

# Academic Challenges Faced by Preschool Learners with Hearing Impairment in Early Childhood Development and Education Centres in Kakamega County, Kenya

KHABENDI PHILIS MUSINDAYI<sup>1</sup>, CHRISTINE NABWIRE<sup>2</sup>, JANET NABISWA<sup>3</sup>  
<sup>1, 2, 3</sup> Department of Educational Psychology, Kibabii University, Kenya

*Abstract- Hearing impairment in early childhood disrupts speech, language and learning during the years in which foundational literacy and numeracy are established. Although Kenya has ratified international disability instruments and enacted supportive domestic legislation, empirical evidence on how hearing impairment constrains learning at the preschool level remains scarce, with most local research concentrated on primary and secondary school populations. This paper examines the academic challenges faced by preschool learners with hearing impairment in Early Childhood Development and Education centres in Kakamega County, Kenya. A cross-sectional survey design employing a mixed methods approach was adopted. Quantitative data were obtained from nine Early Childhood Development and Education teachers drawn from six special schools for the hearing impaired using a structured questionnaire, and were analysed descriptively using frequencies and percentages. Qualitative data were obtained through interviews with heads of institutions and focus group discussions with parents and guardians, and were analysed thematically. The study achieved a response rate of one hundred percent. All respondents agreed that communication barriers, limited vocabulary development, inadequate parental support, the shortage of teachers trained in Special Needs Education and social interaction difficulties adversely affect academic performance. Shortage of trained teachers and social interaction difficulties each attracted unanimous strong agreement, and none of the participating teachers held formal training in Special Needs Education. Qualitative evidence identified communication barriers as the dominant constraint, operating simultaneously in the classroom and in the home where parental proficiency in Kenyan Sign Language was limited. The study concludes that the academic challenges confronting these learners are interconnected rather than discrete, and recommends sustained teacher training in Kenyan Sign Language and inclusive pedagogy, structured parental sign language support, and strengthened home-school collaboration.*

*Index Terms- Academic Challenges, Early Childhood Development and Education, Hearing Impairment, Kenyan Sign Language, Preschool Learners.*

## I. INTRODUCTION

Hearing impairment in early childhood is widely regarded as a sensitive public health and education concern because it disrupts the development of speech, language and learning during the most critical years of a child's growth. The United Nations Convention on the Rights of Persons with Disabilities affirms the right of children with disabilities, including learners who are deaf or hard of hearing, to education delivered in appropriate languages and modes of communication and in environments that maximise academic and social development. Article 24 of the Convention obliges states parties to provide inclusive education supported by reasonable accommodation, including sign language and assistive technologies, so that children with disabilities may learn on an equal basis with others [1].

The scale of the concern is considerable. Global estimates indicate that a very large number of children live with some degree of hearing loss, and that the burden falls disproportionately on low and middle income countries where detection and intervention services are thinnest [2]. Evidence assembled by the World Health Organization further documents the developmental and educational consequences of unaddressed hearing loss and the cost effectiveness of timely intervention [3]. Longstanding evidence establishes that children with hearing impairment experience pronounced delays in literacy outcomes where identification and support do not occur early [4].

Comparative syntheses of international studies report that children with disabilities, including those with

hearing impairment, achieve lower academic outcomes than their peers in inclusive settings whenever effective supports are absent. Such underachievement is consistently associated with insufficient instructional materials, shortages of trained personnel, weak communication support and inadequate classroom accommodation rather than with impairment alone [5].

Across many African education systems, inclusive education policy has been adopted while implementation lags. Inclusive practice requires an adapted curriculum, sign language proficiency among teachers, assistive technologies and learning resources tailored to hearing impaired learners; in the absence of these provisions, children commonly struggle with language acquisition, literacy and classroom participation [6]. Regional work on early hearing detection and intervention reports that children who pass through structured detection programmes demonstrate stronger school readiness and achievement, although substantial numbers still fail to progress beyond the lower primary grades, which underlines the decisive role of the early years [7].

In Kenya, the Children Act guarantees every child the right to free and compulsory basic education without discrimination, and requires that information provided to children be accessible to those with disabilities. Read together with the Persons with Disabilities Act and with Kenya's obligations under the Convention, the domestic framework establishes a clear entitlement to education that accommodates hearing impairment, including access to Kenyan Sign Language and reasonable adaptation within schools [8]. The policy architecture is therefore well developed, yet local evidence indicates that practice does not consistently follow.

Evidence from Kakamega County illustrates the point. Work on the influence of Kenyan Sign Language on the syntactic patterns of written English in schools for the deaf reported learner scores clustering well below average, in the range of twenty to thirty nine percent [9]. Other Kenyan studies attribute such outcomes to late identification, communication gaps and an insufficient supply of specialist trained teachers, all of which translate into weak foundational literacy [10]. Where appropriate support and teacher preparation are

in place, however, learners with hearing impairment are capable of sound academic progress [11].

What is missing is evidence located at the preschool level. Research in Kakamega County has concentrated overwhelmingly on primary, junior and secondary school populations, leaving the Early Childhood Development and Education phase, during which cognitive, social and academic foundations are laid, comparatively unexamined. This paper addresses that gap. It reports the first objective of a larger study and sets out to identify the academic challenges faced by preschool learners with hearing impairment in Early Childhood Development and Education centres in Kakamega County, Kenya.

## II. STATEMENT OF THE PROBLEM

Under the Kenyan early years curriculum, preschool children are expected to make measurable progress across several developmental and academic domains, among them language and communication, early mathematics, environmental activities, psychomotor and creative skills, and religious activities. Hearing impairment is known internationally to depress language development and learning outcomes, yet very little local research examines how this operates among preschool learners specifically. Studies conducted in the region have concentrated on primary school children and above, so the period during which the cognitive, social and academic foundations of schooling are laid has largely escaped scrutiny.

The consequence is a substantive gap in understanding. Despite an inclusive education policy framework that is comparatively strong on paper, there is limited empirical evidence describing the specific academic challenges confronting preschool learners with hearing impairment in Early Childhood Development and Education centres in Kakamega County, or the conditions under which those challenges intensify. Without such evidence, interventions designed for this population rest on findings imported from older learners whose language systems are already established.

The theoretical case for concern is equally clear. If language is the principal vehicle of knowledge construction and learning is inherently social, then hearing impaired preschoolers are denied access to incidental learning and to the social scaffolding on

which early cognitive and academic development depends, placing them at a marked disadvantage in acquiring foundational literacy and numeracy. Where deficiencies also accumulate across the wider environment, in the form of untrained teachers, restricted communication at home, absent assistive devices and weak implementation of policy, hearing impairment ceases to be a purely clinical matter and becomes a systemic educational challenge. This study therefore sought to identify, in a defined local setting, the academic challenges that preschool learners with hearing impairment actually encounter.

### III. THEORETICAL FRAMEWORK

The study was guided by two complementary theories: Vygotsky's sociocultural theory and Bronfenbrenner's ecological systems theory.

Vygotsky holds that social interaction is fundamental to the development of cognitive skills, and that language functions as the primary cultural tool through which higher mental processes are formed [12]. Preschool children acquire literacy and numeracy through guided participation, classroom dialogue, storytelling, play and interaction with teachers and peers. Hearing impairment restricts access to spoken language, classroom discussion, phonological awareness activities and peer communication. The predictable results are delayed vocabulary development, difficulty in sound discrimination and difficulty following verbal instruction, which in turn constrain letter and sound recognition, comprehension, counting and problem solving. Where appropriate scaffolding in the form of sign language, visual aids and individualised instruction is not consistently supplied, the learner cannot advance through the zone of proximal development. The theory therefore predicts that the academic challenges observed will be communicative and interactional in character rather than narrowly cognitive [14].

Bronfenbrenner holds that development is shaped by interaction across nested environmental systems [13]. At the microsystem level, limited teacher preparedness in Special Needs Education, inadequate assistive devices and the absence of individualised support depress classroom performance. At the mesosystem level, weak collaboration between parents and teachers reduces the consistency of support available to the child. At the exosystem level, restricted access

to audiological services and early intervention programmes delays language development. At the macrosystem level, societal attitudes to disability and the quality of implementation of inclusive education policy determine the opportunities available. Over time, at the chronosystem level, delayed identification and late intervention widen the gap in literacy and numeracy. The theory therefore predicts that the challenges will be layered and mutually reinforcing.

Taken together, the two theories frame the academic challenges of preschool learners with hearing impairment as arising from restricted communicative access operating within an environment that fails to compensate for it. This dual lens informed both the construction of the instruments and the interpretation of the findings reported below.

### IV. LITERATURE REVIEW

The literature identifies a recurring cluster of challenges affecting preschool learners with hearing impairment in low resource settings, and it is on these that the present study focused.

#### *A. Communication Barriers*

Communication is consistently reported as the single most influential factor in the academic performance of learners with hearing impairment. Learners frequently struggle with language development where they lack access to sign language or another formalised communication system, and without adequate language they fall behind their peers in the literacy and numeracy skills on which subsequent achievement is built [15]. The difficulty is compounded in classrooms where instruction is delivered orally and where teachers themselves are not fluent signers.

#### *B. Limited Vocabulary Development*

Learners with hearing impairment commonly present with restricted vocabulary and with particular difficulty in handling abstract terms, and the gap relative to hearing peers tends to widen with age in the absence of specialist support [7]. Grammatical features carried by low intensity sounds, such as plural and past tense inflections, are especially difficult to acquire because they are hard to perceive [16].

### *C. Inadequate Parental Support*

Parental involvement through home support, provision of materials and supervision is a key determinant of early skill development. Where parents lack proficiency in sign language, the home ceases to function as a site of language reinforcement, and continuity between school and home learning is broken. Parental participation has been shown to enhance language acquisition, literacy development and learner confidence, which makes its absence consequential.

### *D. Shortage of Teachers Trained in Special Needs Education*

Many preschool practitioners lack sufficient training in Special Needs Education, in Kenyan Sign Language and in strategies appropriate to teaching hearing impaired learners, with the result that opportunities for early intervention are missed [19]. Reviews of teacher preparation for inclusive settings converge on a multi component model comprising knowledge of the nature and degree of hearing loss and its instructional implications, communicative competence in sign or sign supported strategies, and pedagogical skill in visual scaffolding, simplified language, repetition and inclusive classroom management [5]. Learners attending special schools or units, where such competence is more likely to be present, record better outcomes than those placed in mainstream settings without accommodation [20].

### *E. Social Interaction and Listening Fatigue*

Communication barriers make interaction with hearing peers difficult and can produce loneliness, isolation and low self esteem, with learners tending to interact preferentially with children of similar hearing status [18]. Processing auditory information through hearing aids or implants in a noisy classroom is also mentally taxing, and the resulting listening fatigue reduces sustained attention and depresses cognitive performance [17].

### *F. Research Gap*

Existing research addresses special needs education broadly and concentrates on the primary and secondary levels. Within Kakamega County in particular, no published empirical study documents the academic challenges confronting hearing impaired learners at the Early Childhood Development and

Education level, nor the effectiveness of teacher preparation in Special Needs Education within preschool settings. The present study was designed to address that gap.

## V. RESEARCH METHODOLOGY

### *A. Research Design*

The study adopted a cross-sectional survey design employing a mixed methods approach. A cross-sectional survey is appropriate where the purpose is to reveal useful information about the nature of a given phenomenon [24], and the design permitted examination of the relationship between hearing impairment and academic performance without manipulation of the setting. The mixed methods component allowed quantitative patterns obtained from teachers to be interrogated against the accounts of heads of institutions and parents.

### *B. Study Area and Population*

The study was conducted in special Early Childhood Development and Education centres serving learners with hearing impairment in Kakamega County, Kenya, covering four sub counties, namely Mumias West, Kakamega Central, Kakamega South and Likuyani, so as to represent both urban and rural settings. The target population comprised preschool learners with hearing impairment aged three to five years, their teachers, the heads of their institutions and their parents, drawn from six schools for the hearing impaired. The aggregate target population was one hundred and eighty eight respondents, comprising twenty six preschool teachers, seventy eight learners, six heads of institutions and seventy eight parents.

### *C. Sampling Procedure and Sample Size*

Purposive sampling was used to select the six special preschools and the categories of respondent, and simple random sampling was applied within categories. Slovin's formula was applied at a margin of error of 0.05 to determine sample sizes, yielding sixty five learners, sixty five parents, twelve teachers and six heads of institutions. The findings reported in this paper derive from the teacher questionnaire strand, to which nine Early Childhood Development and Education teachers responded, together with interviews conducted with heads of institutions in all

six schools and focus group discussions with parents and guardians.

#### *D. Data Collection Instruments*

A structured questionnaire administered to preschool teachers supplied the quantitative data. Items relating to the present objective were presented on a five point Likert scale ranging from strongly agree to strongly disagree, and addressed communication barriers, vocabulary development, parental support, the supply of trained teachers and social interaction. Interview schedules were used with heads of institutions, focus group discussions were held with parents and guardians, and an observation schedule was used for systematic observation of learner behaviour. Secondary data were drawn from admission records. The combination of instruments was chosen to permit triangulation and to yield both quantitative and qualitative evidence bearing on the objective.

#### *E. Validity and Reliability*

Content validity was established through expert review of the questionnaire, interview schedules and document analysis instruments, on the principle that validity concerns the accuracy with which an instrument represents the concept under study [26]. Reliability, understood as the internal consistency and stability of field data [25], was assessed through a pilot study conducted in one school for the hearing impaired that did not form part of the main sample; the pilot yielded consistent results.

#### *F. Data Analysis*

Quantitative data were analysed using descriptive statistics, specifically frequencies and percentages, and are presented in tables. Qualitative data from interviews and focus group discussions were analysed thematically, and the resulting themes were integrated with the quantitative findings so that each set of results could be read against the other.

#### *G. Ethical Considerations*

Approval was obtained from the Kibabii University Board of Graduate Studies and a research licence was obtained from the National Commission for Science, Technology and Innovation. The licence was presented to the County Director of Education and to the participating institutions before data collection began. Informed consent was obtained from parents

and legal guardians, and assent was sought from the children using age appropriate and disability friendly communication, including visual cues. Participation was voluntary and respondents were informed of their right to withdraw at any stage without penalty. Confidentiality, privacy and anonymity were observed throughout, personal identifiers were not recorded, and the data were used solely for academic purposes [8].

## VI. RESULTS AND FINDINGS

### *A. Response Rate*

All nine sampled Early Childhood Development and Education teachers completed and returned their questionnaires, giving a response rate of one hundred percent. A response rate above seventy percent is regarded as adequate for analysis [27], so the rate obtained was sufficient to support the findings reported here.

### *B. Characteristics of Respondents*

Respondents were asked to indicate the type of centre in which they taught. Six respondents, representing 66.7 percent, were drawn from public centres and three, representing 33.3 percent, from faith based institutions. None taught in a private centre, so the findings principally represent public provision, which is where the majority of learners with hearing impairment in the study area are enrolled.

Table 1: Type of ECDE Centre

| Type of Centre | Frequency | Percentage (%) |
|----------------|-----------|----------------|
| Public         | 6         | 66.7           |
| Faith-based    | 3         | 33.3           |
| Private        | 0         | 0              |
| Total          | 9         | 100            |

Teaching experience was well distributed. Three respondents, representing 33.3 percent, had taught for between six and ten years, and a further three, again 33.3 percent, for more than fifteen years. One respondent, 11.1 percent, had between eleven and

fifteen years of experience and two, 22.2 percent, had five years or fewer. Most respondents therefore possessed sufficient classroom experience to comment reliably on the learning of preschool children with hearing impairment.

Table 2: Teaching Experience

| Teaching Experience | Frequency | Percentage (%) |
|---------------------|-----------|----------------|
| 1–5 Years           | 2         | 22.2           |
| 6–10 Years          | 3         | 33.3           |
| 11–15 Years         | 1         | 11.1           |
| Above 15 Years      | 3         | 33.3           |
| Total               | 9         | 100            |

Respondents were then asked whether they held formal training in Special Needs Education. None did. This finding is of considerable consequence for the objective under examination, since it indicates that learners whose access to the curriculum depends on specialist communicative and pedagogical competence were being taught entirely by staff who had not been formally prepared to provide it.

Table 3: Training in Special Needs Education

| Response | Frequency | Percentage (%) |
|----------|-----------|----------------|
| Yes      | 0         | 0              |
| No       | 9         | 100            |
| Total    | 9         | 100            |

### C. Communication Barriers

Teachers were asked whether communication barriers affected the academic performance of preschool learners with hearing impairment. Every respondent agreed, with 55.6 percent strongly agreeing and 44.4 percent agreeing.

Table 4: Communication Barriers

| Response          | Frequency | Percentage (%) |
|-------------------|-----------|----------------|
| Strongly Agree    | 5         | 55.6           |
| Agree             | 4         | 44.4           |
| Neutral           | 0         | 0              |
| Disagree          | 0         | 0              |
| Strongly Disagree | 0         | 0              |
| Total             | 9         | 100            |

The qualitative evidence reinforced this result, and communication emerged as the dominant theme across both interviews and focus group discussions. Heads of institutions explained that learners had difficulty understanding classroom instructions because communication depended largely on Kenyan Sign Language, visual demonstration and repeated explanation, and that learners who had not yet mastered sign language struggled to follow classroom activity at all. One head teacher observed:

*“Communication barriers are the greatest obstacle because learners cannot easily follow verbal classroom instructions.”*

Parents reported the same difficulty operating in the home, where limited household proficiency in sign language restricted their capacity to assist with schoolwork and reinforce classroom learning. One parent stated:

*“Communication is difficult at home because we do not all know sign language.”*

Participants explained that these difficulties reduced classroom participation, slowed language development and impaired comprehension of lessons.

### D. Vocabulary Development

Teachers were asked whether hearing impairment affected vocabulary acquisition. All respondents agreed, with 88.9 percent agreeing and 11.1 percent strongly agreeing.

Table 5: Vocabulary Development

| Response          | Frequency | Percentage (%) |
|-------------------|-----------|----------------|
| Strongly Agree    | 1         | 11.1           |
| Agree             | 8         | 88.9           |
| Neutral           | 0         | 0              |
| Disagree          | 0         | 0              |
| Strongly Disagree | 0         | 0              |
| Total             | 9         | 100            |

Interview participants reported that learners acquired vocabulary more slowly than hearing peers, attributing this to delayed language exposure and to limited opportunity for communication outside school. Parents observed that progress improved appreciably where visual materials, picture books and sign language were used consistently in both settings, which suggests that the deficit is responsive to instructional and home conditions rather than fixed.

#### E. Parental Support

Teachers were asked whether inadequate parental support adversely affects academic performance. All agreed, with 77.8 percent strongly agreeing and 22.2 percent agreeing.

Table 6: Parental Support

| Response          | Frequency | Percentage (%) |
|-------------------|-----------|----------------|
| Strongly Agree    | 7         | 77.8           |
| Agree             | 2         | 22.2           |
| Neutral           | 0         | 0              |
| Disagree          | 0         | 0              |
| Strongly Disagree | 0         | 0              |

| Response | Frequency | Percentage (%) |
|----------|-----------|----------------|
| Total    | 9         | 100            |

The focus group discussions revealed that parents wished to support their children but faced identifiable obstacles. Four constraints recurred: limited knowledge of Kenyan Sign Language, work related commitments, inadequate understanding of hearing impairment, and limited guidance from schools on how to support learning at home. One head teacher explained:

*“Some parents rarely attend school meetings or assist children with learning activities.”*

Parents further reported that although schools supplied learning materials, they themselves seldom received training in how to use those materials to reinforce classroom learning. Home and school therefore functioned as separate rather than mutually supporting environments, which limited the continuity of the child’s language exposure.

#### F. Shortage of Trained Teachers

Respondents were asked whether the shortage of teachers trained in Special Needs Education affects academic performance. All nine, representing one hundred percent, strongly agreed. This unanimity, read alongside the finding that none of them held such training, identifies teacher preparedness as a challenge recognised most acutely by those directly affected by it.

Table 7: Shortage of Trained Teachers

| Response       | Frequency | Percentage (%) |
|----------------|-----------|----------------|
| Strongly Agree | 9         | 100            |
| Agree          | 0         | 0              |
| Neutral        | 0         | 0              |
| Disagree       | 0         | 0              |

| Response          | Frequency | Percentage (%) |
|-------------------|-----------|----------------|
| Strongly Disagree | 0         | 0              |
| Total             | 9         | 100            |

Interview evidence supported the quantitative result. Participants reported that teachers were committed to supporting learners with hearing impairment but lacked specialist competence in Kenyan Sign Language and in inclusive instructional practice. Heads of institutions argued that continuous professional development was necessary if instructional effectiveness were to improve. One head teacher stated:

*“Teachers need continuous training in sign language and inclusive teaching methods.”*

Participants further observed that teachers who had acquired additional skill in Kenyan Sign Language were better able to explain concepts, manage classrooms and secure learner participation, and parents expressed confidence that strengthening teacher competence would improve outcomes.

#### G. Social Interaction Challenges

Teachers were asked whether learners with hearing impairment experience difficulty interacting socially with peers. All nine respondents strongly agreed.

Table 8: Social Interaction Challenges

| Response          | Frequency | Percentage (%) |
|-------------------|-----------|----------------|
| Strongly Agree    | 9         | 100            |
| Agree             | 0         | 0              |
| Neutral           | 0         | 0              |
| Disagree          | 0         | 0              |
| Strongly Disagree | 0         | 0              |
| Total             | 9         | 100            |

The qualitative data indicated that restricted social interaction was a recurring concern. Parents explained that communication barriers prevented children from interacting freely with classmates and from participating confidently in classroom activity. One head teacher observed:

*“Some learners participate less in classroom activities because they fear making mistakes when communicating.”*

Participants reported that these difficulties produced emotional consequences including frustration, withdrawal, low self esteem and reduced motivation. One parent explained:

*“When they fail to understand instructions, they become frustrated and lose interest.”*

The emotional and behavioural sequelae of communication difficulty therefore constitute a second order challenge, further reducing participation and, by extension, achievement.

#### H. Summary of Findings

The quantitative and qualitative strands converge. Teachers were unanimous that communication barriers, limited vocabulary development, inadequate parental support, the shortage of trained teachers and social interaction difficulties all depress academic performance, with the latter two attracting unanimous strong agreement. The qualitative evidence identified communication as the dominant constraint, operating simultaneously in the classroom, where teachers lack signing competence, and in the home, where parents lack it also. These challenges are not independent of one another: limited teacher competence in Kenyan Sign Language restricts classroom communication, restricted communication limits vocabulary growth and peer interaction, and limited parental signing competence prevents the home from compensating for either.

### VII. DISCUSSION

The finding that communication barriers exert the strongest influence on academic performance supports Vygotsky's position that learning proceeds through meaningful social interaction mediated by language [12]. Where communication between teachers, learners and parents is restricted, the opportunities for cognitive development that guided participation is



meant to supply are correspondingly reduced, and the learner cannot be carried through the zone of proximal development. The vocabulary findings follow directly from the same mechanism, and are consistent with evidence that vocabulary gaps widen without specialist support [7] and that grammatical features carried by low intensity sounds are particularly difficult to acquire [16].

The parental support findings are best read through Bronfenbrenner's framework [13]. The obstacle reported by parents was not indifference but capability: they lacked proficiency in Kenyan Sign Language and had received no guidance on supporting learning at home. This is a mesosystem failure, in which two microsystems that ought to reinforce one another instead operate in isolation, and it indicates that interventions directed at parental attitude would be misdirected where the binding constraint is parental skill.

The unanimous strong agreement on teacher shortage, occurring alongside the finding that no participating teacher held formal Special Needs Education training, is the most consequential result reported here. It corroborates evidence that insufficient preparation in Special Needs Education and Kenyan Sign Language causes early intervention opportunities to be missed [19], and it aligns with the multi component model of teacher preparation described in the reviewed literature [5]. It also helps explain why learners in the study area perform below expectation despite an enabling policy framework: the framework confers an entitlement to communicative access that the available workforce is not equipped to deliver. The observation that teachers who had acquired additional signing skill were more effective indicates that the deficit is remediable through training rather than intrinsic to the setting.

The social interaction findings are consistent with evidence that learners with hearing impairment interact preferentially with peers of similar hearing status and are vulnerable to isolation and low self esteem [18]. Both theories anticipate this result, Bronfenbrenner in treating peer relationships as a significant environmental influence and Vygotsky in holding that learning occurs through interaction with more capable peers and adults. The emotional consequences reported by participants, namely

frustration, withdrawal and reduced motivation, suggest a self reinforcing cycle in which communicative difficulty depresses participation, reduced participation limits language exposure, and limited exposure entrenches the original difficulty.

Read as a whole, the findings support the view that the academic difficulties of these learners arise less from hearing impairment considered as a clinical condition than from an educational environment that has not been equipped to compensate for it. This is consistent with international evidence attributing the underachievement of children with disabilities in inclusive settings to deficits in materials, personnel and communication support rather than to impairment itself [5].

## VIII. CONCLUSION

The study establishes that preschool learners with hearing impairment in Early Childhood Development and Education centres in Kakamega County face multiple interconnected academic challenges. Communication barriers are the most significant, restricting comprehension of instruction, classroom participation and language acquisition. Hearing impairment limits vocabulary acquisition and thereby constrains literacy development. Inadequate parental support, arising principally from limited household proficiency in Kenyan Sign Language rather than from unwillingness, weakens the continuity of learning between school and home. The shortage of teachers trained in Special Needs Education was recognised unanimously as a critical constraint, a finding given particular weight by the absence of any such training among the participating teachers. Social interaction difficulties compound these challenges by producing frustration, withdrawal and reduced motivation.

These challenges are interconnected rather than discrete, and they are largely environmental in origin. It follows that they are amenable to intervention. Strengthening teacher competence in Kenyan Sign Language and inclusive pedagogy, extending communicative capability to parents, and building genuine collaboration between home and school would address the mechanism common to all five, namely restricted communicative access, and would therefore be expected to improve outcomes across the whole cluster.

## IX. RECOMMENDATIONS

First, the Ministry of Education should recruit and deploy teachers trained in Special Needs Education to Early Childhood Development and Education centres serving learners with hearing impairment, and should institute continuous professional development in Kenyan Sign Language, inclusive instructional strategy and learner assessment for teachers already in post.

Second, the County Government of Kakamega should allocate adequate financial provision for inclusive early years education, directed in particular at teacher training and at the communication support on which classroom access depends.

Third, Educational Assessment and Resource Centres should conduct regular school visits to identify learners with hearing impairment early and to provide professional support to teachers and parents, since late identification widens the very gaps this study documents.

Fourth, school management should establish structured Kenyan Sign Language training for parents and guardians, and should strengthen home-school collaboration through regular meetings, workshops and awareness programmes, so that the home is equipped to reinforce classroom learning rather than merely encouraged to do so.

Fifth, parents should participate actively in school activities and make deliberate efforts to acquire Kenyan Sign Language, working with teachers to reinforce classroom learning and to monitor progress.

Further research should examine the effectiveness of Kenyan Sign Language training programmes for Early Childhood Development and Education teachers, investigate the influence of parental sign language proficiency on learner achievement, and extend the enquiry across several counties in order to establish the generalisability of these findings.

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