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Research Article

Influence of Learning Environment on Inclusion of Visually Impaired Learners in Public Primary Schools in Bungoma South Sub County

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Abstract: Learners with visual impairment (VI) are a heterogeneous group with varied nature of difficulties that require adequate attention in curriculum implementation in order to achieve good academic performance when placed in regular or main stream institutions. The purpose of this study was to investigate the influence of school physical and social environment on inclusion of visually impaired learners, in Bungoma South Sub County, Kenya. The study was anchored on Vygotsky theory of social-cultural learning. The study adopted cross-sectional research design. The study targeted 97 head teachers and 97 senior teachers from 97 public primary schools. Through simple random sampling, 78 senior teachers and 27 head teachers were selected to take part in the study. The head teachers' interview schedule and senior teachers' questionnaire were employed to collect data. Piloting involved three public primary schools in the neighbouring Bungoma East Sub County. Content and construct validity of the data collection instruments was ascertained by two university supervisors' scrutiny while reliability was estimated by computing chronbach's alpha coefficient. Both descriptive and inferential statistics were used to analyze the data. Descriptive statistics included frequencies, percentages, means, standard deviations and graphs while multiple regression analysis to test the formulated three null hypotheses. Both quantitative and qualitative data from interview schedules were analyzed concurrently and as per the objective, the study found that most of the schools lacked internal policy on how to relate and support VI learners. Despite long teaching experience, most teachers knew very little about the braille alphabet a key tool in VI learners' education. The study concluded teachers' lack of skills and knowledge on how to apply VI learners' assistive technology was the major hindrance to effective inclusion of VI learners in regular schools. The study recommended that the teachers training curriculum should be revised to include the key special education units targeting all teachers regardless of their speciality.

Keywords: Learning environment, visual impairment, teachers training curriculum.

Introduction

The impetus in the direction of inclusive education has been created by the concern that the rights of children with disabilities were contravened by segregating them from the curriculum and practices of regular education (UNESCO, 2017). Globally, there are several international policies that stress the rights of all children to education including those with disabilities. Some of these policies include the Universal Declaration of Human Rights (UDHR) of 1948, the United Nations Convention on the Rights of the Child of 1989, the Jomtien World Declaration on Education for All of 1990, the Standard Rules on the Equalization of Opportunities for Persons with Disability of 1993, the Salamanca Statement of 1994 and the Dakar Framework for Action of 2000 which adopted a world Declaration on Education for All (EFA) as a tool to establish Education for All children (UNESCO, 2018).

According to rule number six of the Standard Rules on the Equalization of Opportunities for Persons with Disability of 1993 policy, all countries should provide equal access to primary, secondary and tertiary education for children with disabilities in integrated settings (Baraka, 2013). The Salamanca Statement policy advocated that all the regular teachers in inclusive classrooms should adapt and modify their teaching practices and learning environments to suit individual needs of all students in inclusive classrooms (Horton, 2011). Visual impairment can be congenital, occurring at or shortly after birth or acquired through other means later in life (Sacks and Silberman, 1998) cited in Baraka (2013). Some of the congenital causes of visual impairments include conditions like glaucoma, retinopathy, cortical visual impairment, optical nerve hypoplasia, and coloboma. Visual impairment can also be acquired later in life as a result of cataract, cancer, accidents, trauma, nutrition and others (Kirk, Gallagher, Coleman and Anastasiow, 2011).

In Kenya, the education for persons with disabilities started in1946 (Van der Poel, 2010). The first to receive education were persons with visual impairment. A vocational school for the blind was started by Salvation Army Church since the targeted learners were past school age (Ministry of Education, 2006). Later, the vocational school grew and it became known as Thika School for the Blind. In 1958, the Catholic Church established St. Lucy School for the blind. In 1961, the Kenya society constructed St. Oda School for the blind. Salvation Army church started Likoni and Kibos schools for the blind in 1965 (Baraga, 2012).This was happening when Kenya was struggling to rebuild itself after attaining independence from the colonial government.

School Environmental Factors and Inclusion of VI Learners

Inclusive learning environment is an environment that allows and supports the potential learning of all students, regardless of the learning differences and diversities these students possess in the class (Simon, Echeita, Sandoval & Lopez, 2010). Environmental factors such as room decoration and arrangement, listening condition and lighting has been found to influence inclusion of visually impaired learners to a great extent (Khetani, 2015). Learning takes place effectively in inclusive schools when the environment is conducive. An inclusive setting welcomes learners with different abilities by giving them space, time and flexible curriculum to learn (Benjamin, Lucas, Thompson, Davies and Khetani, 2017).

Benjamin *et al.,* (2017) further observes that, school buildings, classroom and school surrounding are three learning environments. Learners with visual impairment faces many challenges and the needs of each learner should be addressed in an inclusive setting. For example pathways, staircases, toilets and classrooms sitting position normally presents a great challenge to learners with visual impairment (Kang Yen, Bedell, Simeonson, Liou, Chi, Liu, Liao and Hwang, 2015).

Inclusive classrooms should have enough space which will accommodates learners with VI. Different strategies enable learners with VI to learn smoothly in well- arranged classrooms and an adapted listening environment. Low vision learners will sit in appropriate position in class for them to see prints clearly on chalkboard. Chiner *et al.,* (2012) notes that, teachers will use techniques and principles in classroom situation and creativity in designing instructional materials for their learners. All learners regardless of their abilities are accommodated in the society. Friendly environment allows learners to participate in learning process and several activities based on the principles of representation, action, expression and engagement. In an inclusive classroom a teacher may plan a lesson which will meet learners' individual needs (Chiner *et al.,* 2012). Multiple representations will meet the needs of diverse

learners with the same concept in different ways. Learners with VI will be represented through touching, audio text verbal touching. Multiple ways of lesson representations enables more leaners to participate in learning because they will understand the concept (Smith, Kelly & Kapperman, 2011).

Action and representations is communication strategy that is used by learners to express themselves through discussion, storytelling and other techniques. Engagement is the way teachers motivate learners' interest for being creative in learning (Courey *et al.,* 2013). In a study conducted in Malta, Buhagiar and Tanti (2013) found that Inclusive education creates an environment that increases social awareness of visually impaired and sighted students and allows them to share their experiences. In such environment, both sides realize their own personality, needs, skills, and potential resulting to increased self-esteem.

Buhagiar and Tanti (2013) further explicate that in inclusive education, visually impaired students may understand the importance of being explicit in describing their needs and problems and the ways of socializing and constructing a network with their peers. The sighted students may observe the problems that visually impaired students are faced with and create solutions for these problems; therefore, they increase their social awareness. Moreover, they may share experiences by doing group work or study lessons together for more insightful experiences. Additionally, peer-teaching can be beneficial for both sides from studying together. By increasing social awareness, inclusive education may be beneficial for both sides in preparing them for a social life (Buhagiar and Tanti, 2011).

A study conducted by Obiero (2018) aimed at assessing the influence of selected factors on the academic performance of learners with physical handicaps in public primary schools in Kapseret Sub-county, Uasin Gishu County, Kenya. The study found that the school environment in Kapsaret Sub County was very supportive in some aspects such as teachers and pupils' positive attitude towards inclusive education. The environment was, however, not supportive in many other aspects such as lack of medical support, reliable guidance and counselling services, and physiotherapists.

In addition most of the teachers were not keen in teaching them the crucial life skills such as bathing, toileting and eating. Although most head teachers in Kapsaret Sub County public primary schools did view inclusive education positively, they were not proactive in ensuring PH learners have a conducive school environment.

Only two schools had developed a school policy on how to handle learners with disabilities and which required no funds. Nevertheless, school environment support had a statistical significant influence on PH learners academic performance ($\beta = 0.159$, $t = 1.001$, $p < 0.05$). While Obiero (2018) study focus was on academic performance of learners with physical handicaps in public primary schools in Kapseret Sub County, Uasin Gishu County, the current study focused on the level of inclusion of visually impaired learners in Bungoma South Sub County. Furthermore, some of the crucial environmental requirements for VI learners have no significance to physically handicapped learners.

Methods

This study adopted cross sectional survey design. In a cross sectional survey, data are collected at one point from a sample selected to describe some large population at that time. Such survey can be used not only for purposes of description but also for determination of relationships between variables at that time of study (Orodho, 2012).

The cross sectional survey design was found appropriate since the study aimed at capturing the prevailing condition at that particular time hoping to raise the awareness to the relevant stakeholders for possible intervention. The study targeted all the 97 head teachers and 97 senior teachers from the 97 primary schools. Senior teachers are considered as knowledgeable in pupils' management and more involved in both pupils, teachers and parents affairs on daily basis as head teachers and deputy head teachers attend meetings and other administrative duties.

The study to selected 30% of head teachers, hence, 27 head teachers with similar number of their senior teachers were selected to represent the study population. The study employed senior teachers' questionnaire and head teachers interview schedule to collect data. Raw data were edited to detect errors and omissions. The completed questionnaires were then scrutinized to ensure that the data is accurate and consistent with other facts gathered and organized well to facilitate coding and tabulation.

To facilitate the analysis, the Statistical Package for Social Sciences (SPSS) version 22 data analysis software was used. The data collected were analyzed with respect of the study objectives using both descriptive an inferential techniques. Descriptive statistics such as percentages, means and standard deviation were used while the three formulated null hypothesis were tested by use of multiple regression analysis.

Key Findings

School Learning Environment and Inclusion of VI Learners

The first objective of the study was to assess the influence of school learning environment on inclusion of visually impaired learners in public primary schools in Bungoma South Sub County. To achieve the objective, a set of statements in form of five points Likert scale were posed to the senior teachers to indicate the extent to which they agreed or disagreed with them. The responses were coded such that strongly disagree (SD) was rated number 1 while strongly agree (SA) was rated number 5. Further the mean responses were computed such that: a mean response of above 3.0 was considered as agree while a mean of below 3.0 was considered as disagree. However, in a bid to make precise and easier interpretation, the response 'SA' and 'A' was considered as agree while the response 'SD and 'D' was considered as disagree. Table 1 shows the proportion of teacher respondents in various levels of agreement, the mean and standard deviation.

Table 1. Senior Teachers' Responses on School Learning Environment

Statement	SA	A	U	D	SD	Mean	SD
	%	%	%	%	%		
Painting of pavements and staircases in our school is conducive to visually impaired learners movement	17.1	14.3	11.4	28.6	28.6	2.7	0.8
Our classrooms have been appropriately painted for visually impaired learners	11.4	25.7	10.0	21.4	21.4	2.8	0.9
Lighting in our classrooms has been made appropriate for visually impaired learners	30.0	22.9	11.4	18.6	17.1	3.2	1.0
We have window shutters/curtains to control the	18.6	14.3	8.6	30.0	28.6	2.9	0.8

natural lighting							
Our Classrooms arrangement is conducive to visually impaired learners	28.6	32.9	10.0	14.3	14.3	3.8	0.7
Visually impaired learners are accorded suitable sitting position in class	34.3	22.9	11.4	14.3	17.1	4.1	0.5
We have adapted washrooms for visually impaired learners	11.4	12.9	7.1	25.7	42.9	2.4	0.9
Pupils' are very cordial and supportive to visually impaired learners	24.3	38.6	10.0	15.7	11.4	3.6	0.9
We have a school policy on how to relate/assist learners with special needs	8.6	10.0	2.9	24.3	40.0	2.1	0.7
Aggregate Score						**3.1**	**0.8**

In reference to Table 1, most of the senior teachers (57.2 %) disagreed that painting of pavements and staircases in their schools was conducive to visually impaired learners movement. However, it was encouraging that there were schools constituting 31.4 % that were sensitive to VI learners painted the surrounding having this category of learners in mind. Similarly, while 42.8 % of teachers disagreed that their classrooms had been appropriately painted for visually impaired learners, 37.1 % agreed. Thus, it seemed that the schools that had made an effort to paint and make the environment conducive for VI learners, were mostly the same schools that had an initiative of painting their classrooms in consideration of the needs of the visually impaired learners.

Over half of the respondents (52.9 %) agreed that lighting in their classrooms was appropriate for visually impaired learners while 35.7 % disagreed. This implied that there were many public schools where visually impaired learners had challenges in class due to poor lighting. This situation could have been brought about by lack of connection to the mains electricity or poor inadequate lighting in classrooms. The issue of in sufficient lighting in classrooms was also echoed by some of the interviewed head teachers. One of the head teacher commented:

We have done everything possible to make our school physical environment conducive to VI learners, but lack of electricity has been our major challenge. The VI learners cannot see the chalk board early in the morning and late in the evening and this slows their participation in class activities. We make them sit just next to the chalk board to no avail, instead they also get affected by the chalk dust. We urgently need the lighting either from the national grid or from solar panels (Head teacher 13).

Incidentally, as much as ample lighting is essential in a class with VI learners, excessive natural or artificial lighting can be a nuisance and hazardous to VI learners. Natural lighting during the day can be controlled by appropriate use of shutters or curtains. Majority of senior teachers, however, disagreed that their schools had window shutters/curtains to control the natural lighting (Mean = 2.9, SD = 0.8). In regard to classrooms arrangement, 61.5 % of teachers affirmed that classroom arrangement was conducive to visually impaired learners. Further, most of the teachers (57.2%) affirmed that visually impaired learners in their schools are accorded suitable sitting positions in class. Class arrangement and sitting positions just

need the ingenuity of the teacher and as such should be highly utilized. Some of the interviewed head teachers appreciated the creativity of their class teachers in regard to the classroom arrangement. One of them commented:

Of our classes are normally overcrowded and even a teacher hardly finds a place to stand or place the working tools. Thus, to cater for the VI learners' it requires the ingenuity of the class teacher to place them in a conducive position taking into account the artificial and the natural lighting. I commend my senior teacher who is naturally gifted in such tasks that requires a combination of cognitive and psychomotor skills for execution (Head teacher 6).

Majority of senior teachers (68.6 %) disagreed that their schools had adapted washrooms for visually impaired learners (Mean = 2.4, SD = 0.9). This implied that VI learners were given no special consideration such as special painting with a view of making their operations easier in the washrooms. Overall, the senior teachers' response on the school learning physical and social environment had a mean of 3.1 and standard deviation of 0.8. This indicated that, though there were a number of undesirable environmental conditions in most of the schools, there many more conducive conditions and which promoted inclusion of the VI learners.

Hypotheses Testing

In order to test the three null hypotheses of the study, the *t* statistic that tests whether a β value is significantly different from zero (H0: β =o) was considered.

Ho1: School learning environment has no statistically significant influence on the level of inclusion of visually impaired learners

Beta	Unstandardized Coefficients Beta Std. Error		Standardized Coefficients	t	Sig. value
1	(Constant)	.258	0.118	2.42	0.074
School learning environment	.477	0.171	0.461	3.67	0.008

As shown in Table 2, the unstandardized beta value for the school learning environment was significantly greater than zero ($\beta = 0.477$, $t(69) = 3.67$, $p < 0.05$). Subsequently, the null hypothesis was rejected, hence, the school learning environment had a significant influence on the level of inclusion of VI learners in public primary schools in Bungoma South Sub County. This implied that the level of inclusion of VI learners was higher in schools where the physical and social learning environment was supportive.

Conclusion

From the study findings and discussions the study concluded that Most public primary schools in Bungoma South Sub County physical and social environments were found moderately supportive to inclusion of VI learners. Most schools lacked appropriate compound and classrooms painting and provision of curtains to control light. However, the sighted learners were cordial and supportive to VI learners.

Recommendation

In order to enhance the level of inclusion of VI learners in regular public schools, the head teachers should improve the physical and social environment in line with requirements of VI learners. Both the compound and classes painting should be sensitive to VI learners,

appropriate curtains and lighting provisions should be fixed in classrooms. All schools should have an internal policy that delineates on how to relate and assist learners with special needs in general.

Conflicts of interest: The authors declare no conflicts of interest.

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