7.9	7.0
Portable toilet	0.0	3.0	2.6
Other	0.0	0.5	0.4

Overall, 90% (86% public and 90% private) of the ECDE centres had separate toilet doors for girls and boys. The majority of the centres without separate toilet doors reported that the toilets were shared with the community, increasing their levels of vulnerability and unwarranted exposure to the learners. According to the 2021 registration guidelines for the basic education institutions, at preschool, there should be separate toilet doors for girls and boys at the ratio of 10:1 and 20:1 pupils to toilet doors respectively (MoE, 2021). In this study, the findings were that on average, the pupil latrine ratio for both girls (29:1) and boys (32:1) in public centres was higher than recommended. In the private ECDEs, the pupil toilet ratio for girls (17:1) was higher than recommended while that of the boys (16:1) was within the recommended ratio. Boys had a higher pupil latrine ratio than girls in public and the situation was the reverse in non-public ECDE centres.

Figure 4.15: Pupil toilet ratio



Most ECDE centres use tap water for drinking (around 63%). However, non-public schools reported more on the use of tap water for drinking compared to public schools (48.2%). Boreholes are commonly used as the source of drinking water in public ECDE centres (40.7%) compared to non-public ECDE centres (5.5%). On average 86.5% of the teachers reported adequate availability of water although there was higher reporting in public ECDE centres (92.6%) than in non-public ECDE centres (85.6%).

More than half of the ECDE centres that participated in this survey have a school feeding program. The results indicate that 75% of non-public and 59% of public ECDE centres have a school feeding program.

Table 4.26: Main source of drinking water at the ECDE centre

Source of water	Public (%)	Non-Public (%)	Total (%)
Tapped into ECDE	48.2	64.9	62.9
Borehole in ECDE	40.7	5.5	9.6
Well	0.0	1.0	0.9
Public Tap	3.7	7.9	7.4
Water vendor	3.7	17.3	15.7
Children carry water	0.0	1.5	1.3
Others	3.7	2.0	2.2

When the data were further disaggregated by sub-county we found that all sampled ECDE centres in Dagoretti, Kibra, Mathare, and Njiru sub-counties have school feeding programs. Similarly, all sampled non-public ECDE centres in Langata, Makadara, and Starehe sub-counties have a school feeding program. None of the public ECDE centres in Kasarani sub-county had a school feeding program.

Table 4.27: Proportion of ECDE feeding programmes by type and sub-county

Sub-county	Public (%)	Non-Public (%)
Dagoretti	100	74.1
Embakasi	20.0	81.4
Kasarani	0.0	60.0
Kibra	100	83.3
Langata	-	100
Makadara	75.0	100
Mathare	100	50.0
Njiru	100	81.0

Sub-county	Public (%)	Non-Public (%)
Starehe	-	100
Westlands	50.0	64.3
County average	**59.3**	**75.3**

The County Government and parents are the main sponsors of the feeding programmes in public and non-public ECDE centres respectively. The county government supports the school feeding programme in 60% of the public ECDE centres while parents sponsor 82.2% of the school feeding programmes in non-public ECDE centres.

Table 4.28: Sponsors for the feeding programmes in Nairobi informal settlements

Sponsor	Public (%)	Non-Public (%)	Total (%)
Parents	25.9	82.2	75.6
The school sponsors	3.7	5.0	4.8
County government	59.3	0.0	7.0
Well wishers	0.0	2.5	2.2
Others	11.1	10.4	10.5
Total	**100**	**100**	**100**

4.5.7 Home environment

Table 4.29 shows basic background information on assessed learners' households. The majority of the household heads (HHH) were male. Significantly, more learners in public centres were from male-headed households. The majority of the household heads had attained either primary or secondary level of education. On average, each household had a child aged below five years, which is expected since the entry point to the sampled households were learners enrolled in PP2 who were also likely to be aged between 5 and 6 years. On average, households had almost two adults (persons aged 18 years and above) living with the children. On close examination, 98% and 91% of the learners' mothers and fathers were alive. 90% of the learners had both of their parents alive, while 77% were living with both parents in the same household.

Table 4.29: Household background characteristics by centre type

Characteristics		Non-public (%)	Public (%)	Total (%)
Head gender	Male	40.28	30.83	39.24
	Female	59.72	69.17	60.76
HHH Education Level	None	2.12	8.27	2.79
	Pre-primary/ Nursery	1.66	6.77	2.22
	Primary	31.89	36.09	32.35
	Secondary O-level	28.2	21.05	27.42
	Secondary A-level	13.82	17.29	14.2
	College	18.99	7.52	17.73
	University	2.67	2.26	2.63
	Others (specified)	0.65	0.75	0.66
Household composition (mean and std. dev)	Aged 5 and below	0.76 (1.00)	0.78 (0.87)	0.77 (0.99)
	Between 6 and 17	1.59 (1.14)	1.94 (1.24)	1.63 (1.16)
	Aged 18 and above	1.68 (1.09)	1.69 (0.95)	1.68 (1.07)

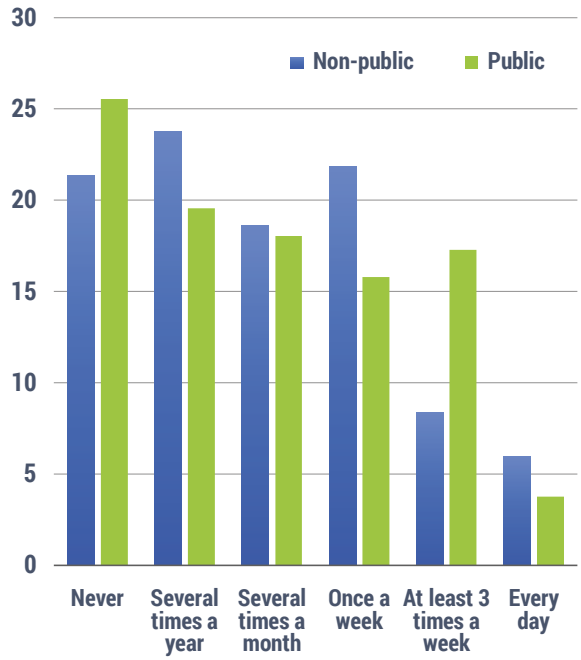
4.5.8 Opportunities for home learning

We assessed opportunities for home learning and fostering of the WCD by understanding the availability of learning materials at home as well as the support provided to the child (Figure 4.16). Overall, 22% of the caregivers reported that the child is never told stories at home, while 36% of the children were taught stories at least once a week. We did not find significant differences between the ECDE types and the frequency of storytelling. Storytelling is crucial during the early years for it helps the child to develop the brain, promote imagination and language acquisition (Black, Walker, Fernald, Andersen, DiGirolamo, Lu, McCoy, Fink, Shawar, Shiffman, Devercelli, Wodon, Vargas-Barón, Grantham-McGregor, et al., 2017; Phillips, 2000). Yet, we found that this practice was not being regularized in the study community.

Further analysis revealed that only two-thirds of the parents encouraged the child to play with others in the neighbourhood. While the reasons for this may vary including the safety of the child, it is critical to allow and support children to explore

their environment. In contrast, at least 8 in every 10 parents reported allowing their children to play and utilize the TV and mobile phone. While TV and the use of mobile phones can enhance digital learning, too much exposure is discouraged. This is because unlimited exposure to TV and smart mobile phone reduces the time for play, and interactions at home, and can negatively affect the social-emotional, attention, and cognitive development of children (Eric, 2021).

Figure 4.16: Frequency of telling stories at home by centre type



In addition to telling stories, key areas of inbuilding cognitive skills and brain development included reading books, singing, counting, colouring for fine motor and encouraging the child to tell stories (Table 4.31). Overall, naming, counting, colouring, playing with the child and open conversation were highly practised. While the prevalence of undertaking these activities was high among the non-public, it was only statistically different for colouring in favour of the non-public ECDE centres.

Table 4.30: Opportunities for early learning while at home by centre type

Supported child	Non-public (%)	Public (%)
Read books or looked at picture books	70.97	70.68
Sang songs to or with	62.95	56.39
Played with child	75.02	72.93
Named, counted, or drew things	77.60	74.44
Colouring	75.39	65.41
Encouraged child to tell stories	67.37	63.91
Open conversation	74.38	77.44

In this study, we also sought to understand homework support since the children's reference materials were in school. Homework support is essential in establishing how much the child has learnt in school and is part of parental involvement. Unlike storytelling, 94% (92% public and 94% non-public) of the children were supported in homework by their caregivers (results not presented).

The support was on various activities such as numbers, alphabets, reading, and shapes (Table 4.31). Parents in non-public schools appeared to be involved in checking and guiding homework and communicating with teachers. In public schools, parents reported to be less involved in the signing of dairies – this may be a reflection of the absence of dairies in public centres.

Table 4.31: Type of homework support by centre type

Type of support	Non-public (%)				Public (%)			
	Always	Sometimes	Rarely	Never	Always	Sometimes	Rarely	Never
Check homework	89.49	8.48	1.11	0.92	78.95	12.78	2.26	6.02
Guide in homework	80.37	15.58	2.3	1.75	66.17	20.3	6.02	7.52
Sign diary	61.57	12.72	4.52	21.2	30.83	20.3	6.77	42.11
Communicate with teacher	68.11	26.82	3.69	1.38	48.87	40.6	9.02	1.5

4.5.9 Whole child assessment

The learner assessment comprised different tasks in pre-numeracy, pre-literacy, self-awareness, executive functioning, social-emotional, and gross motor domains. Each task was composed of several sub-tasks followed by specific items to measure each sub-task. The item scores for each sub-task were summed together for each learner and a raw percentage computed. The sub-tasks under each task were also summed to measure learner performance in that task. In this section, we present tasks grouped into four main categories of pre-numeracy (combining both pre-numeracy and executive functioning) cognitive skills, non-pre-literacy cognitive skills and non-cognitive skills (social-emotional, self-awareness, and gross-motor).

4.5.9.1 Pre-Numeracy and executive functioning cognitive domains

At the pre-school level, pre-numeracy learning areas include skills in both measurement and numbers and are measured in the sub-tasks presented in Table 4.32 while the results are presented in Figure 4.17. The learners performed well in the different measures of pre-numeracy skills with small standard deviations as shown by the narrow 95% confidence intervals that are too narrow in all the domains.

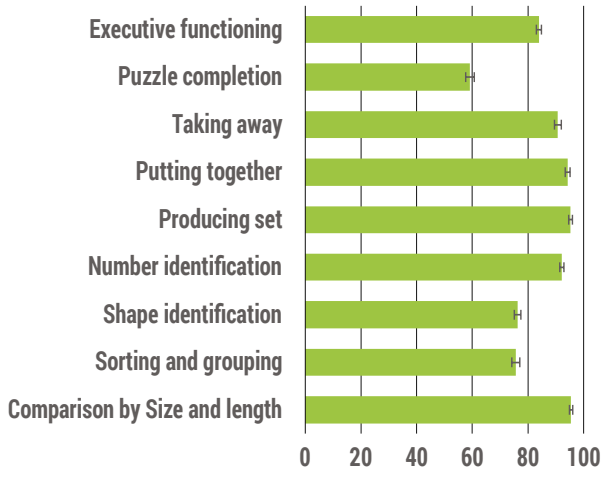
Comparison by size and length was highly scored (95.5%), followed by producing set and both putting together and taking away aided by counters. However, the learners scored low in puzzle completion (59%). The puzzle completion tested the ability of the learner to organize four pieces of a puzzle to make a whole object (ball) and was related to sorting and grouping which were also performed moderately. Sorting and grouping required learners to view pieces of pictures that were both in different shapes and colours and sorting them using the two ways. Executive functioning that tested the short term memory was also highly performed (84%). In this skill, learners were expected to repeat the numbers read to them in the same order. Previous studies such as Tayari intervention (Ngware et al., 2016) and the MELQO study in Zanzibar (MoEVT & UNICEF, 2019) examined the skill using both forward and backward digit span, with the learners scoring lowly on the latter.

Table 4.32: Pre-numeracy and executive functioning assessment skills

Sub-task	Task	Skills assessed
Measurement	Comparison by Size and length	Ability to identify using basic superlative items by length and size.
	Sorting and grouping	Identification of objects and grouping them in terms of their shape and colour.
	Shape identification	Identification of different shapes and relating them to things or objects in the environment.
	Puzzle completion	Putting various pieces of a puzzle together to form an object.
Numbers	Number identification	Learners' ability to name numerals from 1 to 20.
	Producing sets	One-on-one correspondence – a learner is expected to produce a set.
	Putting together	Using objectives/counters to undertake addition.
	Taking away	Using counters to subtract.
Executive function	Forward digit span	Short term memory using forward digit span of up to 5 digits.

These results suggest that learners living and schooling in urban informal settlements were acquiring the basic pre-numeracy skills despite the Covid-19 disruptions.

Figure 4.17: Pre-numeracy and executive functioning mean scores



4.5.9.2 Pre-literacy cognitive domain

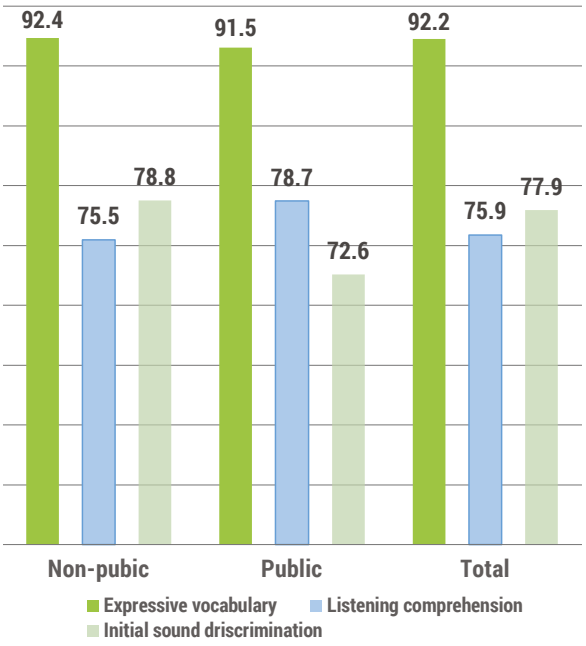
The pre-literacy domain consisted of three key skills: reading, listening, and speaking (Table 4.33). The writing was excluded during piloting since most of the learners could perform the skill. Learner performance in this domain is presented in Figure 4.13 stratified by ECDE type – private and public (government).

Table 4.33: Pre-literacy assessment skills

Task	Sub-task	Skills assessed
Speaking	Expressive vocabulary	The naming of domestic animals and things found in the market
Listening	Listening comprehension	Listening to a story and responding to question items from the story
Reading	Initial sounds	Identifying words starting with a certain sound

Overall, the learners performed well in expressive vocabulary, which measured speaking skills. In this sub-task, they were expected to name animals found at home as well as items found in the market. The performance in this skill was not statistically different by type of the ECDE centre. In listening comprehension, overall 76% of the learners scored the items correctly, however, the learners in public centres marginally performed better in this skill than those in private centres, unlike initial sound discrimination, in which learners in private schools performed better.

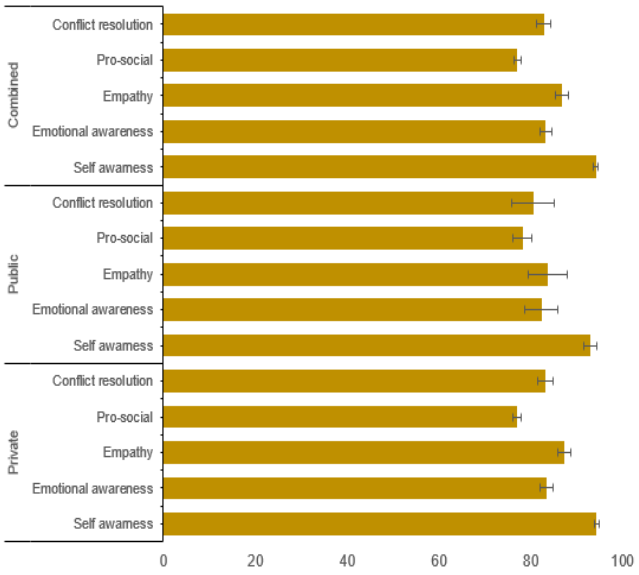
Figure 4.18: Pre-literacy domains mean scores



4.5.9.3 Social-emotional

The social-emotional domain was measured using various skills including self and emotional awareness, empathy, conflict resolution, and pro-social skills (friends and associations) (Figure 4.19). Findings show high levels of social-emotional skills other than pro-social skills that have some room for improvement. In the pro-social skills, learners were expected to name their friends, things that they did together, and about sharing. Overall, learners performed highly on self-awareness, which required them to state their name, their sex, their age, and where and whom they stayed with. The self-awareness items were used to break the ice and ease the participation of the learners. Despite this, a small proportion of learners could not state their age and their place of residence.

Figure 4.19: Social-emotional domain mean scores



4.5.9.4 Gross motor

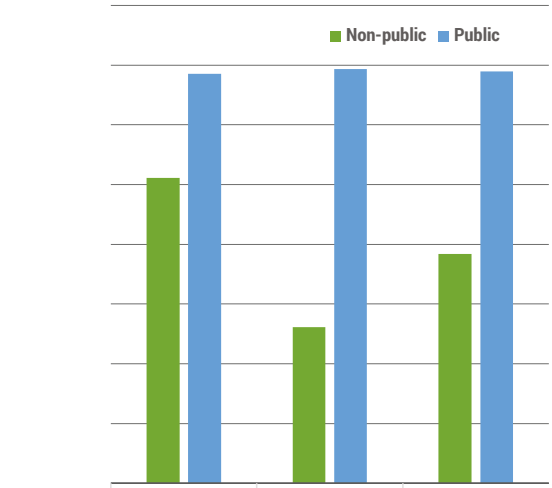
Gross motor skills are important in a child's life for they help the child to participate in learning activities both inside and outside the classroom (Veldman et al., 2016). These skills help the learners coordinate and control their bodies and are fundamental to the development of fine motor skills (Veldman et al., 2016). Following this, learners were assessed on gross-motor skills through the hopping exercise and targeting children without physical disabilities (Figure 4.20).

Overall, the learners showed promising levels of gross motor development in the hopping exercise – with nine in every ten learners able to hop at least 10 steps - and this did not differ by learner's gender

and school type. However, learners in public centres (93%) had a slightly higher demonstration of the skill than those in the non-public centres (89%). This could potentially be attributed to the availability of playgrounds accessible to non-public ECDE centres than the public ECDE centres. Lack of play areas in the public centres seems to have a large bearing amongst girls than boys, though insignificant. Existing evidence shows that this is so because of the greater physical activity observed in boys than in girls which can be attributed to the development of their motor skills (Kohl & Hobbs, 1998; Stodden et al., 2008).



Figure 4.20: Gross motor mean scores by centre type and gender



	Boys	Girls	Overall
Non-public	91.11	88.62	89.84
Public	92.86	92.94	92.90

4.5.9.5 Performance in key domains by ECDE type

Table 4.34 shows the performance in the various domains by ECDE type. While the overall performance is high across the domains, insignificant differences by ECDE type in most of the domains other than pre-numeracy were observed. In this domain, learners in private ECDE had significantly higher scores than those enrolled in public centres.

Table 4.34: Mean scores in the various domains by centre type

Domain	Non-public			Public			P-Value
	Mean	95% CI		Mean	95% CI		
Self-awareness	**94.37**	93.85	94.89	**92.93**	91.53	94.33	0.050
Executive functioning	**84.10**	83.12	85.08	**82.77**	80.36	85.19	0.333
Pre-numeracy	**87.33**	86.74	87.92	**83.52**	81.76	85.29	0.001
Social emotional	**79.46**	78.65	80.26	**79.56**	77.79	81.34	0.922
Pre-literacy	**80.31**	79.35	81.28	**79.51**	77.06	81.95	0.548

4.5.9.6 Performance in key domains by learner's gender

Table 4.35 shows the performance in the various domains by the learner's gender. There are no significant differences in performance in the different domains by learner's gender.

Table 4.35: Score in the various domains by gender

Domain	Boys			Girls			P-Value
	Mean	95% CI		Mean	95% CI		
Self-awareness	**94.69**	94.02	95.35	**93.69**	92.98	94.40	0.045
Executive functioning	**83.52**	82.23	84.81	**84.31**	83.03	85.60	0.396
Pre-numeracy	**87.13**	86.31	87.96	**86.52**	85.75	87.29	0.290
Social emotional	**79.81**	78.76	80.86	**79.14**	78.12	80.17	0.375
Pre-literacy	**80.55**	79.28	81.82	**79.88**	78.61	81.14	0.461



5. Discussion



This study sought to understand the key actors in the provision of ECDE in Nairobi, with a particular focus on the urban informal settlements, which are characterized by private players. The focus on urban informal settlement is critical since the settings accommodate a considerable proportion of Nairobi population. Children in these low socio-economic urban settings face unique challenges, particularly the environment in which they are growing and access to basic social services. In addition, the focus on ECDE is critical because of its long term benefits and in promoting school readiness. Children who attend an ECDE are said to also perform better on assessments of reading and math skills (Magnuson et al., 2004). Further, the balancing of caregiving and sourcing for livelihood implies a higher utilization of daycare centres and pre-schools for many parents. Moreover, during the early years of development, a stimulating environment for children is critical in promoting whole child development (Darling-Hammond & Cook-Harvey, 2018).

With rapid urbanization, there is growth in urban poverty which has resulted in growing urban informal populations residing in urban informal settlements
(Williams et al., 2019). These settings lack legal recognition and therefore limited investment by the government despite being vulnerable and exposed to high risks (Mudege & Zulu, 2011; Wamukoya et al., 2020). As a result, private providers have moved in to fill this void in the provision of basic social services in health, caregiving, and education. This is evident from the findings of this study in which the majority of ECDE providers were private players. However, what is more, worrying is that the majority of the players were profit-driven – individually owned enterprises - putting into question the quality of ECDE and support for WCD. Malenya (2021) notes that how the provision of social services particularly education has been conducted for the urban informal does promote an alternative system that distances the urban informal from the public provided goods. In this study, WCD is examined in terms of the learning and home environment and assessment of learners on key WCD skills (both cognitive and non-cognitive domains) using internationally developed and adapted tools.

Although the private players in the urban informal settlements increased access to ECDE, the quality of such centres was found to be inadequate – with learners exposed to unsafe environments that lacked basic infrastructures such as playgrounds. Play is essential for child development for it not only promotes physical development but also good health, understanding of children's abilities and supports learning. Through play, children develop holistically for it enhances their social, emotional, and cognitive skills besides gaining self-confidence. While we observe that almost 90% of the teachers encouraged learners to play, it needs to be oriented to playful learning. That is the use of relevant playful and experimental activities in the classroom that

encourage the children to think, interact with one another, plan, and evaluate their processes. This calls for the utilization of relevant pedagogies by teachers that are age-appropriate to ensure the child is immersed in learning and development.

Yet, we found out that teachers using rote approaches such as written assignments and oral assessments may not promote WCD. Moreover, the poor quality of ECDEs in this study, particularly in terms of infrastructure and resources inhibits playful learning and could lead teachers to adopt these rote methodologies. Existing evidence has demonstrated how children who are at risk can benefit significantly from a good quality ECDE in terms of cognitive and non-cognitive skills development (OECD, 2020). In the findings of this study, there were no mechanisms to ensure quality, particularly for the private players, given lack of support from the relevant authorities. This is despite the centres enrolling a significant number of learners as compared to the public centres.

The most formative experience of young children comes from nurturing care received from primary caregivers, the family environment and community support to families (García & Weiss, 2016). The impact of parents is felt most during the earliest years of life when a child's brain is rapidly developing (Winston & Chicot, 2016). This is because all of an infant or young child's experiences are created and shaped by parents and the family environment (García & Weiss, 2016). Yet in this study, we find limited opportunities for home learning and fostering of WCD by households. While 88% of the caregivers reported telling stories to their children, the frequency was low and wanting, with only less than one third telling stories at least once a week. Storytelling is crucial during the early years especially in developing the child's brain, promoting imagination, and language acquisition (Yabe et al., 2018). Further, a significant proportion of the parents were not allowing their children to play with their peers in the neighbourhood, while at the same time encouraging screen time (TV and smart mobile phones) which limits play and interactions at home. This study however established that other key areas of inbuilding cognitive skills and brain development including reading books, singing, counting, colouring for fine motor and encouraging the child to tell stories were highly practised. It would however be good to understand the context in which these were happening and explore opportunities for enhancing such positive practices.



This study was situated in the context of preschools (ECDE centres) in Nairobi informal settlements in Kenya. Preschools in Kenya are structured for early learning in a confined environment i.e. class like settings. Following this, it is envisioned that the adoption of the whole-child approach in the ECDE centres will support and nurture all areas of children's development and learning. Thus, the study measured WCD from the perspective of early learning in pre-numeracy, executive functioning, and literacy as well as social-emotional and self-awareness domains – which are also essential in promoting school readiness. Overall, we observed high performance in all the assessed domains. Performance was in most cases insignificantly different when examined by gender and school type.

These findings are in contrast with previous studies that found low performance among preschoolers overall and across the domains. For instance, in a similar study conducted in Zanzibar, learners scored on average 19% on this sub-task, though with a very large standard deviation of 43, indicating huge variability (MoEVT & UNICEF, 2019). In Kenya, the Tayari project, which was an interventional study implemented by RTI international and evaluated by the African Population and Health Research Center (APHRC) between 2016 and 2018 also found low performance among APBETS of about 30% when using the results of the baseline survey (Ngware et al., 2016). The Tayari baseline survey was however conducted at the beginning of the year, while the current survey was conducted at the end of the third term, and learners would have been exposed

to learning. Moreover, the current survey assessed learners in the fourth year of CBC implementation, which could have a bearing on the results.

The results of this study when put in the context of WCD paint a mixed picture: development of cognitive, physical, emotional, and communication skills. While on the one hand learners demonstrated good literacy, numeracy and social-emotional skills, they were exposed to environments that may not holistically support early learning on the other. Indeed, WCD is said to tie early learning to the rest of the educational system – and prepare learners for schooling (Committee on the Science of Children Birth to Age 8: Deepening and Broadening the Foundation for Success; Board on Children, 2015). Thus this study provides useful information for various stakeholders including both national and county governments, researchers, academics among others on the WCD and the quality of ECDE education received by learners in urban informal settlements of Nairobi.

Overall, one in every five learners was enrolled in the non-state low-cost private schools found in the informal settlements. The study shows that these schools have varied characteristics and a considerable number of the centres are not registered with the Ministry of Education despite existing guidelines that relaxed the strict requirements for the registration of schools (MoEST, 2015).

This means that the centres are operating without any oversight. Previous studies that extensively examined the support provided to these centres found minimal or no support by health and quality assurance officials, even in the registered private centres (NACONEK, 2020). Moreover, since majority of the entities are profit-driven, they may exploit the rather vulnerable population. This can further disadvantage children from urban informal resource settings.



5 in every 6 learners

was enrolled in the non-state low-cost private schools found in the informal settlements

6. Conclusion



In this study, we sought to understand the ECDE actors, which were found to be varied and dominated by individual providers. The mapped ECDE enrolled a significant population of children, with the numbers exceeding those provided by the government through the 2019 national education statistics. This calls for registration of the centres and putting in place measures for them to submit enrolment information to the Education Management Information System (EMIS). Further, there is a high degree of WCD development for learners enrolled in both public and private ECDE centres. We did not observe significant differences between the type of the centre and gender of the child in the various domains examined.

However, there were significant differences in which environment in which the children were exposed. For instance, public ECDE centres had a higher pupil-teacher ratio than private ECDEs, as well as a large number of learners per toilet door. However, the public centres were also likely to utilize better sanitation facilities than the non-public. The non-public were also characterized by limited access to play materials and grounds which are essential for physical and cognitive development. We also found out there was limited parental engagement with schools and teachers, particularly in public schools. This is one of the largest studies that attempted to map all ECDE players in Nairobi County. The mapping results provide a large sample to extrapolate and generalize the results for Nairobi, particularly how the low-cost providers are promoting the whole child development. The learner assessment provided an opportunity to understand the WCD in-depth and also the readiness of the learners to start schooling.

In conclusion, to increase the opportunity for children to thrive, the provision of ECDE that promotes WCD is important- both at home and school. Children from impoverished societies such as the urban poor are at risk and exposed to different vulnerabilities. Evidence has shown that learners with poor and vulnerable backgrounds benefit most from early education and targeted interventions.

However, the ECDE interventions should promote a facilitating learning environment, encourage playful or experiential learning and thinking and become responsive to children's needs, abilities, and interests. The environment should also promote connections of the different critical players, particularly the school, teachers, and parents to support child development in the different spheres of WCD. Thus, if the developmental needs of the learners, especially the vulnerable are not addressed early they can further inequalities in education and health. 7

7. Recommendation



Based on the findings of this study, three key recommendations emerge:

1. The national and county governments should explore ways to register and regulate the low-cost education providers found in the informal settlements. This is critical to protect learners and their families from exploitation by the private providers and to also ensure that they receive quality ECDE. One way to address this concern beyond the registration challenge is by improving access to public ECDE through the construction of new ones and expanding existing ones and equipping them with enough facilities including the playing spaces for the children to play and learn.
2. The national and county governments should promote inclusion by supporting both public and private ECDEs to cater for children with special needs.
3. Promoting home-school relations and parental support:
   a) ECDE centres should create and promote connections between home and school. In this study, we found that majority of the teachers, especially those in public ECDEs had little communication with the parents of the learners. For instance, on one hand, only 31% of the parents in public ECDEs reported signing diaries, while on the other, 55% of the teachers had reached less than 70% of the parents. Promoting WCD in the context ECDE is a shared responsibility and thus such connections between the ECDE centre and home need to be encouraged.
   b) Supporting parents to be involved in their children's development. Whereas parents were telling stories to children, it was infrequent and seemed to be driven by homework provided by the centres. Thus, the national and county government supported by local education officers should create awareness among parents on the need and ways to support WCD at home, critical to which is encouraging early learning in children that has long term benefits.



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