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TOWARDS IMPLEMENTING INCLUSIVE EDUCATION IN KENYA: LESSONS FROM THE LEARNING ENVIRONMENT IN UASIN GISHU COUNTY

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Abstract:
Although Kenya has been helped by United Nations International Children's Fund (UNICEF), the Bernard Van Lee Foundation (BVLF) and the Agha Khan Foundation, a lot remains to be done in the quest to achieve inclusive education. As such, fully cognizant of other factors that may account for this scenario, this study sought to determine the extent to which the school learning environment influences implementation of inclusive education in rural public primary schools within Uasin Gishu County, Kenya. Adopting a mixed design approach, the study sampled 221 teachers. Stratified and proportionate sampling was used to select schools (ECDE centres) and teachers, while data was collected using questionnaires, interview schedules and observation guides. Data collected was analysed both quantitatively and qualitatively. Pearson Chi-square and Regression, and correlation analysis were used to establish the existence and strength of association between the study variables. The level of significance was set at 95% or at a p-value of 0.05. Open-ended questions were analysed through reporting themes and quotas as they emerged. The analysed data was presented in frequency tables, graphs and charts denoting the findings of the study. The study findings indicated that there was there was significant association between the conduciveness of the school learning environment (χ2=99.712; df=16; p=0.000) and

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implementation of IE. Further, from R-square values, the school learning environment (19.0%) contributed to the implementation of inclusive education in rural public ECD centres in Uasin Gishu County, Kenya. This paper establishes that the conduciveness of the environment enhances implementation of the IE. In learning environments where assistive technologies have been installed and working, then implementation may be deemed successful. Therefore, there is a need for deliberate funding by county government, since ECDE is a devolved function. There is also need for a legislation to govern ECDE centre, and this legislation ought to be in tandem with national goals and sustainable development goals.

Keywords: learning environment, challenges, inclusive education, Uasin Gishu County, special needs learning, early childhood development

1. Introduction: A Brief Overview of Inclusive Education

According to a report published by the World Health Organization (WHO, 2011), 15% of the global population (200 million) suffers from some form of disability. Some of them are children, women or aged persons with disabilities. Charema (2007) claims that 87% of individuals with disabilities in developing countries live in rural areas. Inclusive education is considered to be a means of providing educational opportunities for all children, including children with disabilities. This means placing children with physical disabilities, behavioural or academic difficulties or social concerns together with regular children in mainstream classrooms (Wilczenski, 2012).

To discuss inclusion, there is need to first understand exclusion, which is more complex than unequal access and outcomes for students with disabilities (Slee, 2011). Students from non-dominant groups tend to be over-represented in special education in the United States (Waitoller, Artiles, & Cheney, 2010), Austria (Luciak & Biewer, 2011), Germany, Sweden (Berhanu, 2008), England (Dyson & Kozleski, 2008), and Australia (Sweller, Graham, & Van Bergen, 2012). In the United States, disparities are also found within the special education system. Special education students from non-dominant groups (e.g., Latino/a, Native American, and African American) are more likely to be removed from the general education classroom (de Valenzuela, Copeland, Huaqing Qi, & Park, 2006; Fierros & Conroy, 2002), less likely to receive related and language services (Zehler et al., 2003), and less likely to enrol in higher education programs than their White peers (Wagner, Newman, Cameto, & Levine, 2006).

Special needs education started in Kenya after the end of the Second World War and has since been mainly offered to four categories of children with disabilities, namely; children with hearing impairments, mental handicaps, visual impairments and those with physical handicaps (GoK, 2007). Education to these children was only offered in special schools until the 1970s when units and integrated programs were initiated. However, educational opportunities for children (learners) with special needs and disabilities are a major challenge to the education sector.

2. Learning Environment, Assistive Technology and Inclusive Education: Scholars' Views

Assistive technologies are used as a cover term (umbrella) for adaptive devices and associated services. Adaptive products are also called Assistive technologies. There are however different descriptions of adaptive technologies. According to the worldwide categorization of functioning, disability and health (ICF), adaptive devices and technology are described as any device instrument or equipment made for enhancing the capacity of a disabled individual (WHO, 2011). As stated by Lancioni, Sigafoos, O'Relly and Singh (2013), assistive devices whose objective was to support persons with disabilities and those with special educational needs or rehabilitation requirements, enhanced functioning in everyday life and achieved higher standards of living. Six areas concern the usual daily student activities and comprise computer access, mathematics learning, studying, reading and writing. Assistive technologies are especially designed supports and adaptive devices that make everyday functionality of a disabled individual work effectively and efficiently. These may include: powered and manual wheelchairs, auditory devices, assistive computer software technologies, prosthetics and ventilators. A number of informational and communicational technologies and devices pertaining to the practice of medicine might be considered "*assistive technologies*" (Gordon, Kezner, Sheldon & Hansen, 2007).

The evolution of assistive technologies has moved to a more individualized user focused strategy that was from low-tech adaptive to sophisticated adaptive devices that incorporate highly advanced Information and Communications Technology (ICT), software cyber-physical and stem-cell applications. For instance, progress in technology has brought forth modern adaptives like Segway that some disabled persons mainly in developed countries, use as mobility devices, including many veterans injured while serving in the military. It was envisaged that in future sophisticated devices would definitely be designed giving more movement (mobility) choices for disabled persons. The iPad, computer and Braille were the frequently used assistive technologies in Kenya. In the learning and teaching process, the iPad was not popular among teachers and students. The Braille machine was the most popular, second was the computer. In the learning and teaching process, large print devices, optical and non-optical were displayed (Oira, 2016).

It has become of paramount importance in the student lives to generate openings or vacancies for students to do worthwhile work and expand their productivity and efficiency. In this view therefore, teachers are duty bound to assimilate the good use of the current technologies and further improve constructive teaching resources. Ahmad (2015) advanced further that the student population changes of those with special needs and those with disabilities and language issues, which had been witnessed in institutions a few years ago, had a profound effect in altering learner's objectives, instructions strategies plus the instruments used in the assessments of the entire student population (Ahmad, 2015). Boone and Higgins (2007) also advanced those assistive technologies

(AT). They noted that the instruments could lessen learner's separation, indeed enabling those turns into usual classroom learners. Consequently, adaptive technologies turned into instruments of giving means to persons living with difficult physical, emotional or intellectual circumstances to actually engage in learning activities (Lange, McPhillips, Mulhern & Wylie, 2006). Ahmad (2015) persisted that assistive technology was usually talked about as per advancement of design level such as high-tech, medium-tech or low-level-tech.

When disabled children are offered opportunities and nurtured positively like any other children, they get the potential to leading and satisfying lives to contributing to social, cultural and economic vitality of their communities yet living and growing could be particularly cumbersome and uneasy for disabled children. Most often they are exclusively kept alone and cut off from education, health, social services and with little chances to engage in family and community service. This often influenced their future employment chances and engagement in public life (Borg et al., 2015).

Studies in various African countries were carried out regarding the living standards of disabled persons between 2001 and 2006. The countries included Malawi, Zimbabwe, Zambia and Namibia. In all the four countries that the study was done, the only sector that attained 50% of detailed requirements for disabled persons was health care. The results showed unbelievable disregard in terms of provision of services for disabled persons; who had unmet requirements especially soaring in welfare; adaptive technologies, training, technical education and psychological services (Jones, 2004). In Kenya, Achieng (2015) has observed that in majority of the schools for the visually impaired in Kisumu County, adaptive technology was used, in that most of the visually impaired students largely relied on the use of Braille and Mirror Magnifiers. Nevertheless, the assistive technologies were considered obsolete. The study locale had not been penetrated into by the modern technologies; consequently, the majority of the visually impaired students hardly benefitted from the advantages inherent in these technologies. Almost all SNE teachers interviewed were in agreement that the use of current assistive technologies by blind students was a paramount requirement for promoting learning independent study and active learner teacher interaction that was a precondition for quality academic performance (Achieng, 2015).

In conclusion, we can say no matter what, research study usually inclines to move in the direction of useful evaluation of the well-being and capacity of ATS for everybody. At would most unlikely even be, the only panacea for individual care, despite being an important addition to what we might already have. In any case any devices that adds to person's welfare and assists their freedom adds to their entitlement and comprise a big saving as opposed to their supportive choices. People with disabilities have an open and optimistic attitude towards new and emerging technologies. However, future research should focus not only on the technical development as such, but rather on a sound implementation, social embedding and evaluation of technological solutions which already exist, and this is the reason for the current study.

3. A Case for this Study

Although Kenya has been helped by United Nations International Children's Fund (UNICEF), the Bernard Van Lee Foundation (BVLF) and the Agha Khan Foundation, a lot remains to be done in the quest to achieve inclusive education. This is attested to by the fact that despite all the benefits that may accrue from ECDE and the commitments made by the government of Kenya to achieve Basic Education for All (BEFA) through ECDE, there is still poor performance of ECDE sub-sector characterized by low enrolment of children and high rate of dropouts caused by school factors (Varld, 2008). As such, fully cognizant of other factors that may account for this scenario, this study sought to determine the extent to which the school learning environment influences implementation of inclusive education in rural public primary schools within Uasin Gishu County, Kenya.

4. Theoretical Grounding

Our study adopted the Ecological Systems Theory of Bronfenbrenner's (1992). The theory is fully compatible with the concept of inclusion, where support is provided within the framework of an integrated, holistic educational support structure. Bronfenbrenner's theory spells out the complexity of the interaction and interdependence of multiple systems that impact on learners, their development and learning (Swart & Pettipher, 2005). Bronfenbrenner compares the different environments or social contexts in which children operate and all are interrelated. These nested structures, contexts or environmental systems consist of the microsystem, the mesosystem, the exosystem and the macrosystem, which all interact with the chronosystem. These systems tend to maintain themselves, but at the same time are constantly changing and reorganizing themselves in an attempt to achieve a state of equilibrium. A systemic understanding of change assumes circular rather than linear causality and the interrelatedness of all aspects of a situation. A small change at one level will potentially have an effect on the entire system. This approach acknowledges and accepts some degree of unpredictability. This model suggests that any individual is likely to experience a range of contexts shared with others, but that the interactions of the individual characteristics, time, contexts and chance will have different consequences for different learners. It implies that each individual consists of multiple systems in interaction and develops holistically.

The successful implementation of inclusive education is, to a large degree, dependent on the development of an effective education support structure. To achieve the aims of an inclusive education system, it becomes imperative that educators be trained and supported to meet the new challenges with confidence. Bouwer and Du Toit (2000) support this contention, reporting that educators perceive education support as "*... gravely inadequate...*" intensifying their general feeling of helplessness. In addition to educators, parents, school managers, School Governing Body (SGB) members and

community organisations need to be empowered to collaboratively fulfil their support roles.

Through collaboration, all role-players need to ensure that the school becomes an inviting, inclusive, health promoting arena where all learners are fully supported in order to maximise their individual potential as Kenyan citizens. It is against this background that the researcher undertook to establish the critical areas of support required by both learners and educators within the inclusive classroom. The researcher explored the available support structures in school and surrounding areas in order to recommend effective ways in which educators, learners, education support personnel, parents and community members can collaborate, with the goal of providing effective educational support structures in ECDE centres.

5. Methodology

This study was done in Uasin Gishu County, 330 km North West of Nairobi. It lies between longitudes 34 degrees 50‟ East and 35 degrees West and latitudes 0 degrees 03" South and 0 degrees 55" North. It borders Nandi County to the South, Trans Nzoia County to the North, and Elgeyo Marakwet County to the East. It shares some rather short borders with Bungoma County to the West and Kericho County to its South Eastern tip. It occupies 3,345 square kilometres and as of 2012, it had a population of 894,179 people (CRECO, 2012). Uasin Gishu County was selected as the study site due to its convenient to the research topic. In addition, Uasin Gishu registers one of the populous counties in Kenya. It is growing and is now rated one of the counties that have heavily invested in Early Childhood Education. The other consideration is that Uasin Gishu ECDE centres in the rural areas are inaccessible from the main roads. Owing to their unreachability, learners with special needs are vulnerable because such ECDE centres are way far from being monitored closely by the education authorities.

The research embraced the pragmatic worldview which has affinity with mixed methods research (MMR), allowing the use of qualitative and quantitative techniques either sequentially or concurrently. In terms of research design, we adopted the use of mixed research design of quantitative and qualitative approaches. This design was considered appropriate for collecting data necessary to determine the school-based factors influencing successful implementation of inclusive education in ECDE curriculum. This design was also found useful in identifying the standards against which the existing conditions in ECDE centres would be compared. The design was also chosen as dictated by the nature of the study, which primarily involves gathering of facts. The variables were studied in their natural setting without any manipulation by the researchers (Creswell & Plano, 2011).

The target population studied comprised all head teachers and ECDE teachers in the 492 ECDE centres in which 471 are attached to public primary schools in Uasin Gishu County and 21 as stand-alone ECDE centre. There were a total of 1036 ECD teachers and 492 head teachers in the public primary schools in Uasin Gishu County. Yamane's (1967)

formulae was used to determine the sample size. It provides a simplified formula to calculate sample sizes for finite proportions. It operates on the assumption of a 95% confidence level and p=0.5 for maximum sample. The formulae is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where: n is the sample size; N is the population size; and e is the level of precision. For N=1036, we substitute it in the formulae to get the sample size of the ECDE teachers as follows:

$n0 = 10361+10360.052 = 288.5 \approx 289$

With finite populations, correction for proportions is necessary. This is because a given sample size provides proportionately more information for a small population than for a large population. The sample size (n_0) can thus be adjusted using the corrected formulae:

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Where: n is the sample size; N is the population size; and n_o is calculated sample size for infinite population

$$n0 = \frac{1036}{1+(289-1)/1036}$$

= 221

Similarly, the same procedure is applied for population the sample of the ECDE centre, to obtain 20 centres.

Stratified and proportionate sampling was used to select schools in the six sub-counties of Uasin Gishu County. Schools were stratified as per sub-county and a proportionate sample for each sub-county computed based on the overall sample for the County and total number of schools in the respective and County. The selected schools (ECDE centres) in each Sub-County were selected randomly using random numbers generated in excel sheet. Then in the ECDE centres, the teachers were selected randomly to attain the numbers required for that ECDE centre.

Data collection was done by use of questionnaire, observation schedules, document analysis, and structured interview schedule. Data was analysed both quantitatively and qualitatively. The structured questionnaire and observation guide

items were coded into SPSS ver. 20 while taking care as to whether the responses were nominal, ordinal or scale. Frequencies and percentages were generated into tables and interpretation made. For open questions, similar themes were extracted as per the number of times that they appeared and the same procedure was repeated, that is, the open-ended questions was analysed through reporting themes and quotas that emerged. Similar, procedure was done for the data generated from the interview guide as was done for the open-ended items in the questionnaire. However, the frequencies generated were not reported but just used to inform. Data was analysed and presented in frequency tables, graphs and charts to present the findings of the study. The themes emerging from secondary data were identified to augment the primary data. Chi square test of independence and regression was used to establish nature of correlation between the study variables and how much the independent variables contributed to the dependent variable (Implementation of IE). The level of significance was set at 95% or at a p-value of 0.05.

6. Results and Discussion

6.1 Influence of Learning Environment on Implementation of Inclusive Education

In the study's endeavour to determine the extent to which the school learning environment influenced implementation of inclusive education in rural public primary schools within Uasin Gishu County, the respondents were asked to state the extent to which they agreed with the statements regarding their learning environments. This was measured on a 5-point liker scale, ranging from not conducive (1) to very conducive (5). There was a trend between the conduciveness of the learning environment and the implementation of IE. At very low implementation of IE, there were roughly mixed reactions about conduciveness of the environment at the ECDE centres. As the conduciveness of the environment improved, the implementation of IE increased as well. There was, however, low implementation of IE in situations where the environment was not conducive. For instance, when the degree of conduciveness of the school environment was 17.3% and 8.2%, the implementation of extent of implementation of IE was moderate and to great, respectively, as shown in Figure 1. The study findings indicated that there was likelihood that when the environment was more conducive, the implementation of IE was remarkable. In particular, the degree of implementation of IE was to a moderate and great extent, where its environment was more conducive as rated by 17.3% of the teachers. On the other hand, implementation of IE was to a great extent where its environment was more conducive and very conducive as rated by 8.2% and 9.2% of the teachers respectively (Figure 1). At low levels of implementation of IE, there was no distinction between the conduciveness of the environment, whether it was not conducive, less conducive or very conducive.

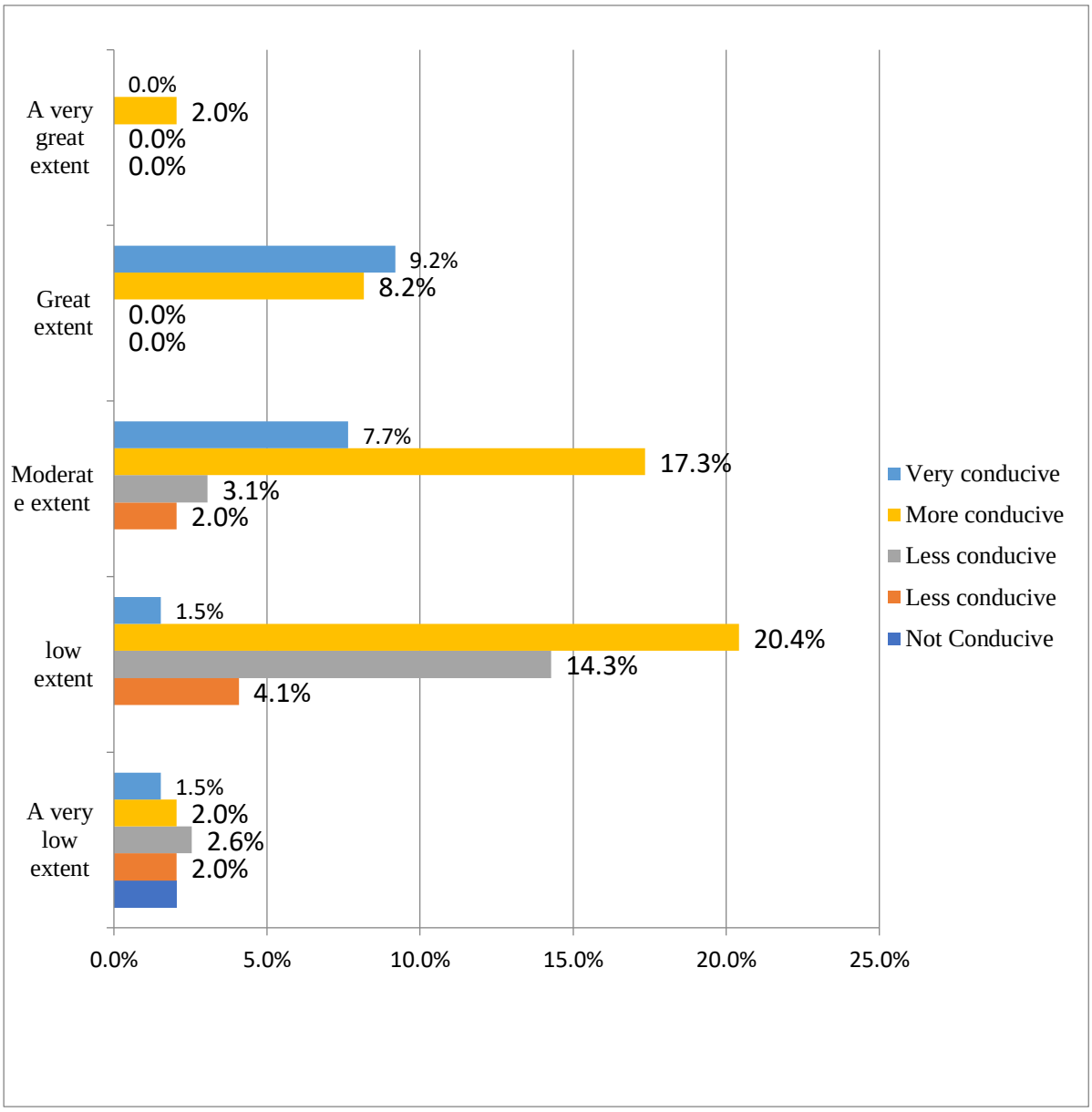

Figure 1: Conduciveness of School Environment and Implementation of IE

6.2 Implementation of Inclusive Education

An assessment of the implementation of IE was done through responses from the head teachers. In the study, there were many elements of implementation of IE that the head teachers respondent to. They include whether the children were identified in the children with SNE, whether assessment of the SNE pupils was initially and occasionally done and whether there are assistive technologies for such learners, among other elements of implementation of IE. The study results indicated that the ECDE centres were doing well (and not performing) in some aspects of implementation. In particular, much was done in identification (56.1%) of SNE learners in ECDE centre. Assessment was equally good (44.4%) but not as good as the identification. Other area that faired on relatively well included involvement with SNE pupils (36.2%) and cooperation that exist between multidisciplinary teams and teachers in handling SNE learners (37.2%), as shown in Table

1. The areas in which the ECDE centres were not doing well include the development of ECDE centres according to the needs of the SNE children (28.5%), acquisition of relevant assistive technologies for SNE learners and continued development of ECDE according to the need of SNE pupils and active participation of parents in designing each at 16.3% (Table 1). The study findings indicated that for proper implementation of inclusive education, cooperation of the various stakeholders is important. A study by Carnell and Tillery (2005) indicated that, when special education teachers work side by side with their counterparts, that us general education colleagues within the classroom to deliver a merged system of classrooms amounts to collaboration.

Table 1: Implementation of IE in ECDE Centres according to Head Teachers

	Very low extent		Low extent		Moderate extent		Great extent		A very great extent	
	N	%	N	%	N	%	N	%	N	%
Identification of children with SNE in ECDE centre	28	14.3	31	15.8	27	13.8	59	30.1	51	26.0
Timely and professional Assessment of SNE pupils in ECDE centre	40	20.4	39	19.9	30	15.3	60	30.6	27	13.8
Professional teaching staff involved with SNE pupils	64	32.7	26	13.3	35	17.9	56	28.6	15	7.7
Developed ECDE centre according to the need of SNE children	40	20.4	59	30.1	51	26.0	30	15.3	16	8.2
Acquired Relevant assistive technologies for SNE learners	74	37.8	40	20.4	50	25.5	16	8.2	16	8.2
Continued development of ECDE according to the need of SNE pupils	57	29.1	47	24.0	60	30.6	24	12.2	8	4.1
Existence of Cooperation between multidisciplinary teams and teachers in handling SNE learners	42	21.4%	31	15.8%	50	25.5%	46	23.5%	27	13.8%
Active participation of parents in designing	59	30.1%	59	30.1%	46	23.5%	16	8.2%	16	8.2%
Accessibility and equipment of SNE learners with adapted technical appliances	75	38.3%	69	35.2%	31	15.8%	16	8.2%	5	2.6%

Through reauthorizations of the Individuals with Disabilities Education Act in combination with changing societal values, coupled with legislation have speeded up on opportunities for learning and development with a growing sense of belonging for all children. With all this in place inclusion in ECDE has gained widespread moral, empirical and legal support. It is worth noting that, the methods used to implement inclusive programming, and in particular for young children, vary greatly across communities (e.g., Buysse, Skinner, & Grant, 2001; Odom et al., 1999). Not only does the overall implementation vary, but specifics features of the implementation if inclusive education may vary as well. For instance, with regard to access differences may arise in areas such as ratio of children with disabilities to those without developmental delays, the duration that learners with disabilities spend with peers without developmental delays, and the types of professionals who provide the services (Guralnick, 2005; Odom et al., 1999). Differences in the way IE program is implemented may also arise from the personnel who are charged with the implementation. The program philosophy, the beliefs of the

personnel and the methodology of implementation of the key component of involvement varies. The latter is noted because children with disabilities who are enrolled in inclusive programs have experiences that differ on the extent to which they are involved in routine classroom activities and participate in the general education curriculum and model used for the provision of related services. The participation of parents in decision making, on where their children will be placed is also very important to successful implementation of IE. Studies in developing countries are yet to be done to inform what program characteristics influenced families and professionals' decisions about children's placements in inclusive or segregated settings (Hanson et al., 2001). Hurley and Horn (2010), indicate that many of the inclusion program features valued or not valued by members of the one-factor solution generated appear to be congruent with the defining features of access and meaningful participation.

Chi-square analysis findings indicated that there was significant association between the conduciveness of the school learning environment (χ^2=99.712; df=16; p=0.000) and implementation of IE. Further, from R-square values, the school learning environment (19.0%) contributed to the implementation of inclusive education in rural public ECD centres in Uasin Gishu County, Kenya. The study findings revealed that lack of teaching and learning materials such as syllabus and books, lack of teaching aid and other learning resources was a big challenge. In cases where the materials were available, they were inadequate. The above findings resonate well with findings such as those by Eleweke and Rodda (2007) who indicated that lack of resources impedes implementation of IE. This is because most ECDE centres in developing nations lack even the most basic or simple teaching and learning materials which can be produced locally. From the study, it was established that most of the established classrooms were not learner friendly. They were also temporary, dilapidated buildings with no pathways, especially those that lead to the toilets set aside for the disabled. This signals a barrier in implementation of inclusive education on adequacy of learning resources, appropriate for the learners in terms of the degree of disability and age. In some of the centres, there were no learning resources because of insecurity while in other areas; there were no learning resources at all because of a combination of other factors.

The head teachers commented that there is need to strengthen learner integration in the ECDE centres. In effect structural improvement in terms of use of facilities is key to the implementation of IE. Infrastructural improvements need to be done, including creation of ramps to facilitate movement of learners on wheelchairs and toilets doors to be widened among others. Majority of the head teachers suggested the need to embrace inclusive learning while reviewing the curriculum into competent based so as to nurture the learners' potential. They also advised that provision of assistive devices should be given a priority. The assistive technologies were inadequate in school and were limited to hearing aids, wheelchairs, crutches, white cane and prosthetics. The respondents were asked of other devices and there was no indication of other types of assistive technologies.

7. Conclusion and Recommendation

This paper has established that the special needs education (SNE) learners in inclusive classroom are not negligible and as such factors influencing implementation of inclusive education is something to focus on. An analysis of related literature also linked the important role played by school environment in the implementation of inclusive education. The conduciveness of the environment enhances implementation of the IE. In learning environments where assistive technologies have been installed and working, then implementation may be deemed successful because, the teachers as well as the SNE will maximize the time set for learning. In addition, in such environments, the SNE learners will learn with ease and comfort as opposed to other learning environments where there are no assistive technologies. There is, therefore, a need for deliberate funding by county government, since ECDE is a devolved function. There is also need for a legislation to govern ECDE centre, and this legislation ought to be in tandem with national goals and sustainable development goals.

Conflict of Interest

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report. We certify that the submission is our original work and is not under review at any other publication.

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