International Journal of Innovative Research and Advanced Studies (IJIRAS)
Volume 9 Issue 5, May 2022

ISSN: 2394-4404

Assessing Access To School Facilities By Pupils With Sensory Disabilities In Public Integrated Schools In Kitui County, Kenya

Joseph Mutemi Mwandikwa

PhD Student, Department of Educational Management, Policy & Curriculum Studies, University of Nairobi

Dr. John, Mbugua

Senior Lecturer, Department of Educational management, Policy & Curriculum Studies, University of Nairobi

Prof. Ndunge, Kyalo

Department of Educational Management, Policy & Curriculum Studies, University of Nairobi

Abstract: ***This study sought to establish the extent to which infrastructural design considerations influence access to school facilities by pupils with sensory disabilities in public integrated schools in Kitui County, Kenya. A pragmatic paradigm was used to support a mixed-methods approach, which included a descriptive cross-sectional survey and a correlational design. A sample size of 159 respondents from a target population of 767 was used. The respondents comprised of head teachers, standard six and seven class teachers, pupils with special needs in classes six and seven, as well as BOM Chair persons. A pilot-study was done to ensure reliability and validity of the instruments. For descriptive data, Pearson's Product Moment Correlation (r), simple regression, multiple regressions, and stepwise regression (R^2) were used; for inferential statistics, Pearson's F-tests for the hypotheses were used. Physical orthopedic considerations in the construction of school infrastructure in Kitui County, Kenya, were shown to have a substantial impact on access for students with special needs at public integrated schools in the county. The study recommends formulation of appropriate policies that supports school infrastructural development and specifically that address sensory design considerations, Policy provision should support resource allocation, research and implementation. It is important to investigate the same variable in both public and private schools. This will enable comparison of the findings of the current study and the future ones. In addition, secondary school level learners are more mature than those from primary schools and their challenges could be different therefore, another similar study can be carried out at that level to enable comparison of findings.***

Keywords: Access, school facilities, sensory disabilities, sensory design considerations, public integrated schools.

I. INTRODUCTION

A new era dawned for children's rights in 1989, when the United Nations General Assembly ratified the Convention on the Rights of the Child (CRC) and the World Summit on the Rights of the Child (WSC) (international save the children alliance 2001). The Convention on the Rights of the Child, a watershed moment in the history of children's rights, remains relevant today. All of the children's needs are considered, including their survival, growth, safety, and participation (UNCRPD, 2006).

There are numerous international treaties that state that every child has the right to an education, including the United Nations Human Rights Charter from 1948, The Jomtien Forum on Education for All from 1990, The UN Convention on Children's Rights from 1989, and The Dakar Framework for Action from 2000. (2001). All children really mean 'All' including the disabled children without anyone assuming that they are just but a minority. Thus, education is right and key investment towards improving lives of people. Most children in the globe have a similar experience at school, and it is one of the primary ways in which societies prepare their future generations (UNICEF, 2006). The disabled children are entitled to good and independent life, and education can give them the necessary skills.

When it comes to determining the educational requirements of their children, British parents take a more active role. Every school receives enough money from the local education authority (LEA) to support the education of all students (Randiki 2002). There has been a market-like system termed "local administration of schools" in place since the 1980s by the British government (LMS). Since schools are given more money based on the number of enrolled students, schools compete to recruit students with special needs in education (SNE) (Hiulu 2002).

In 1991, the Ministry of Education and Sports launched inclusive education in Uganda. In 2002, the department of special needs education, Education Assessment, and Resource Guidance and Counseling was extended to provide more services for students with disabilities. The major tasks of this section are to assess and intervene with pupils who have special educational needs (Randiki 2002).

The Kenya Government committed itself to universal primary Education (UPE) by ratifying the Universal Declaration of Human Rights (UN General Assembly Universal Declaration of Human Rights 10 December 1948. Other international policy frameworks ratified and signed by the government include The United Nations Convention on the Rights of the Child (CRC 1989), African charter in the Rights and welfare of the child (1990), United Nations Environment, Scientific and Cultural Organization (UNESCO)

Goals for Education for Children with Special Needs, Salamanca Declaration, Action Framework for Special Education (1994), and the Millennium Declaration (MDG 2000). For a variety of reasons, including the necessity to offer education as a basic human right, education as a social vaccination in the battle against poverty, and education as an essential vehicle for national growth, integration, and peace, this promise has been made. Pleases & Reaven (2011) report that in spite of international commitments, Kenyan educational institutions separate or include students with impairments, according to pleases & reaven (2011).

Children have a right to free and compulsory primary education, enough food, housing, and health care, as well as protection from all types of abuse and neglect, as detailed in Article 53 of Chapter 4 of the 2010 Kenyan Constitution. Additionally, they have a right to be free of all sorts of abuse, harsh treatment and punishment, and dangerous or exploitative employment.

Getting excellent education to underprivileged children with disabilities remains a major concern, according to the EFA Global Monitoring Report 2010. Educational marginalization is exacerbated by disability, which is one of the least obvious, yet most powerful, causes. In Africa, the majority of children with disabilities are unable to go to school, according to the EFA Global Monitoring Report (2007). Of the 72 million primary-aged children globally who are not in school, one-third have a disability.

Disability has a negative impact on a child's educational progress, which has an impact on their economic standing. After looking at data from the World Bank, Neufeldt concluded that children who live in poverty or have disabilities are more likely to drop out of school early and with less credentials. When children with and without impairments are allowed to grow up in the same environment, they are less likely to experience prejudice. To reduce poverty, education helps children with disabilities gain the skills they need to become effective role models and enter the workforce. Some students believe that inclusive education entails modifying school cultures, rules, and practices in order to better serve the needs of all students, including those with disabilities, who attend their school.

Principle of access states that all learners should have access to school facilities regardless of their physical or other limitations (Salamanca Statement, 1994:6). Pupils with disabilities should be encouraged to attend their neighborhood school as much as possible, according to the'school for all' idea. One of the most significant aspects of an educational environment is the physical structure of the school. Administrative offices, classrooms, libraries, restrooms, a kitchen, and a dining hall, among other things, are all included in the campus's infrastructure. According to Bell and Rhodes (1996), a school's utilization of resources is vital since it enhances learning possibilities for students.

MOE (2004), the government recognizes that there has been a major backlog in the supply of infrastructure and a paucity of permanent classrooms, particularly in disadvantaged regions. Poor building standards and lack of maintenance were also to blame for the deplorable conditions of the existing infrastructure. The congestion and bad circumstances that resulted from the surge in enrollment were detrimental to the students' learning. New facilities, classrooms, and instructors have been procured to accommodate a rapidly expanding student population. In and of itself this is a major achievement. There have been only small alterations made to the prior arrangements when it comes to new building and securing school facilities and equipment, on the idea that similar equipment and institutional resources would equally serve to foster all sorts of skills in all students. When it comes to mobility, literacy, and hearing, children with special needs often need unique assistance and equipment. There must thus be an inclusive set of services for people with impairments.

II. STATEMENT OF THE PROBLEM

Globally, the right to education is recognized as a fundamental human right. A human right, education, is defined in Article 26 of the Universal Declaration of Human Rights as an inalienable human right (UN, 1948). A number of additional international, regional, and national treaties, legislation, and policies reaffirm this. As stated in the World Conference on Education for All (EFA), or the Jomtien Declaration, basic education should be available to all people, regardless of their wealth. An official proclamation states that children with disabilities must get special attention and appropriate steps must be adopted to ensure that everyone with a disability has access to an education (UNESCO, 1990).

The phrase "sensory disability" refers to a condition in which one or more of one's senses are compromised but cognition and intelligence remain normal. It's a term used to describe students who have difficulty with hearing, seeing, or moving around because of sensory impairments (UNCEF 2007). Deaf children, dumb, blind, and children with multiple

impairments are often left out of the mainstream inclusive schools mostly due to lack of highly trained teachers and sign interpreters in most schools. With the policy of inclusive schools, the ministry of education should be able to handle this matter by giving appropriate staffing with required skills to teach in inclusive schools.

In some inclusive classrooms, pupils with disabilities learn alongside their peers. While inclusive education may be beneficial for all kids, it is conceivable that instructors who are not equipped to teach special needs students or who perceive these students as a burden may exclude or overlook children with disabilities. With the goal of serving everyone in mind, inclusive classrooms and its stakeholders must fully commit to the mission (Hehir and Katzman, 2012).

Goals and objectives in universal primary education can only be met if all children eligible for primary education, including those with physical impairments and other special needs, are fully enrolled. Enrollment, attendance, and graduation from school are all difficult tasks for students with disabilities. Disability, according to UNESCO (2010), is one of the least evident but most powerful elements in educational marginalization. There is a stigma attached to both physical and mental disabilities, which may lead to social isolation and educational marginalization. However, there is a lack of empirical research on disability and educational access (Fulmer 2008).

'Discrimination on any basis' is prohibited under Kenya's 2010 constitution. Discrimination against people with disabilities persists despite explicit constitutional protections. In many ways, this expresses itself in the form of various obstacles, which are not divided based on handicap category, gender, or age. To put it another way, those who are deaf or hard of hearing experience prejudice in a different manner than people who are physically disabled or mentally ill or those who are suffering with albinism and those who have autism spectrum disorders and developmental problems. Education, work, health care, housing, and the legal system are all places where prejudice occurs, as are a variety of cultural contexts and the unequal distribution of resources within those communities.

Predetermined demands and baseline technical criteria, such as space footages or standard educational standards, are used to generate architectural designs for educational buildings. There is an unfortunate propensity for designs to become bogged down in budgets or value engineering before reaching higher order values such as curriculum, utility, accessibility, attractiveness and applicability or sustainability; Taylor (2009).

There is little to no change in the physical layout of most schools while they are addressing urgent infrastructure requirements or upgrading their facilities. Many schools, particularly those that cater to students with disabilities, make little, if any, alterations to the makeup of the learning environment. Also each year, the National Government Constituency Development Fund builds new schools in order to replace old and deteriorating facilities (NG-CDF). Although education has changed dramatically, most new school buildings still trail behind in creating amenities that cater to students with disabilities in inclusive settings.

Only 39 percent of this group went to a mainstream elementary school, and only 9 percent went to high school, according to the 2008 Kenya National Survey on Persons with Disabilities. Population Council of the United States (2008). As a result, the cycle of poverty and disability continues. Special schools, integrated units, and inclusive classrooms within regular schools are all available in Kenya for children with special needs. Many children with impairments, however, do not go to school. There were only 22,000 students with special needs in schools in 1999, but that number grew to 26, 885 in 2003 and 45,000 in 2008. However, when compared to the overall number of students in the United States in 2008, this is a poor comparison. Despite the resumption of FPE in 2003, Njoka, Riech, Obiero, Kemunto, Muraya, Ongoto, and Amenya estimate that over 1 million children of school age remained out of school (2012). MVC (marginalized and vulnerable children) include children with special needs, those who have been infected or infected with HIV/AIDS, and those who live on the outskirts of cities.

According to these numbers, this review, which intended to establish how well Kenyan students with disabilities were able to participate in schooling, was a basis for performing the study. Indeed, this is an effort at a more educated and inclusive society on the global scale. In addition, this study assessed the extent to which concerns about infrastructure design for children with special needs have been taken into consideration. Many studies have focused on the qualities of teachers, on economic and social factors, on curricular difficulties, and on attitudes toward special needs students. For children with special needs, there is a gap in how schools are built and whether they are accessible to them. In order to bridge this gap, our research tried to determine the degree to which infrastructure is available to everybody.

III. OBJECTIVE OF THE STUDY

This study was guided by the objective,' to establish the extent to which sensory design considerations in designing school infrastructure projects influence access to school facilities by pupils with special needs in public integrated schools in Kitui County, Kenya.

IV. HYPOTHESIS

There is significant influence between sensory design considerations in designing school infrastructure projects and access to school facilities by pupils with special needs in public integrated schools in Kitui County.

V. LITERATURE REVIEW

One or more senses are compromised in people with sensory disabilities, but their intellect and IQ remain normal. One or more of a student's senses is damaged, such as their hearing, vision, or mobility (UNCEF 2007). Disability is often seen through the prism of one's ethnicity, race, social status, or even one's peer group (Harry 2002) There are many

households in Latin America where children with sensory impairments are integrated into the social system (stone 2004). In the meanwhile, getting children with sensory issues into public institutions like schools remains a challenge (Dedzik, Elwan, and Matts 2009).

Deaf children, dumb and blind, and children with multiple impairments are often left out of the mainstream inclusive schools mostly due to lack of highly trained teachers and sign interpreters in most schools. With the policy of inclusive schools, the ministry of education should be able to handle this matter by giving appropriate staffing with required skills to teach in inclusive schools. The topic of mental health and inclusion necessitates a social model approach.

Education must be free and obligatory for all pupils in Kenya regardless of their socioeconomic status, gender, or handicap. All children, regardless of skill level, must be able to access the curriculum in order for it to be useful. It's (Thomas 2012).

According to Stone (2004), persons with sensory disorders are often seen as an unnoticed minority. As a result, societal values affect how long a person with a handicap may expect to live (Gilbert and Ellwein, 2008). In our roles as educators, we have a duty to make sure that education for everyone is both a concept and a reality. To achieve the ambitious objective of education for everyone, students from disadvantaged groups must participate. One cannot exaggerate the relevance of groups such as those with sensory impairments. Several economic and political benefits have been shown for include students with impairments in the quest of a quality education in schools (Thomas, 2012).

Access to education for everyone has been emphasized by several international organizations. For children with sensory problems, innovative and customized approaches to education may be necessary. Students with and without sensory problems may benefit from a variety of special education programs. A kid with a handicap, ideally, should be educated in a setting that optimizes their potential and minimizes their impairment's effect. The following techniques have been thoroughly tested and praised by special education researchers and practitioners for their capacity to reduce the negative effects of disability, optimize student achievements, and improve classroom accessibility for students with sensory impairments. It's important to note that Hehir and Katzman (2012) The term "inclusive education" refers to When students with various levels of ability attend school together, this is known as inclusive education (Hehir and Katzman, 2012).

Students with impairments may be taught alongside their classmates in an inclusive classroom. It is possible that students with and without sensory problems may be ostracized or disregarded if instructors are not adequately equipped to educate special needs students and perceive them as a burden. This can lead to a bad learning environment for all students. In order for inclusive classrooms and its stakeholders to effectively serve all parties, they must completely commit to the purpose. In developing countries like Kenya, inclusive schools are becoming increasingly commonplace in public education (Hehir and Katzman 2012).

In order to establish an enabling atmosphere and accommodate students with sensory disabilities, all Kenyan schools must be properly designed and equipped. Some disability educators believe that students with disabilities benefit from learning in a setting that is specifically tailored to meet their requirements (Helnir, 2011). Blind students may be sure that they will get Braille teaching and have access to audio files that would not be accessible in a typical public school setting. "Separate but equal is not equal" is a common refrain among disability rights supporters (T. Hehir, personal committee October 23, 2012).

There is an educational concept known as "Universal Design for Learning" (UDL) that aims to make the curriculum more user-friendly for students of all abilities (Rose & Gravel 2012). According to the term "Universal Design" in architecture, buildings should be designed to serve a wide range of individuals, including those with disabilities, and their needs should be taken into account from the beginning of the planning process, according to Rose and Gravel (2012).

The purpose of this research is to determine whether this is the case in our school building. To avoid the "one size fits all" approach, educators create lessons that can be understood by students of various abilities (Ramea, 2000). USL has proven successful in a wide range of school settings and has gained a foothold in the educational community according to Rose & Gravel 2012).

"Quality inclusive Education for Colombia" is a policy oriented on for broad inclusive education that was produced by Colombia's Ministry of Education with the help of numerous partners (UNISCO, 2012). In order to better accommodate kids with sensory problems in the classroom, an inclusive policy, culture and classroom practices have been implemented (Atencion and poblacion 2010). As a result of this policy, the Colombian government has shown its concern for the rights of those with disabilities.

A dramatic statement about the rights of disabled people may be made by a national policy of inclusion for children with disabilities in all areas of schooling. The problem, though, is that when schools aren't prepared for inclusion, they may instead abide by its text rather than its spirit. The implementation of an inclusive education model is not a simple task; it needs substantial pedagogical, political, and financial support and preparation.

Children with sensory impairments should be able to attend school in the same way as their peers, and curricula should be adjusted to their needs. Specially educated instructors and accessible educational facilities may be available to students with sensory disorders. For children with mobility and sensory problems, getting to and from school may be a huge obstacle. This study seeks establish how schools have put se3nsory considerations in designing the school infrastructure and how the school management has ensured availability of required assistive devices.

VI. THEORETICAL FRAMEWORK

Ludwig von Bertalanffy created the systems approach theory in 1956, and it will guide our investigation. Ross Ashby subsequently expanded on the idea. There is a hypothesis that a system is an organized collection of components that work together to accomplish certain objectives. The idea considers an organization to be an open system with multiple

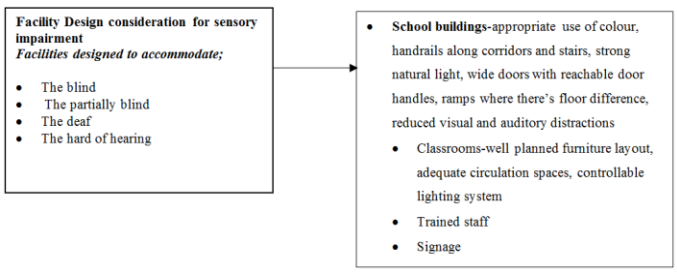
subsystems. All of these subsystems are interconnected and rely on one another. Communication, decision-making, responsibility, relationship, goals, rules, processes, and other aspects of a coordinating mechanism connect the many subsystems of an organization.

The school infrastructure design, the facilities and equipment form part of the system in which learning takes place. For an inclusive school the appropriate design of classrooms, circulation routes, stairs, lifts, toilets among others are paramount in making the school environment friendly to the disabled children hence can affect learning. Inadequate facilities and equipment do affect the children's learning negatively.

Many theories from the fields of psychology and sociology will inform this investigation, including Erikson's phases of psychological development (1963) by Gardner and Bronfen-ecological Brenner's system (1989). It is possible to explain the function of the teacher in the facilitation of emotional and behavioral well-being and resilience in the school environment via these three ideas, which are diverse in their emphasis. Multiple intelligences theory by the Gardeners (1983) broadens the scope of human intelligence to include more than just the linguistic and logical/mathematical ones. Traditional and restricted educational emphasis on academic accomplishment in reading, writing, and arithmetic is questioned by Gardner (Gardner &Hatch 1989; Mathews 1994). A list of Gardener's personal intelligences is provided in 1989.

A more psychologically oriented approach to Gardner's (1983) theory, the Socio-Ecological Theory investigates the connections between social systems and human development (Lee &stewart,2013). It's important to note that Erikson and Bronfen Brenner, for example, both focus on how social and cultural contexts influence the development of a child's mental health. These ideas emphasize the link between the development of emotional and mental well-being and the events and environments in which one grows up. As a result, they argue, it's critical to include classroom strategies that promote students' mental and emotional health and well-being.

VII. CONCEPTUAL FRAMEWORK



VIII. RESEARCH METHODOLOGY

A. PHILOSOPHY AND DESIGN

A research paradigm (philosophy) used in this study is pragmatism.

Research methods may be more successfully combined when guided by pragmatism. There should be a diversity of techniques to study in order to get the most answers to the most significant research issues (Johnson & Onweugbuzie, 2004). As a conceptual underpinning for mixed mode studies, it emphasized the need of focusing on the research issue and then using pluralistic approaches to gather knowledge about the problem (Creswell, 2013). The pragmatism paradigm was used to drive this study's mixed-mode technique.

According to the study design, this study used both descriptive and correlation research methods. Due to the fact that the research used both descriptive and inferential data analysis, the use of two designs was appropriate. It was in contrast to this that the cross-sectional descriptive survey approach focused on the present situation.

Because of its ability to collect a broad range of data, this study technique was selected. It was also capable of minimizing bias and increasing dependability.

B. TARGET POPULATION

The target population for this study was 767 respondents composed of 107 head teachers of integrated schools in Kitui County, 214 standard six and seven class teachers and 339 pupils with special needs from the 107 integrated schools in the county. (Kitui county education office 2021).

C. SAMPLE SIZE

The sample size for this study was 159 participants who consisted of thirty-one head teachers, sixty-two class teachers, thirty-one BOM chairpersons and thirty-five pupils all selected from the schools in the selected five sub-counties in Kitui County.

D. SAMPLING PROCEDURE

The research used a mix of multi-stage and stratified random sampling because of the multiple levels involved. Multistage sampling is the preferred method for large populations and where every subpopulation is desired to be included in the sample, according to Huber (2004).

The first stage selected 30% of the sixteen sub-counties in Kitui County, which is five sub-counties. Sekaran (2003) indicates that in sampling procedures, a minimum of 30% of subpopulations is essential for statistical analysis. The five sub-counties were purposely selected based on the number of integrated schools in each sub-county. The results were as follows;

Total no. of sub-counties	No. of sub-counties sampled (30%)	No. of integrated schools in sampled S/counties	No. of schools sampled (census)	Total no. of SNE children in sampled schools	No .of pupils sampled(std6 & 7 pupils)
16	5	31	31	339	35

Table 1.2: Sampling Frame

Table 3.2 shows the total number of sub-counties in Kitui County, number of sub-counties sampled, number of integrated schools in the sampled sub-counties, the number of special needs children in the sampled schools, and number of

special needs children who are in classes six and seven in the sampled schools

Sub-county	Number of integrated schools	No. of schools sampled	No. of sampled pupils in std 6 & 7	No. of HTs sampled	No. of class teachers sampled	No. of BOM chairpersons sampled
Kitui central	11	11	20	11	22	11
Mwingi central	7	7	6	6	14	7
Kitui west	5	5	5	5	10	5
Matinyani	4	4	2	4	8	4
Chuluni	4	4	2	4	8	4
TOTAL	**31**	**31**	**35**	**31**	**62**	**31**

Table 3.3: Criteria for Sampling

Table 3.3 shows the number of integrated schools in each of the sampled sub-counties, the number of sampled pupils from the sampled sub-counties, number of head teachers sampled, number of class teachers sampled and the number of BOM chair persons sampled.

The third stage involved selecting the children with special needs who were in classes six and seven and who totaled to 35 pupils. These two classes were chosen because they had been in school for long; hence, the pupils could give their real life experience within the school build environment and accessibility to different school facilities. They gave practical life experiences of how they had interacted with the school built environment. Class eight pupils were not selected because they would be busy preparing for their final examination. All the thirty-one head teachers of the selected integrated schools were automatically respondents due to their positions as heads. The classes six and seven teachers were also participants owing to their responsibilities as class teachers. These were 62 in total. Thirty-one school BOM chairpersons were also respondents.

E. DATA COLLECTION PROCEDURES

The National Commission for Science, Technology, and Innovation granted the researcher's request for permission to conduct his study. He employed and trained research assistants to help him collect data. When authorization was granted, each research assistant was assigned a specific number of primary schools from which to collect data. Telephone calls were made to the head teachers of the shortlisted schools in order to set up appointments in advance. They were informed both orally and in writing that the information acquired throughout the research would be kept secret and used exclusively for educational reasons. The researcher or assistants would personally administer the questionnaires and would be available to handle any clarification sought by the respondents. In order to make the study's purpose and significance clear to the participants, a short explanation was given to them before the questionnaires were handed out. Surveys and observation forms were completed by qualified study assistants at the selected elementary schools.

F. DATA ANALYSIS TECHNIQUE

The four stages of data analysis often utilized in research projects were used to examine the information gathered during this investigation. Data cleansing, reduction, distinction, and explanation are among the steps. Cleaning up data included coding and tabulation to identify anomalies and provide numerical values to replies that might be used for further study.

G. QUALITATIVE DATA ANALYSIS

Analyzing qualitative data entails many techniques and procedures for translating qualitative data into relevant explanations, understanding or interpretation about the subject matter under study. In the end, the goal is to discover the meaning and symbolism included within qualitative data. Interacting with the data, arranging it into manageable pieces, breaking it down into manageable subsets and coding and processing are all examples of qualitative data analysis as defined by Bogdan and Biklen (2003). This method is useful in finding patterns to explain influential patterns and relationships from the data that has been gathered.

As soon as the data was collected, qualitative analysis started. By Best and Khan (2004), qualitative data analysis is a problem because it must deal with a large number of data and uncover important patterns in order to communicate what the data tells us about the world around us effectively. A three-step analysis approach was used to analyse and interpret data gathered using qualitative methodologies. Each interview session resulted in daily summaries summarizing the primary data collected. Interim reports were prepared by describing replies in detail and identifying areas that needed extra information and obtaining it. Interim report analysis and interpretation is the third phase of a mixed mode approach, which recommends including both quantitative and qualitative data into the final report. The qualitative data analysis was carried out either simultaneously with or sequentially with the data gathering. Table 3.5 illustrates the operationalization of the variables below, which were assessed and evaluated in accordance with the study's goals.

The data was entered into an SPSS version 20 computer program, which was then double-checked to ensure that there were no inaccuracies in the data. The qualitative data collected by open-ended questions in the questionnaire was analyzed using Richie et al (2003)'s framework-based approach. Based on major topics, ideas, and categories, this involves categorizing and arranging material into a logical framework.

H. QUANTITATIVE DATA ANALYSIS

Descriptive statistics such as the mean and standard deviation were used to assess central tendencies. Pearson's coefficient of correlation was utilized to calculate the influence of each independent variable on the dependent variable, which is the availability of school facilities, in this investigation. Data in this research was measured in intervals, and the Pearson r correlation coefficient method is the most suited for finding relationships in this kind of dataset (Kothari, 2004). The relationship between the two variables that need to

ISSN: 2394-4404

be adjusted is assumed to be linear. To verify that the variables had a linear connection, a scatter graph was initially created and compared to the actual data. Because the relationship between the independent and dependent variables may go either way, we used two-tailed tests to establish a correlation.

Each independent and dependent variable's significance was tested using basic linear regression models. The moderating variable was tested using multiple regression and stepwise models. This study used a 0.05 significance level for testing hypotheses. In order to determine the amount to which the independent variable influenced the dependent variable, regression analysis was necessary.

I. SENSORY DESIGN CONSIDERATIONS

It was determined that students with special needs at public integrated schools in Kitui County, Kenya were impacted by sensory design concerns in the construction of school facilities. Survey participants were asked to indicate how strongly they agreed or disagreed with each of the following statements in a self-administered survey. On a five-point Likert scale, they were asked to evaluate a total of eleven items; No extent (NE) 1<NE<1.8; Very Minimal Extent (VME) 1.8<VME<2.6; Minimal Extent (ME) 2.6<ME<3.4; Great Extent (GE) 3.4<GE<4.2; and Very Great Extent (VGE) 4.2<VGE<5.0. There is an equal distance of 0.8 between the two scales. Data on the impact of sensory design considerations on the ability of students with special needs in public integrated schools to use school facilities may be found below in the form of frequency (F), percentage (%), mean (M) and standard deviations (SD).

	Scale	NE F %	VME F %	ME F %	GE F %	VGE F %	Mean	SD
16a	Pupils can navigate freely along the pathways	2 (1.4)	11 (7.9)	94 (67.6)	31 (22.3)	1 (0.7)	3.13 (0.052)	0.612
16b	There is proper lighting along the pathways	5 (3.6)	27 (19.4)	83 (59.7)	23 (16.7)	1 (0.7)	2.91 (0.062)	0.727
16c	Rooms have room numbers both in braille and tactile characters	19 (13.7)	91 (65.5)	24 (17.3)	5 (3.6)	0 (0.0)	2.11 (0.057)	0.667
16d	Toilets have signage both text and pictogram	16 (11.5)	97 (69.8)	19 (13.7)	7 (5.0)	0 (0.0)	2.12 (0.056)	0.664
16e	All reading and learning areas are well lit	6 (4.3)	31 (22.3)	86 (61.9)	13 (9.4)	3 (2.2)	2.83 (0.063)	0.741
16f	Appropriate colours are used	7 5.0)	35 (25.2)	89 (64.0)	6 (4.3)	2 (1.4)	2.72 (0.059)	0.692
16g	Assistive devices are available	19 (13.7)	97 (69.8)	21 (15.1)	1 (0.7)	1 (0.7)	2.05 (0.052)	0.618
16h	Curtains are provided to control glare	19 (13.7)	99 (71.2)	19 (13.7)	1 (0.7)	1 (0.7)	2.04 (0.051)	0.607
16i	Signage are both in text and pictogram	17 (12.2)	98 (70.5)	14 (10.1)	9 (6.5)	1 (0.7)	2.13 (0.062)	0.731
16j	Routes are free from barriers/ obstacles	10 (7.2)	35 (25.2)	73 (52.5)	20 (14.4)	1 (0.7)	2.76 (0.069)	0.813
16k	Both visual and audio alarms are provided	20 (14.4)	87 (62.6)	26 (18.7)	6 (4.3)	0 (0.0)	2.13 (0.059)	0.700

Sample size n = 139, Cronbach alpha = 0.612, Composite mean =2.4799 Composite standard deviation = 0.4155

Table 2: Sensory design considerations

The overall composite means (M) for the amount to which sensory design considerations in developing school infrastructure impact access by children with special needs in public integrated schools in Kitui County was 2.4799, and the overall composite standard deviation (SD) was 0.4155. At M = 2.4799 and SD = 0.4155, the findings suggest that at least the majority of respondents believed that sensory design concerns are taken into account when constructing school facilities in order to enable accessibility for students with special needs in public integrated schools. The Cronbach Alpha Coefficient for the eleven items that were used to quantify the effect of sensory design considerations while developing school facilities to facilitate access for students with special needs in public integrated schools was 0.612. Having a high reliability coefficient indicates that the item had a high degree of internal consistency when it came to measuring this construct.

Key informant's interviews indicated that the sensory design considerations when designing school facilities to ensure access by pupils with special needs in public integrated schools was not seriously thought about because the boards of management of schools did not involve the ministry of public works when designing and constructing school infrastructure. However, they all agreed that it was very necessary that school infrastructure be designed with the considerations of the needs of pupils with special needs to ensure that the pupils can easily access all the school facilities. Currently most school buildings are constructed based on available budgets rather than users' needs which then make most of them not easily accessible by pupils with special needs.

Pupils were asked in Item 16a whether they could freely move around the walkways. Some 94 (67.6 percent) of the respondents agreed with this item to some degree, which means that students are unable to move freely along the paths. There was a standard deviation of 0.612 for this item's mean

score, which was 3.13. This shows that the majority of respondents believe that the selection process for project beneficiaries is fair and transparent.

It was determined that item 16b's goal was to find out how well the walkways were lit. Some 83(59.7 percent) of the respondents agreed with this item to some degree, according to the findings. More over two-thirds of those polled agreed with the statement to some degree or another, while only 17.4% agreed to a significant degree. Pupils were unable to freely traverse the walkways because of this (16a). In this case, the item's standard deviation was 0.727 and the average score was 2.91. An overwhelming majority of survey respondents agreed with the assertion that project recipients were actively involved in choosing beneficiaries. Key informants arrived at a general agreement that where there was power connectivity in the schools, only the classrooms had lights. There was no lighting along the pathways. This means that pupils who are partially blind can knock on obstacles on the pathways. For instance, some of the schools were built on very hilly areas and the compound was not leveled making the lighting of the pathways very necessary

Item 16c sought to establish the extent to which rooms had room numbers both in braille and tactile characters. Results indicate that majority 110(79.2%) of the respondents agreed to very minimal extent that rooms had room numbers both in braille and tactile characters. Only a minority 29 (20.9%) of the respondents agreed that rooms had numbers in tactile characters. Blind pupils were not able to locate the rooms using room numbers.

Item 16d examined the presence of both textual and pictographic signs in restrooms. There were only 113 people who agreed with this item in a very minor way, meaning that toilets did not have both text and pictogram signage. The mean score (M) for this item was 2.12 with a standard deviation (SD) of 0.664. Most respondents agreed that the restrooms lacked both text and pictograms in their signs. This means that it was very difficult for partially blind and the blind to locate the toilets.

Item 16e sought to establish the extent to which all reading and learning areas were well lit. Results indicate that majority 117(84.2%) of the respondents agreed to minimal or very minimal extent with the item while 16(11.5%) agreed to a great extent to this item. This means that all reading and learning areas were not well lit. The mean score for this item was 2.12 with a standard deviation of 0.664.

16f sought to establish the extent to which appropriate colours were used. Results indicate that 131 (94.2%) of the respondents agreed to minimal or zero extent with this item, while only a minority 8 (5.8%) agreed to a great extent. The mean score for this item was 2.72 and a standard deviation of 0.692.

The purpose of Item 16h was to find out how much glare control was supplied by curtains. Curtains are supplied to reduce glare, according to the majority of respondents (122, or 94.2%), but only two respondents (1.4%), on the other hand, felt that this statement was true to a large degree. This item had a standard deviation of 0.607 and a mean score of 2.04. This shows that 94.2 percent of the respondents (122) said that there were no curtains in the classrooms to reduce glare. Key informant interviews indicated that the school management did not consider curtains as a priority since it affected minority of the pupils. Pupils with special needs may be the minority, but they should be given their right to conducive- learning environment.

For the sake of this question, Item 16i aimed to determine the degree to which the Signage was both written and pictographic. The results show that the majority of 129 (92.8%) agreed to some degree with this statement, while just 10 (7.2 percent) agreed to a considerable degree. There was a standard deviation of 0.731 to this item's mean score of 2.13. That's an indication that 129 people (or 92.8%) thought that both text and pictograms on signage were negative.

Item 16j sought to establish whether Routes were free from barriers/obstacles. Results indicate that majority 73(52.6%) agreed to a minimal extent to this item. Another 45(32.4%) agreed to very minimal extent while a minority 21(15.1%) agreed to a great extent. The mean score for this item was 2.76 and a standard deviation of 0.813.

Item 16k sought to establish the extent to which both visual and audio alarms were provided in the schools. The results indicated that majority of the participants 132(95%) agreed to very minimal extent, while minority 6(4.3%) agreed to a great extent. The mean score for this item was 2.13 and a standard deviation of 0.700. This result implies that majority of the respondents 132(95%) said that both visual and audio alarms were not provided in the schools.

Key informant interviews indicate that both visual and audio alarms were not provided in the schools due to lack of funds from government and other development partners. Key informants indicated that sensory aid is largely lacking in many schools because of lack of funding from the government and development partners. However, county officials confirmed that appropriate designs are already in place but funding has been the challenge

From the table sensory design considerations were measured using11 different spectrums. These include; ease of navigation along the pathways, lighting along the pathways, room numbers marked by braille and tactile characters, toilets having signage in pictures and text, good lighting in learning and reading areas, appropriate colours used, assistive devises are available, curtains on windows to control glare, signs written in text and picture format, routes that are free from barriers and both visual and audio alarms are installed. From the table it can be noted that most of the sensory design considerations are only accessible to very minimal extent. This can be seen from the fact that eleven of them that is ; room have room numbers marked by braille and tactile characters, toilets having signage in pictures and text assistive devices are available, curtains on windows to control glare, signs written in text and picture format and both visual and audio alarms. These seven indicators have high modes at the second last level of the scale.

J. CORRELATION ANALYSIS

Sensory design factors and the dependent variable, special needs students' access to school amenities, were compared using correlations. The following results were obtained.

		Access to school facilities by pupils with special needs	Sensory design considerations
Access to school facilities by pupils with special needs	Pearson Correlation	1	.440**
	Sig. (2-tailed)		.000
	N	139	139
Sensory design considerations	Pearson Correlation	.440**	1
	Sig. (2-tailed)	.000	
	N	139	139

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3: Correlation

At the 0.01 level of significance, we found a link between the dependent variable access to school facilities by children with special needs and concerns for sensory design. This reveals that sensory design considerations have a substantial impact on kids with special needs having access to school amenities.

K. REGRESSION

The hypothesis we ought to test was; H_1: There is significant influence between sensory considerations in designing school infrastructure and access by pupils with special needs in public integrated schools in Kitui County. To test this hypothesis this research conducted a linear regression analysis of the model $Y = a + B_2X_2 + e$

Where: -
Y= access
A=constant
B2= Beta co efficient
X2= sensory considerations
E=error term
The following results were obtained;

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.440[a]	.194	.188	.47554	.194	32.922	1	137	.000

Analysis of Variance (ANOVA)

Model	Sum of squares	df	Mean squares	F statistics	Sig
Regression	7.445	1	7.445	32.922	.000[b]
Residual	30.982	137	.226		
Total	38.427	138			

Coefficients

Model	B	Std error	Beta standardized	t	Sig
Constant	1.942	.245		7.926	.000
Beta	.559	.097	.440	5.738	.000

Table 4: Regression

Children with special needs were more likely to have access to school facilities if they included sensory design considerations, according to the table's 0.440 R value. – For children with exceptional needs, sensory design issues account for 19.4% of the variation in access to school facilities, according to a coefficient of determination R squared = 0.194. The anova table shows the results that help us to evaluate the hypothesis of interest. From the table the regression sum of squares was 7.445, the residual sum of squares was 30.982 and the total sum of squares was 38427. The p value of 0.000 is less than the significance criterion of 0.05, hence the null hypothesis is discarded. Students with special needs in Kitui County's public integrated schools benefit greatly from taking sensory factors into account while building school infrastructure. From the table the model was significant and therefore, $Y = 1.942 + 0.559X_2$ is the prediction model. The data presented here suggests that kids with special needs would have easier access to school resources if sensory design considerations were applied to each unit of the design.

IX. FINDINGS OF THE STUDY

The second purpose was to investigate the degree to which sensory design principles in developing school infrastructure impact access by kids with special needs in public integrated schools in Kitui County. For this objective, eleven items were considered. The study found out that there was an average internal consistency in the Likert scale responses for all the items since the Cronbach alpha coefficient was 0.612. The composite mean and standard deviation was 2.4799 and 0.4155 respectively. The standard error for the mean estimate was 0.00467 which was a small value hence showing that he mean estimate was a true reflection of the population mean. The mean shows that on average most respondents claimed that sensory designs were considered at a very minimal extent in designing the infrastructure.

No significant association between sensory design considerations in developing school infrastructure and access by kids with special needs in public integrated schools in Kitui County, Kenya, was investigated as a goal of this study. The research indicated a connection of 0.440 between sensory design concerns and access to school facilities for students with special needs. There was a significant correlation between sensory design considerations in designing school infrastructure and access by students with special needs in public integrated schools in Kitui County, Kenya, according to the coefficient of determination of 0.94, the F statistic of 32.922, and the p value of 0.0000. The linear regression-based prediction model was also noteworthy.

X. CONCLUSIONS

Pupils with special needs have a right to education. Therefore, schools need to ensure that facilities cater for the needs of such pupils as well. Designs that cater for special needs considerations should be encouraged when developing infrastructure in schools. However, little had been done in

terms of research to provide empirical evidence to back up these claims. This study sought to find out the infrastructural design considerations, project management skills and access to school facilities by pupils with special needs, in public integrated schools in Kitui County, Kenya.Based on the empirical evidence generated in this study, this conclusions was made; Design considerations for pupils with sensory needs, had influence on access to school facilities by pupils with special needs.

XI. RECOMMENDATIONS

According to this research, the following policy, practice, and research technique suggestions are made.

A. RECOMMENDATION TO POLICY

From the findings of his study, it is evident that there is a gap in the infrastructural designs of public school facilities in relation to pupils with special needs. Efforts by the school boards of management cannot bear much result if not supported by sound policies. This study therefore recommends formulation of appropriate policies that supports school in infrastructural development and specifically that address physical orthopaedic design considerations, intellectual design considerations, emotional design considerations and Policy provision should support resource allocation, research and implementation. Besides the policies, and based on the policy provisions, necessary laws need to be enacted to enforce implementation of such policies.

B. RECOMMENDATION TO PRACTICE

This study makes it clear that buildings and other school infrastructure - are crucial elements of learning environments in schools and especially where learners living with disability are concerned. This study therefore recommends that project designs for school infrastructure must address the needs of learners living with disability of different nature. This study singles out four areas of consideration in these designs such as physical orthopaedic design considerations, sensory design considerations, intellectual design considerations, and emotional design considerations. There is need for capacity building to stakeholders involved in development of public school's infrastructure. These includes but not limited to the school boards of management, school administrators, contractors, and ministry of public works officials who are in charge of approving of project designs and supervising to ensure all the regulatory requirements are met in such infrastructure projects.

C. RECOMMENDATION TO RESEARCH METHODOLOGY

Cross-sectional surveys and correlational designs were employed in this study's pragmatic paradigm to support a mixed technique approaches. This methodology was considered appropriate for this study as it allowed descriptive analysis, correlation and regression analysis and drawing conclusions from these analyses. Therefore, based on this, it can be recommended that future similar studies can adopt the same methodology.

REFERENCES

[1] Brenner, J. W., Metz, S. M., & Brenner, C. J. (2009). Campus involvement, perceived campus Educational, Scientific and Cultural Organization Paris: (UNESCO).
[2] Eriksson, L. & Granlund, M., (2004). Conceptions of participation in students with Estonian Education and Research Network (2000). Overcoming Resource Barriers An ENET exploring government policy and teachers' understandings. PHD Thesis, School of
[3] Faber Taylor, A., & Kuo, F. E. (2009). Children with attention deficits concentrate better after walk in the park. Journal of Attention Disorders, 12, 402–440.
[4] Fulmer, J. (2009) What in the world is infrastructure? [accessed 25th February 2015]. Available at: http://www.corridortrust.com/uploads/Infrastructure_Investor.pdf . G. D., Gonyea.
[5] Gardner, H. (2011). Truth, beauty and goodness reframed: Educating for the virtues in the 21st century. New York: Basic Books.
[6] Government of Kenya (2001). The Children's Act. Nairobi: Government Printer.
[7] Government of Kenya (2002). The Children Act, 2001. Nairobi: Government Printer.
[8] Government of Kenya (2010). Constitution of Kenya. Nairobi: Government printer.
[9] Government of Kenya (2013). Basic education act, 2013. Nairobi: Government Printer
[10] Hehir, T., & Katzman, L.I. (2012). Effective inclusive schools: Designing successful school wide programs. San Francisco: John Wiley & Sons.
[11] Kothari C., (2004) Research Methodology: Methods and Techniques (second revised edition) New Age International Publishers, New Delhi
[12] Krejcie, R. V. & Morgan, D. W. (1970). Determining Sample Size for Research Activities. Educational and Psychological Measurement. Vol. 30, pp 607-610.
[13] Ministry of Education (2009). Child Friendly Schools Infrastructure Standards
[14] Plessis, I. G.-d., & Reenen, T. H. (2011). Aspects of disability law in Africa. Pretoria, South promises. International Journal of Educational Studies 01(02) 2014.109-118.
[15] Questionnaire: Norms for the 4th edition. Bloomington, IN: Center for Pos tsecondary
[16] Randiki, F. (2002). Historical development of special needs education. Nairobi: KISE.
[17] Regional Office.
[18] Report, No. 1. Brussel: Education International.
[19] Rose, D.H., & Gravel, J.W. (2012). Curricular opportunities in the digital age. Boston, MA: Routledge.
[20] Taylor, A. and K. Enggass (2009). Linking Architecture and Education: Sustainable Design for Learning Environments., University of New Mexico Press, Albuquerque.

[21] UNESCO (1990). World conference on Education for All. Jomtien: UNESCO.
[22] UNESCO (2010). Education for All Global Monitoring Report: Reaching the
[23] UNESCO (2010). Reaching the marginalized. EFA Global Monitoring Report 2010. Oxford:
[24] UNESCO. (2012). Quality inclusive education in colombia initiative. Retrieved from http://www.ibe.unesco.org/en/global-news-archive/single-news/news/quality-inclusive education-in-colombia-initiative.html.
[25] UNICEF (2007). A Human Rights Approach to Education for All: A framework for the realisation of children's rights to education and rights within education. Retrievedfromhttp://www.unicef.org/publications/files/A_Human_Rights_Based_Approach_to_Education_for_All.pdf.
[26] UNICEF (2013). State of the world's children: Children with disabilities. Retrieved from United Nations (UN) (1948). Universal declaration of human rights. Paris
[27] United Nations (UN) (1989). Convention on the rights of the child. New York: UN.
[28] United Nations. (2004). Data and statistics for disability-sensitive policies and programmes. university. The Undergraduate Research Journal, 7, 1-12.
[29] Unrest in Secondary Schools, Nairobi: MOE.