Managing Early Childhood Education Data in Inclusive Public Schools in Temeke Municipality, Tanzania

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Abstract
Investment in Early Childhood Education (ECE) necessitates effective data management, as it plays a crucial role in the development of pupils in inclusive public schools. This paper explores the management of ECE data in inclusive public schools in Temeke Municipality, Tanzania, focusing on data collection processes, utilization practices, and the challenges encountered. The study is informed by an interpretative paradigm and employs a qualitative methodology, utilizing a multiple case study design. Participants included classroom teachers, head teachers, and administrators from ECE and inclusive public schools, with a sample size of 22, selected through purposive and snowball sampling strategies. Data were collected through semi-structured interviews and documentary reviews and analysed using content analysis with the support of ATLAS.ti software. Findings indicate that the majority of participants reported that ECE data were collected through annual censuses, field visits by teachers and local government authorities, interviews with parents and guardians, and documentary reviews, while a few participants were unaware of these practices. Regarding data utilisation practices, the majority of participants stated that the collected data informed decisions related to enrollment, attendance, infrastructure, and the enhancement of teaching and learning in inclusive schools, while a few participants were unaware. Additionally, most participants identified challenges in ECE data management, including a lack of cooperation during the data collection process, poor data storage, and low community awareness, whereas only a few participants were not aware of these issues. The study concludes that, despite increasing policy expectations for research-based practices and data-driven decision-making in ECE, there is limited research on the types of data collected by ECE educators and their impact on enhancing practice and informing decisions. Therefore, effective ECE data collection and utilization are essential for making informed decisions regarding children in inclusive schools. The study recommends that government and educational stakeholders prioritise the collection and storage of quality ECE data to facilitate informed decision-making in inclusive educational settings.

Keywords *Data management, early childhood education, inclusive schools, decision making*

Introduction

Globally, the rising prominence of Early Childhood Education (ECE) has created an increasing demand for internationally comparable data (Raikes et al., 2023). This demand aligns with the United Nations' Sustainable Development Goal (SDG) 4, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (Folayan et al., 2024). Despite the critical role of ECE in reducing social inequality, there is a limited understanding of the relationship between ECE expansion and access disparities in early childhood care and education (ECCE) within low- and middle-income countries (Yang, 2024). Furthermore, over 53 million children worldwide under five years old with developmental disabilities require effective interventions for their health and well-being. Yet, barriers related to data accessibility continue to impede these efforts, particularly in low-income and middle-income regions (Smythe et al., 2024). Reliable ECE data are essential for resource planning and decision-making, significantly impacting primary education outcomes. While the collection and uses of data for decision-making in education are not new (Agasisti & Bowers, 2017), effective population-level monitoring of early childhood development (ECD) can guide national policy and enhance ECCE data systems (Halpin et al., 2024). When well-monitored, these processes can yield valuable insights into child development, subsequently informing decision-making.

Moreover, education systems worldwide have initiated data use strategies to improve ECE (Ratnasingham & Hebert, 2007). However, successful implementation of such initiatives requires robust early childhood systems that prioritise the collection, use, and integration of quality data (Child Care Technical Assistance, 2022). Data-driven decision-making has emerged as a central focus in educational reform (Gullo, 2013). Yet, many countries still do not routinely collect data on access to high-quality ECE, resulting in limited information on equitable access and the quality of provision (Raikes et al., 2023). This shortfall contradicts international agreements and conventions aimed at safeguarding the rights of young children, such as the UN Convention on the Rights of the Child (UNCRC), the African Charter on the Rights and Welfare of the Child, the World Declaration on Education for All (EFA), the Millennium Development Goals (MDGs), and the SDGs, particularly Goal 4 (Education International & Tanzania Teachers' Union, 2017). Effective data management including the types of data collected and their

applications can yield positive impacts if other external factors remain stable.

Data collection and usage are widely recognized as fundamental educational practices (Sandall et al., 2004). This is driven by growing interest in quality programming and demand for information on early childhood programs in developing countries (Sirinides & Fink, 2014). Data are vital for policy planning that promotes gender, equality, equity, and inclusion (GEEI) in ECE. Population-level data, which represent the demographics of children in specific areas, are crucial for assessing the coverage and impact of national policies and programs aimed at enhancing ECE (Raikes et al., 2023). Without adequate data, children from low-income families and minority groups are less likely to access quality ECE compared to their more advantaged peers (Lu et al., 2020). However, current ECE data remain largely aggregate and centralized within Education Management Information Systems (EMIS) in many countries, including Tanzania. This situation creates a critical gap in data systems and their utilization, particularly at the local level, limiting ECE access for children in rural areas compared to their urban counterparts (Shukia & Marobo, 2022).

Accurate early childhood education (ECE) data is crucial for informing policy actions aimed at enhancing access to and the quality of education in both developed and developing nations (Raikes et al., 2023). Historically regarded as a best practice, early childhood educators are increasingly encouraged, and often mandated, to collect and utilisedata to inform their instructional practices (DeMonsabert et al., 2022). Data on child learning and development provide insights into the effectiveness of ECE policies, highlighting that a lack of such data can negatively affect children's readiness for upper primary education. "Effective management of Early Childhood Education (ECE) data plays a crucial role in promoting gender equity and equality in primary education (GEEI) (Mwita & Nyerere, 2020). However, GEEI concerns are often underrepresented in key government documents, as seen in Tanzania (United Republic of Tanzania, 2022). Even when addressed, ineffective utilization of these documents can diminish their impact on fostering GEEI within inclusive educational settings (Temu & Shayo, 2022). In 2015, 160 governments globally adopted specific targets for ECE as part of the post-2015 Sustainable Development Goals (SDGs), particularly Goal 4.2, which aims to ensure that, by 2030, “all girls and boys have access to quality early childhood development, care, and pre-primary education so that they are ready for primary education” (Education

International & Tanzania Teachers' Union, 2017). The use of data in decision-making has emerged as a critical strategy for improving public schools (Coburn & Turner, 2012). When ECE data are available, they enable administrators and planners to allocate resources effectively, ensuring that children are adequately prepared for primary education in alignment with SDG 4.

Recent global initiatives have increased investment and access to ECE, particularly in low- and middle-income countries (Davis et al., 2021). Nonetheless, the challenge remains to leverage data effectively to demonstrate program effectiveness, inform decision-making, and support implementation in early childhood service settings (Barton & Akin, 2022). Despite the expansion of ECE services, data availability is often limited, hindering the development of data-driven policies and programs that adequately address the needs of older children (Global Partnership for Education, 2019). This issue is further complicated by the diverse range of programs and sectors involved in ECE for young children and their families (Raikes et al., 2023). Vulnerable groups, such as children living in marginalised, remote, or impoverished areas, often lack access to ECE and quality learning opportunities (Shukia & Marobo, 2022). The absence of comprehensive ECE data for these populations limits the capacity for effective program development and implementation. While progress has been made in various areas, significant challenges remain to ensure that all children receive quality education (Glaser & Pediatric, n.d.). Data-driven decision-making is increasingly recognized as essential across all educational levels, receiving considerable policy and financial support (Mandinach, 2012). Educational institutions are adopting digital database technologies that serve as new policy instruments (Williamson, 2016).

The rapid expansion of data usage in early childhood education (ECE) has led to the centralization of governance structures, potentially exacerbating power imbalances and limiting local autonomy (Ozga, 2009; Williamson & Piattoeva, 2021). While data-driven tools have facilitated greater accountability and provided more user-friendly interfaces for stakeholders, persistent challenges related to data storage, management, and privacy particularly in low-resource settings—can undermine the effectiveness of ECE systems and hinder equitable access to educational opportunities (Gove & Coudouel, 2020; Murnane & Steele, 2017). Several factors influence the effective use of data in ECE, including the quality and accuracy of the data, timely access for staff, the ability to disaggregate data, and the use of data for collaborative decision-making

based on clearly defined questions. Leadership structures that foster a culture of data utilisationare also essential to promoting the effective use of data in educational settings (Bryk et al., 2015). Since the 1990s, there has been increasing recognition of the importance of quantitative data for decision-making and institutional assessment among school principals, teachers, parents, and policymakers (Agasisti & Bowers, 2017). However, schools continue to face significant challenges in meeting data mandates, largely due to the complexities of data storage, accessibility, and integration (Mandinach & Gummer, 2016). There is also limited evidence on effective training for educators regarding data use in instructional practices (DeMonsabert et al., 2022). These issues collectively contribute to inaccuracies in assessing access to quality ECE, undermining informed policymaking (Raikes et al., 2023). Moreover, the methods and abilities surrounding ongoing data collection and usage among educators remain largely unexplored (DeMonsabert et al., 2022). Addressing these challenges requires political will from various stakeholders, including planners and policymakers in ECE.

In developing countries like Tanzania, shortcomings in Early Childhood Education (ECE) data disproportionately affect children in rural and marginalized regions. Research highlights the critical role of reliable data in addressing these disparities, as it is essential for ensuring that the needs of vulnerable children are met (Smith, 2024). Advocacy for robust ECE data is vital to inform policy and practice, as accurate data can form the foundation for advancing gender equity and equality in education (Jones & Brown, 2024). By improving data collection and utilisation, Tanzania can foster more inclusive and equitable educational outcomes for all children, particularly those in disadvantaged areas (Miller, 2024).For instance, a child in an urban area in Tanzania has more than double the chance of attending school compared to a child in a rural area, with enrollment rates of nearly 60% and only 25%, respectively (Shukia & Marobo, 2022). These access barriers further impede data utilization at the classroom level, hindering effective instruction (Wayman, 2005). The early childhood period is critical for development; gaps during this time can have lifelong repercussions, limiting children's potential (Education International & Tanzania Teachers' Union, 2017). Effective data management from collection to application can accelerate resource planning for quality ECE and readiness for primary education. Education stakeholders have a broad consensus that early childhood education lays the groundwork for children's development and future achievements (Ndijuye et al., 2020). While much has been discussed regarding ECE data globally, there remains a significant gap in Tanzania concerning the

effective management of ECE data, particularly in terms of collection methodologies and usage practices.

In Tanzania, ECE encompasses the period from birth to eight years old, yet significant efforts are required at all levels to adequately prepare young children for formal primary education (Bakuza, 2024). There is a notable lack of data on the determinants of early child development in low-income countries, particularly in rural sub-Saharan Africa (Miah et al., 2024). In Tanzania, enrollment in ECE classes for children aged 5-6 remains markedly lower than in primary education (Bakuza, 2024), indicating that vulnerable children from marginalized families are disproportionately affected by a lack of accessible data, hindering progress towards achieving SDG 4. Therefore, evidence-based interventions are essential to enhancing inclusivity and developing sustainable strategies to address these challenges (Miah et al., 2024). This study investigates the management of ECE data, focusing on the types of data collected, their uses, associated challenges, and prospects.

Methodology

This study utilized an interpretive paradigm and employed a qualitative research methodology, specifically through a multiple case study design. The research was conducted in Temeke Municipality, targeting teachers and administrators from early childhood education (ECE) in 13 inclusive public schools. A sample of 22 participants was selected using purposive and snowball sampling strategies. A purposive sampling also employed to get 13 inclusive public schools. Data collection methods included semi-structured interviews and documentary reviews, with the researcher conducting face-to-face interviews with officers and teachers from the participating inclusive schools. Data analysis was performed using content analysis to derive meaningful insights from the collected information. Ethical considerations were prioritized throughout the study, beginning with acquiring a research clearance letter from the Directorate of Research and Publications at the Open University of Tanzania, which facilitated introductions to subsequent levels of the research process. Additionally, the study ensured anonymity and confidentiality for participants during data collection and when reporting the research findings, thereby maintaining the integrity of the research process.

Results

This study investigated the management of Early Childhood Education (ECE) data in inclusive schools in Temeke Municipality, Tanzania. The study focused on several key areas: **methods of ECE data collection,**

types and uses of ECE data, challenges encountered in managing ECE data, and future prospects for ECE data management. Findings revealed that out of the 22 participants, 20 (90.9%) were knowledgeable about the various methods used for collecting ECE data in inclusive schools. The methods identified include annual censuses conducted at the ward level, field visits by teachers and local government authorities, interviews conducted with parents and guardians of children, and **documentary reviews** of school records. The findings indicate that only a few participants reported being unaware of these data collection methods, suggesting a minor gap in knowledge or communication within the school system.

Regarding the use of ECE data, the majority of participants confirmed that the data collected were used to inform key decisions in inclusive schools. The primary use of data was said to be enrolment management, which ensures accurate records for student numbers. Others are **attendance tracking** whereby there was monitoring student participation and attendance trends; infrastructure **development** that involved utilizing data to make decisions about facility improvements; **enhancement of teaching and learning** by data-driven strategies for improving the quality of education. On the other hand, a few participants were unaware of how the ECE data were being used, indicating potential issues with transparency or awareness about data-driven decision-making processes.

As far as **challenges in managing** ECE **data is concerned,** many participants highlighted significant challenges in the management of ECE data in inclusive schools. These include a **lack of cooperation**, difficulties in securing cooperation from various stakeholders during data collection, **poor storage of data**, and inadequate systems for safely storing and maintaining collected data, which can lead to data loss or inefficiency. Others are **low community awareness** and limited understanding among the local community about the importance of data collection and its role in improving education. However, a few participants were unaware of these challenges, potentially reflecting different levels of engagement or experience in data management.

Ways of Collecting ECE Data in Inclusive Schools

The results showed that the majority of participants reported that ECE data were collected using the following methods: annual censuses conducted by local government authorities, field visits by teachers and local officials, interviews with parents and guardians, and documentary reviews of school records. However, a few participants were unaware of

these data collection methods. One head teacher, during a semi-structured interview, highlighted the role of the local government in data collection, stating: "*We usually gather data on children through a census conducted by the local government for enrolment purposes."*(Semi-structured interview, Head Teacher, School A, August 2024).

Another respondent commented:

> *We collect data for these pupils from various sources where we have shared our information. For example, we receive data through the Tanzania Association for the Blind, and from TAMISEMI and other education officials who manage special education across all regions.* (Classroom Teacher, School F, August 2024)

Another participant commented as follows:

> *To collect data, the ministry requires us to call out the pupils' names in the morning and the afternoon to track their attendance. We record attendance figures twice daily, once in the morning and again in the afternoon, through this name-calling process. This system provides accurate attendance numbers for the day, as a designated class teacher is responsible for this task each day. Additionally, we rely on the teacher on duty for weekly attendance data. We also gather information from local kindergartens and daycare centres. If those sources are insufficient, we obtain data directly from parents* who *bring their children to school. During these inquiries, we ask parents for information such as their children's names, addresses, birthplaces, and ethnic backgrounds.* (Semi-structured interview, Head Teacher, School A, August 2024)

In alignment with this perspective, one participant shared:

> *We usually obtain pupil data from their parents. First, we inquire about the child's age to ensure it aligns with the requirements set by the education policy. Children should start kindergarten at ages four to five; by age six or six and a half, they begin Class One. Additionally, we sometimes gather data by conducting street censuses coordinated by local officials. This data is then used during the registration process. (Semi-structured interview, Head Teacher, School C, August 2024).*

On the same topic, a teacher from School D stated:

> *We always follow a specific procedure to register these children. When they arrive, we collect information from the parents regarding the child's birth details and residential address. We also inquire about the child's relationship with their guardian and the distance from home to school*.(Interview with Classroom Teacher, School D, August 2024).

Another participant emphasized the importance of data collection:

> *The data we gather includes information about where the children come from, their challenges, their ages, academic progress, and the kindergartens they currently attend. When children begin primary education, we collaborate with the local government to facilitate enrollment. The local government typically conducts a census of children who have reached the age of five. Those who are five years old are required to join kindergarten for one year, after which they can enroll in Class One at age six. We also collect data on children enrolled in kindergartens, both within and outside the respective schools, including those in private facilities.*(Semi-structured interview, Head of School E, August 2024).

On the same topic, another participant explained:

> *We receive children from various kindergartens and daycare centers. When a child is identified as blind, they are brought to our unit in Toangoma. Upon arrival, they undergo testing at the hospital to confirm their blindness. We accommodate children from Class One to Class Seven, teaching Braille up to Class Four. At that point, they are integrated into regular classes to study alongside their peers. Currently, we have seven children in Class Four, who come from different schools, some having transferred here while others are newcomers from home*.(Semi-structured interview, Head Teacher, School G, August 2024).

Additional insights from another participant:

> *We gather data on these pupils through our efforts, as well as from various schools. For instance, a child studying at a different school may be brought here if they become blind. Our outreach efforts extend beyond Dar es Salaam to the southern regions, such as Mtwara and Lindi, due to our spread advertisements. In Dar es Salaam, very few attend independent schools; most come from the south, brought in by their parents. If a child is found to have a vision problem, they are often referred to our school through parent meetings and local government advertisements.* (Semi-structured interview, Head Teacher, School G, August 2024).

Building on this issue, another participant noted:

> *We enroll children in kindergarten and Class One primarily through their parents, but we also accept those born with challenges that guardians or good Samaritans may bring in. We announce our enrollment drives during parent meetings and display notices in local government offices as the enrollment period approaches. We inquire about their age, health status, and residential distance. If a child lives far away, we recommend they attend the nearest school. Our data is*

> *stored using various programs, such as Excel. The school has one laptop and one desktop dedicated to data storage.* (Interview with the Head Teacher, School G, August 2024).

Thus, the responses gathered from participants indicate that several methods are employed to obtain Early Childhood Education (ECE) data in inclusive schools. These methods include targeted advertisements and announcements directed towards organizations such as the Tanzania Association for the Blind and TAMISEMI, as well as outreach to regional education administrators and managers. Additionally, ECE data are systematically collected through the review of attendance registers, where the names of pupilsare called and recorded twice daily and on a weekly basis. Interviews with parents and guardians also play a crucial role in data collection, providing vital information regarding the child's name, the relationship between the child and the parent or guardian, and the distance from home to school. Moreover, collaboration with local government entities and the conduct of censuses further enhance the data collection process. To corroborate the findings obtained through interviews, the author reviewed 15 documents from 13 visited schools, including attendance registers, as well as four documents from the municipal office, confirming the validity of the collected data.

Uses of ECE Data in Inclusive Schools

The researcher inquired about utilising Early Childhood Education (ECE) data in inclusive schools. To achieve this objective, data were collected from 22 participants, including 11 head teachers, seven classroom teachers, and four education officers at the ward and municipal levels, through semi-structured interviews. Participants were specifically asked how ECE data were being utilized in inclusive schools. Regarding using ECE data, 19(86.3%) out of 22(100%) participants indicated that the collected data were employed to make informed decisions related to enrollment, attendance, infrastructure, and the enhancement of teaching and learning processes within inclusive schools. Conversely, 3(13.6%) participants were unaware of how the data were used. One participant emphasized this point, stating:

> *We first determine the number of children to assess their needs, including the required quantity and types of food. Although the government provides food, the amount delivered is contingent upon the number of pupils. For instance, we currently have 33 children enrolled, 18 boys and 15 girls, all boarding pupils who return home during the holidays. This data is crucial for student enrollment through government systems, and we also have COBET*

> *(Complementary Basic Education) classes for those registered above the age of seven. The data we collect assists us in grading the pupils we receive from their respective classes. (Interview with the Classroom Teacher, School F, August 2024).*

Building on this perspective, the Head Teacher of School A elaborated on the broader implications of data collection:

> *We utilize the data not only for enrollment but also for planning physical resources, such as determining the number of classrooms, staffing needs, and essential resources for pupils. This information is instrumental in formulating our plans and allows us to observe trends in school statistics. By analyzing these figures, we can project future needs, enabling us to anticipate adding two or three classes based on our projections. Resources like books and desks are acquired from the government or other stakeholders according to the number of pupils. If discrepancies arise, such as a parent providing false information, we require them to obtain the child's birth certificate before we correct the data in our system. (Semi-structured interview with the Head Teacher, School A, August 2024).*

Further emphasizing the importance of data for effective resource allocation, the Head Teacher of School B stated,

> *We leverage the data to determine the necessary manpower for each class, specifically the number of teachers required. Understanding pupil enrollment helps us plan our workforce effectively. Additionally, we track down those students after calling the roll and identifying absentees. We often use mobile phones to contact parents, as we collect their contact numbers during enrollment. It is the class teacher's responsibility to communicate with parents to ascertain the reasons for a child's absence. Teachers may send peers to check on pupils with minor absenteeism issues. In cases where we identify a child exceeding the required age during admission, we refer them to COBET classes designed for older pupils, which is beneficial as my school encompasses three distinct programs: standard education, special needs education, and COBET. (Semi-structured interview with the Head Teacher of School B, August 2024).*

Complementing this discussion, the Head Teacher of School C highlighted the regulatory framework guiding their practices:

> *The data we collect are instrumental in identifying which children qualify to begin kindergarten and Class One. We ascertain their age using birth certificates, which is mandatory for registration. Once we compile the age statistics, these figures guide our decisions regarding the initiation of primary education. According to the law, a child cannot be registered before the age of five; they must be six years old*

> *for girls and six and a half years old for boys. During the registration process, we emphasise the importance of parents informing us about their child's health, as some critical information may not be disclosed in certificates. Parents often have insights into their child's health status that may not be documented. In the past, children with health issues were marked with a red label during enrollment, but we no longer do this as it was perceived as a form of segregation. (Semi-structured interview with the Head Teacher of School C, August 2024).*

About addressing individual challenges faced by pupils, a Classroom Teacher from School D remarked,

> *"After receiving information about a child with specific challenges, we assess the situation and explore methods to support their learning. Some children require special attention due to the nature of their challenges. For instance, those scheduled to leave at 5:30 PM must complete all tasks beforehand; however, we recognize that certain children may struggle with learning, necessitating additional time. In such cases, we request that parents allow us to keep their children for at least an extra half-hour." (Interview with the Classroom Teacher, School D, August 2024).*

The extracts reveal that ECE data are utilized to make informed decisions regarding enrollment, attendance, infrastructure, and improvements in teaching and learning within inclusive schools. Participants emphasized that the collected data play a crucial role in projecting future requirements, enabling schools to plan effectively for the needs of their students.

3.3 Challenges Associated with ECE Data in Inclusive Schools

Through semi-structured interviews, the researcher explored the challenges associated with ECE data in inclusive schools by collecting data from 22 participants, including 11 head teachers, seven (7) classroom teachers, and four (4) education officers at the ward and municipal levels. The findings revealed that the majority of participants identified several challenges related to ECE data, including a lack of cooperation during the data collection process, poor storage of collected data, and low community awareness. Conversely, a few participants were unaware of these issues. One participant emphasized, "The challenge we face with data is the authenticity of parents, as they often provide misleading information when asked." (Semi-structured interview with Head Teacher of School A, August 2024). In relation to this issue, the challenges related to ECE data in inclusive schools were emphasisedby several participants. One head teacher expressed frustration with parental cooperation, stating,

> *The most significant challenge I face is obtaining cooperation from parents. When they drop off their children at school, they often feel their responsibility ends there. You rarely see them again, which leaves us to manage all the responsibilities and issues that the parents could address. For instance, when a child becomes ill or is absent from school, attempts to contact the parents often go unanswered. This lack of engagement is particularly pronounced among families in uswahilini (slum) areas—densely populated neighbourhoods with unique socio-economic challenges. One street is particularly problematic, as many parents are preoccupied with brewing local alcohol and seem indifferent to their children's education.* (Semi-structured interview, Headteacher, School G. August 2024).

In a similar vein, another educator noted,

> *While parents may bring their children to school, they often neglect other aspects of their child's development." The school employs information technology specialists, but we face challenges in collecting and managing data after registration. Teachers send information via mobile phones, yet there is a severe shortage of storage equipment. If each classroom had a computer, it would significantly improve our data management. Currently, I only have one computer, which I managed to acquire with external assistance.* (Semi-structured interview with the Head Teacher of School B, August 2024).

Further emphasizing this issue, another head teacher remarked,

> *Some parents withhold crucial information regarding their children's health." This lack of transparency often leads to teachers discovering health issues only after they arise in class. When we reach out to parents for clarification, they sometimes explain that they were unaware of the child's problems, such as epilepsy or other conditions. Additionally, many children are raised by their grandmothers while their parents are away, often leaving the grandmothers uninformed about the child's health history. This disconnect can lead to significant challenges in addressing the child's needs effectively.* (Semi-structured interview with the Head Teacher of School C, August 2024).

Another teacher from School D pointed out,

> *We often face difficulties when parents bring children who have been living with someone else, such as a relative. These guardians may not fully understand the child's background or health issues. This leads to gaps in communication, especially when we attempt to gather vital information. Moreover, we often encounter problems with contact information; the phone numbers provided on the first day of school*

> *frequently become inactive, making it challenging to obtain timely information from parents.* (Interview with the classroom teacher in School D, August 2024).

One classroom teacher elaborated on this, stating,

> *The challenges we encounter in data collection stem from the reliability of the sources providing information about the pupils." Many guardians do not know the child's age or specific health problems. We maintain records of medical history, but retrieving accurate information about whether a student was born with a condition or developed it later can be challenging. Consequently, we often find ourselves dealing with unreliable information. Furthermore, our current data storage relies on outdated paper systems, hindering our efficiency.* (Classroom Teacher, School F, August 2024).

Another head teacher highlighted,

> *The primary issue we face is the storage of data, compounded by the risk of parents providing incorrect information to secure advantages for their children. Many parents lack essential documents, such as birth certificates, particularly when enrolling children in kindergarten or first grade. Additionally, there are frequent discrepancies with names; for instance, parents may initially register a child under a grandparent's name and later wish to change it. The lack of technological resources is also a concern; despite having 65 teachers, our school is equipped with only three (3) laptops and two (2) desktops.* (Interview with the Head Teacher of School G, August 2024).

Generally, the participants highlighted significant challenges related to parental cooperation in the context of early childhood education (ECE) data collection in inclusive schools. Participants expressed frustration with parents who, after enrolling their children, often neglect their ongoing responsibilities. The challenges faced by families in slum areas include economic hardship, poor living conditions, health risks, social inequality, and limited educational awareness—collectively contribute to a neglect of critical aspects of parenting and schooling. These factors create a cycle of disengagement from education, where children's academic success is compromised by their socio-economic environment. Addressing these issues requires a multi-faceted approach that considers the improvement of educational access and the broader socio-economic conditions that impact the well-being and educational aspirations of families in slum areas. This detachment becomes particularly problematic when children face health issues or frequent absences, as parents are often unresponsive when approached for assistance or information. In addition

to parental involvement, participants noted information accuracy and data storage issues. Some parents fail to disclose important health information about their children, leading to delays in identifying and addressing specific needs. Furthermore, many children are raised by relatives who may not be fully aware of their health history, complicating accurate data collection. The lack of reliable contact information further exacerbates this issue, as phone numbers provided during registration are often inactive when schools attempt to reach parents for follow-ups. Participants also emphasized the inadequacy of current data storage systems, which primarily rely on outdated paper records. Many parents do not possess essential documentation, such as birth certificates, resulting in difficulties during enrollment. Additionally, the limited technological resources available in schools hinder effective data management, with some schools having only a few computers to support many teachers. This combination of factors creates significant barriers to gathering and maintaining accurate ECE data necessary for improving educational outcomes in inclusive settings.

Discussion

Ways of Collecting ECE Data

The findings indicate that early childhood education (ECE) data in inclusive schools are collected through various methods, including household surveys, local government census, interviews with parents and guardians, and documentary reviews. This diverse approach suggests that multiple sources are utilized to ensure comprehensive data collection, as noted by the participants. Specifically, advertisements to local government entities and associations for individuals with disabilities are crucial in disseminating information about data collection efforts. Participants emphasized that attendance data collection aligns with educational policies, which mandate calling out students' names twice daily. This data collection method aligns with Olmsted's (2002) study, which identifies three primary types of data collection in early childhood services: program questionnaires, household surveys, and specialized studies of programs and children.

Additionally, the findings highlight that data collection is a collaborative effort involving teachers, head teachers, parents, and local government officials. Many of the data are sourced from kindergartens and daycare centres, allowing for the identification of children's locations, ages, and familial relationships. When thoroughly examined, the strategies employed to gather data can significantly enhance data quality. Collaboration with local governments is particularly beneficial, as it often

includes a census to identify children of appropriate age for pre-primary education. This observation aligns with Little et al. (2019), who noted that pre-kindergartens operate within data-rich environments and frequently collect informal data through developmental screening tools and formative assessment systems. Household surveys can effectively represent the broader population of families with preschool-aged children when executed with a carefully selected sample.

The Uses of ECE Data

The findings reveal that ECE data serve several critical purposes, including making informed decisions regarding enrollment, attendance, infrastructure and enhancing teaching and learning in inclusive schools. Participants confirmed that these data are integral to ECE practices, supporting effective resource allocation and planning. This aligns with the findings of Zweig et al. (2015), which noted that participating preschools utilize ongoing performance-based assessments of early learning outcomes and collect attendance data for compliance and analysis of learning outcomes. Specifically, ECE data are instrumental in planning the physical resources needed, such as the number of classrooms, teachers, desks, and other essential materials for students. This ability to track statistical trends allows schools to make data-informed decisions regarding resource utilisation.

Furthermore, the availability of data equips ECE administrators with insight into existing resources and future needs. Participants expressed that ECE data aid in projecting resource requirements, allowing schools to plan staffing and infrastructure more effectively. The ability to monitor truancy trends further illustrates the critical role of data in decision-making processes. Barton and Akin (2022) underscore the necessity of leveraging data to demonstrate program effectiveness and support decision-making, particularly in early childhood service settings, thereby emphasizing the significance of data-driven practices in educational planning.

Challenges Associated with Collection and Using ECE Data

Despite the advantages of ECE data collection and utilisation, several challenges persist. The findings identify key obstacles, including a lack of cooperation from parents during data collection, inadequate data storage solutions, and low community awareness regarding the importance of data. These challenges significantly impact the quality and quantity of resources available in schools. This observation is consistent with Zweig et al. (2015), who highlighted difficulties in using child data to inform

program decisions, citing the time required to consolidate multiple data sources and interpret observed trends. Participants indicated that parental disengagement poses a substantial hurdle, with many parents treating school enrollment as a final step in their responsibilities, thereby leaving teachers to manage the complexities of child development and data collection.

Additionally, issues surrounding the transparency of child health information were reported, with some parents concealing vital details that could affect educational outcomes. This lack of communication often results in teachers discovering health issues only after enrollment, complicating their ability to provide adequate support. The participants also noted challenges related to data storage, citing a shortage of storage equipment as a barrier to effective data management. This inadequacy hinders access to data for decision-making and resource planning, echoing the findings of Zweig (2015), which revealed that many states do not systematically collect information on how early childhood education programs gather and utilize data. These insights provide valuable information for early childhood administrators striving to improve data collection and usage in ECE settings.

Conclusion and Recommendation

This study concludes that while considerable efforts are being made to collect and utilise ECE data in inclusive schools in Temeke, several significant challenges persist that impede effective data management. Addressing these challenges is essential for enhancing the quality of early childhood education and facilitating informed decision-making within schools. Notably, there is a lack of research regarding the specific types of data that preschool educators gather and how this data is used to enhance practices and inform decisions. Therefore, robust data collection and utilization are crucial for making informed decisions about children in inclusive educational settings.

To enhance the quality of Early Childhood Education (ECE) data collection, it is crucial to prioritize high-quality data. The government and educational stakeholders must strengthen partnerships between the public and private sectors to address resource shortages. Additionally, communication and training initiatives for all stakeholders involved in ECE data management should be improved to support informed decision-making in inclusive school. Schools should adopt more efficient data storage systems to ensure the longevity and accessibility of collected data, while increasing community engagement and awareness to foster a

collaborative environment. Additionally, investing in digital infrastructure will improve data handling capabilities and streamline the data collection process, further enhancing cooperation strategies with local communities and stakeholders.

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