

# **Institutional Factors Influencing the Implementation of Competency Based Education Among Learners with Physical Impairments Affecting Mobility in Public Inclusive Primary Schools in Nyamira County, Kenya**

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**Abstract:** The roll out of the Competency Based Education in Kenya aims to foster competency-based, inclusive and learner-centred education. However, learners with physical impairments affecting mobility still have problems in education that could prevent them from benefiting from learning activities. This study examined the institutional factors influencing the implementation of CBE among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira County, Kenya. Specifically, the study examined infrastructure accessibility, assessed the adequacy of adapted learning resources, evaluated teachers' competencies, and determined the role of time adaptability and flexibility within school programmes in the implementation of CBE. The study was based on the Systems Theory which sees the school as an integrated whole, whose parts inter-relate and function in order to meet the educational objectives. The descriptive survey design with a mixed-method approach was used. The target population comprised 23 headteachers and 142 teachers from public inclusive primary schools in Nyamira County. A sample of 11 headteachers and 65 teachers was selected using purposive and simple random sampling techniques. Data were collected using teacher questionnaires, headteacher interview guides and observation checklists. The validity of the instruments was established through expert review, while reliability was assessed using Cronbach's alpha coefficient. Data analysis revealed that the quantitative data was conducted by descriptive data analysis and the qualitative data was done with the thematic analysis technique. The results showed that the lack of infrastructure accessibility were major limitations in realizing CBE. Restriction of participation occurred due to poor ramp access, non-accessible routes, limited adapted sanitation facilities and lack of mobility supportive furniture. Adapted learning resources were also inadequate, particularly assistive devices and adapted instructional materials. The findings further indicated that teachers were generally prepared to implement CBE, although gaps remained in inclusive education training, specialised support and continuous professional development. Time adaptability and flexibility were also identified as important considerations, particularly where learners required additional time for learning activities and assessments. The study concludes that effective implementation of CBE for these learners requires accessible infrastructure, adequate adapted learning resources, competent teachers and flexible school programmes. The study recommends increased provision of accessible infrastructure and assistive devices, adaptation of learning materials, continuous teacher capacity building in inclusive education, and greater flexibility in school programmes to accommodate the needs of learners with physical impairments affecting mobility.

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## I. INTRODUCTION

### ➤ *Background to the Study*

Competency Based Education is a learner centered educational approach that emphasizes the mastery of specific skills, knowledge, values, and attitude before progression to the next level of learning. Unlike traditional time-based systems that prioritized content coverage and examination performance, CBE focuses on learners demonstrated ability to apply competencies in real life contexts (Patrick & Sturgis, 2015; UNESCO, 2021). The model is designed to nurture creativity, critical thinking, collaboration, and problem-solving skills necessary for the 21<sup>st</sup> century workforce (World Economic Forum, 2023).

Inclusive education is therefore closely connected to successful implementation of CBE, which seeks to ensure that all learners regardless of ability, background, or social economic status have equitable access to quality education. Inclusive education promotes the adaptation of curriculum content, teaching strategies, assessment practices and learning environments to accommodate diverse learning needs. Within this framework, learners with physical limitations affecting mobility require deliberate institutional support like being able to enter the classes, navigate between learning spaces, use sanitation facilities, access learning materials and participate in practical activities to fully benefit from CBE implementation.

In this study, mobility impairments refer to difficulty in performing physical movements required for participation in everyday school activities, particularly walking, moving between locations, climbing steps or navigating the school environments, with or without mobility aids or assistance. These impairments may result from congenital conditions, neurological disorders, muscular disease, injuries or skeletal abnormalities. Learners with mobility impairments may experience difficulties in walking, standing, manipulating learning materials or accessing school facilities independently. Importantly mobility limitations affect physical functioning and not intellectual capacity, to meaningfully participate in CBE, such learners often require accessible infrastructure; ramps, modified classrooms, adapted sanitation facilities, assistive devices (wheelchairs, braces, crutches), adapted learning materials, flexible assessment methods and individualized instructional support. In addition, the nature of the competency based learning demands flexibility in school schedules, learning pace and assessment methods to allow all learners adequate time to demonstrate mastery of required competencies.

Globally, disability among children represents a substantial population requiring inclusive education and support. UNICEF estimates that nearly 240 million children, approximately one in ten children globally, have some form of disability. However, the figure covers disability across several functional domains. The lack of sufficiently disaggregated data on particular functional domains, including mobility also creates challenges for planning services specifically for children who experience movement related difficulties. The adaptation of CBE has gained

momentum as countries strive to align education systems with evolving labour market demands. Nations such as the United States, Canada and Finland have implemented CBE reforms aimed at promoting mastery-based progression and learner centered pedagogy (Patrick & Sturgis, 2015; U.S. Department of Education, 2022). However, emerging literature suggests variations in implementations practices across institutions, particularly in relation to inclusive education. While CBE is compatible with inclusive principles, evidence regarding how institutional structures support learners with physical impairments affecting mobility remain limited in many contexts (Basham, Smith, & Greer, 2020).

UNESCO (2021) suggests that learners with mobility impairments and other disabilities often face compounded disadvantages within CBE systems due to insufficient inclusive pedagogical strategies and limited access to assistive technologies. WHO and UNICEF report that more than 2.5 billion people globally need at least one assistive product while nearly at least one billion people who need assistive technology do not have access to it, with particularly limited access in low- and middle-income countries. Even in well-resourced education systems, transitioning from traditional grading structures to performance-based assessments has proven challenging. These international experiences demonstrate that assistive technology can support independence, participation and inclusion in education, making its availability relevant to learners with mobility difficulties.

Across Africa, countries such as Kenya, Rwanda, and South Africa have embraced CBE reforms to address the mismatch between education systems and labour market needs. The reforms aim to cultivate practical competencies, innovation and entrepreneurship among learners. However, implementation has encountered persistent structural challenges, particularly in resource constrained contexts (Ndungu, Mweru, & Wambiri, 2022).

Studies across Sub Sahara Africa: Nigeria, Chad and South Africa reveal that learners with mobility impairments face additional barriers, including inaccessible school environments, limited specialised teacher training, and inadequate funding for assistive devices (UNESCO, 2018). In many rural settings, negative societal attitudes and insufficient policy enforcement further undermine inclusive education efforts highlighting the gap between inclusive policy frameworks and institutional practice.

In Kenya, the 2019 Kenya Population and Housing Census provides useful evidence on functional difficulties. The census estimated overall disability prevalence among the population aged 5 years and above at 2.2%. Mobility was one of the reported functional domains with mobility difficulties accounting to 0.9% of the population in the national disability analytical report. CBC was introduced in Kenya in 2017 to replace the 8-4-4 system, with the objective of fostering creativity, innovation, and practical skill development (Ministry of Education, 2023). The reform aligns with constitutional and policy commitments, including the constitution of Kenya (2010), the Special Needs Education

Policy Frameworks (2009), and the Sector Policy for Learners and Trainees with Disabilities (2018), all of which advocate for equitable access to quality education and that inclusion is not only a question of enrolment but also of ensuring that institutional conditions allow learners to participate meaningfully in the learning process.

Despite progressive policy provisions, implementation challenges remain significant. National surveys indicate that a high proportion of persons living with disabilities reside in rural areas, yet enrolment and retention rates remain low (NNES, 2019). Institutional barriers such as inadequate teacher training in CBE methodologies, limited infrastructure adaptation, insufficient funding, and rigid assessment systems disproportionately affect learners with mobility impairments.

Learners with mobility impairments require specific institutional support to thrive under CBE. These include barrier free physical environments, time adaptability and flexibility within school programmes, assistive technologies e.g. IEPs, differentiated instructional approaches, and trained special needs educators. However, systematic weaknesses including understaffing, high teacher learner ratios, and limited professional development opportunities hinder effective service delivery (Adoyo & Odeny, 2015; Muriithi, 2020).

In Nyamira county, located in Nyanza region of Kenya, the implementation of CBE is ongoing but constrained by structural and logistical challenges. The county's hilly terrain and poor road infrastructure limit access to learning resources and specialized equipment. KNBS data indicate that among persons with disabilities in Nyamira, 50.9% were reported under the mobility domain compared with the 42.0% nationally among persons with disabilities. The figure provides useful indication that mobility related functional difficulties constitute an important area requiring attention. Reports from County Education Office (2023) indicate that only a small proportion of schools possess adequately adapted infrastructure to support inclusive CBE delivery, such as accessible classrooms, technology integration facilities and vocational training spaces.

Teacher competencies remain a critical concern. A significant percentage of educators lack specialized training in competency-based methodologies and inclusive instructional strategies, resulting in inconsistent implementation across schools (Kirui & Kamau, 2023). Additionally, limited funding allocation and weak policy enforcement contribute to inadequate provision of assistive devices, adapted learning materials and accessible facilities.

In public inclusive primary schools within the county, learners with mobility impairments continue to face barriers in accessing individualized learning approaches central to CBE. Although the policy frameworks envision inclusive and equitable education, institutional realities such as insufficient infrastructure, limited teacher capacity, outdated teaching materials, and ineffective resource utilization undermine the intended outcomes of CBE reform.

Although CBE holds significant potential to transform Kenya's education system and equip learners with relevant skills competencies for local and global markets, its successful implementation in Nyamira county for learners with mobility impairments require strengthened institutional capacity. Also, for CBE goals to be achieved by all learners, more needs to be done by the necessary stakeholders, from funding by the government, to in-service courses for teachers and change of attitude, change in curriculum for teacher trainees to align with the CBE requirements. Addressing infrastructural gaps, enhancing teacher training, improving resource allocation and reinforcing inclusive policy implementation are essential to ensuring that learners with mobility impairments fully benefit from CBE in Nyamira county and beyond.

Therefore, this study examined the institutional factors influencing the implementation of CBE among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira county with particular focus on infrastructure accessibility, teachers' competencies, learning resource availability and the time adaptability and flexibility of school programs in accommodating the diverse learning needs of these learners.

#### ➤ *Statement of the Problem*

The CBE curriculum in Kenya was introduced to equip learners with practical skills, values and attitudes required for the 21st century, emphasizing learner centered instruction, mastery of competencies and inclusive participation. However, learners with mobility impairment may experience institutional barriers that limits their effective participation in CBE.

Although Kenya's policies provide for inclusive education, the 2019 KPHC reported mobility disability at 0.9% of the national population, while in Nyamira county, mobility accounted for 50.9% of the reported disability types. These figures demonstrate the relevance of addressing mobility related educational needs. However, limited empirical evidence shows how specific school conditions affect CBE implementation for these learners.

In particular little is known about the influence of infrastructure accessibility, adapted learning resources, teacher competency and time adaptability and flexibility in public inclusive primary schools in Nyamira County. This evidence gap makes it difficult to determine whether schools provide adequate conditions for learners with mobility impairments to participate effectively in CBE. Therefore, this study sought to examine the institutional factors influencing the implementation of CBE among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira County, Kenya.

#### ➤ *Purpose of the Study*

The main purpose of this study was to determine the institutional factors influencing the implementation of competency-based education among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira county, Kenya.

### ➤ *Research Objectives*

The following objectives were utilized to guide the study. They include:

- To examine how infrastructure accessibility influences the implementation of competency-based education among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira county.
- To assess the adequacy of adapted learning resources in supporting the implementation of Competency-Based Education among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira county.
- To evaluate teachers' competencies in implementing competency-based education among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira County.
- To determine the role of time adaptability and flexibility within school programs affect the implementation of competency-based education among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira county.

### ➤ *Research Questions*

- How does infrastructure accessibility influence the implementation of competency-based education among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira county?
- How adequate are adapted learning resources in supporting the implementation of competency-based education among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira county?
- What are the competencies of teachers in implementing competency-based education for learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira county?
- What role do time adaptability and flexibility in school programs play in the implementation of competency-based education among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira county?

### ➤ *Significance of the Study*

The findings of this study may be beneficial to several stakeholders in the education sector. The Ministry of Education and other education policymakers may use the findings to understand the institutional factors influencing the implementation of Competency-Based Education among learners with physical impairments affecting mobility in public inclusive primary schools. The findings may provide information for informed decisions concerning the improvement of accessibility of school infrastructure, provision of adapted learning resources, teacher competencies and support mechanisms necessary for effective curriculum implementation.

The study may be useful for school headteachers in public inclusive primary schools to understand institutional

factors which impact the implementation of CBE for learners with mobility challenges. The results can be used by school headteachers to highlight what needs to be improved in the school in terms of teacher competencies, availability of learning materials, school infrastructure/physical conditions, and the management of instructional time for inclusive education.

The study may also benefit teachers as the findings may indicate the significance of having assessment skills, knowledge about CBE, and institutional support in implementing CBE for learners with mobility impairments. The results can inform strategies for developing teachers' capacity to be flexible in teaching and assessment, as well as in learning activities, in the context of inclusive classrooms.

The study can also be beneficial for education planners and government agencies in charge of school development in terms of information on the need for proper infrastructure, physical accessibility, learning resources and availability of inclusive public primary schools. This information can assist in planning and allocating resources to enhance access to education for learners with mobility disabilities.-

The findings of the study could offer lessons that can be used in other education contexts in Nyamira County and other parts of the country where education institutions have similar problems in implementing CBE for learners with mobility limits.

### ➤ *Limitations of the Study*

The study only focused on learners with mobility impairment and not including other categories of disabilities such as visual, auditory, or intellectual impairments. This was because the study objectives and instruments were specifically designed to examine institutional factors affecting the implementation of CBE. Consequently, the findings may not be directly applicable to learners with other types of disabilities. Research was conducted in selected public inclusive primary schools in Nyamira county. The selection was guided by the study population and sampling procedures, as well as the time and resources available for the research. Therefore, the findings may not fully represent the conditions in all schools or other regions with different institutional contexts.

The study majorly relied on self-reported information from teachers and headteachers through questionnaires and interviews, which may be influenced by personal perception or social desirability. This could affect the accuracy of some reported information. However, the use of observation checklist helped supplement the responses and provide additional evidence on school conditions. Time and resource constraints limited the number of schools and respondents that can be included in the study. This may have reduced the breadth of information obtained and limited the generalizability of the findings beyond the study area. In addition, access to some school records or facilities during observation was limited by school schedules and administrative procedures. However, these limitations were minimized through careful sampling procedures and the use

of clear and well-structured research instruments to enhance the credibility of the findings.

#### ➤ *Delimitations of the Study*

This study was delimited to public inclusive primary schools in Nyamira County and focused on the institutional challenges affecting the implementation of Competency-Based Education among learners with physical impairments affecting mobility. The study involved teachers and headteachers as the main respondents because they are directly involved in curriculum implementation and school management.

The study specifically examined four institutional aspects: infrastructure accessibility, availability of adapted learning resources, teachers' competencies, and time adaptability and flexibility in the implementation of CBE. Other factors outside these institutional aspects were not covered by the study.

The study also delimited the data collection to teachers' questionnaires, headteachers' interview guides and an observation checklist. These instruments were used to obtain information on the institutional conditions affecting the implementation of CBE among learners with mobility impairments in the selected public inclusive primary schools.

## II. LITERATURE REVIEW

#### ➤ *Competency Based Education*

CBE is learner centered approach that focuses on equipping students with practical skills and knowledge for personal growth and job market. Unlike traditional time-based systems such as 8-4-4, learners progress once they have demonstrated mastery of specific competencies (Murray & Sands, 2020; Sturgis, 2011). CBE emphasizes real world application, critical thinking and decision making (ILO, 2019; Levine, 2019).

Globally CBE has been implemented in vocational training, higher education and increasingly in primary and secondary schools, with curricula designed around clear competencies and performance-based assessments. In Kenya, pilot programs in public schools have applied CBE principles to enhance practical skills, learner centered approaches and inclusivity allowing students to progress at their own pace.

#### ➤ *Infrastructure Accessibility Influences the Implementation of CBE Among Learners with PI Affecting Mobility*

The effective implementation of CBE requires more than curriculum reform; it demands learning environments that support practical, learner centered activities. For learners with mobility impairments, infrastructure accessibility are fundamental determinants of participation and inclusion in educational activities. This section reviews the role of physical infrastructure in shaping inclusive education outcomes, particularly within CBE frameworks in public inclusive primary schools.

Globally, inclusive education frameworks recognize infrastructure and accessibility as fundamental to equity in

learning. The United Nations Convention on the Rights of Persons with Disabilities (CRPD, 2006) explicitly mandates that states parties ensure accessibility to education facilities for persons with disabilities, including reasonable accommodation and universal design principles. Accessible infrastructure enhances learners' autonomy, participation and social inclusion directly supporting learner centered pedagogies foundational to CBE.

Research from Europe and North America shows that school infrastructure designed according to universal design principles improves academic engagement for learners with mobility impairments. For instance, in the United States, the Individuals with Disability Education Act (IDEA, 2004) has prompted schools to integrate ramps, adjustable desks and accessible restrooms, demonstrating that infrastructure modifications significantly increase participation in practical and collaborative learning activities. Similarly, studies in Canada and United Kingdom highlight that poorly designed physical environments reduce learner independence, hinder engagement and negatively affect academic outcomes for students with disabilities (Imrie, 2012; Florian, 2019).

UDL principles emphasize proactively creating learning environments that allow participation by all learners, minimizing the need for individual accommodation. The principle directly aligns with the demands of CBE, which relies on movement between activity stations, collaborative tasks and hands on learning. Without accessible spaces, learners with MI face barriers to competency attainment, social interaction and engagement in active learning (Burgstahler, 2015).

Internationally, research demonstrates that infrastructure is a key determinant in the success of inclusive pedagogical approaches. In India, inclusive education programs showed that schools with accessible facilities reported higher learner attendance, participation and performance, particularly for learners with mobility impairments (Singh, 2017). In South Africa, a study by Walton and Spencer (2016) revealed that learners' access to modified classrooms, ramps and accessible toilets significantly influenced their participation in learner centered teaching approaches, echoing the global consensus that physical accessibility is inseparable from curriculum implementation.

In Kenya, the CBC launched in 2017, align with global CBE principles emphasizing skills mastery, practical engagement and learner centred pedagogy. Effective implementation of CBE requires functional and accessible learning environments. Research in Kericho county demonstrates a positive correlation between the availability of infrastructure and successful implementation of CBE. Beatrice Ngeno, Maurine Mweru and Teresa Mwoma (2021) reported that schools with functional classrooms and other specialized facilities showed higher levels of competency-based activity delivery. This suggested that practical spaces enhance teachers' capacity to delivery nonlinear, experimental learning central to CBE ([journals.eanso.org](https://journals.eanso.org/))(1)).

However, multiple studies indicate that inclusive infrastructure remains inadequate in Kenyan schools. Chonge, Wambugu and Kiaritha (2016) found that public primary schools in Bungoma county lacked ramps, accessible toilets and safe pathways limiting access for learners with physical challenges. Similarly, Karande (2014) reported that schools in Kiambu Municipality had insufficient ramps, handrails, lowered handles and adapted toilets reducing mobility and full participation of physically challenged learners. Sikini, Kimani, and Kamau (2025) also found out that only a minority of schools had taken steps to integrate learners with physical disabilities, highlighting a resistant gap between policy aspirations and actual school readiness.

National reports, such as those from the NGEAC (NGEAC, 2025), reinforce that learners with mobility impairments are disproportionately affected by inadequate infrastructure, experiencing reduced independence, social exclusion and decreased participation all of which hinder engagement with competency-based learning activities (educationnews.co.ke(5)).

Locally, within counties such as Nyamira, limited studies have addressed how infrastructure affects CBE for learners with mobility impairments. However, existing evidence from broader inclusive education and CBE related studies in Kenya indicates that infrastructure inadequacies remain a major barrier to effective learning. National reports, including NGEAC highlights that many schools still lack essential facilities such as ramps, adapted classrooms and accessible sanitation facilities, which significantly restrict the participation of learners with disabilities in education activities. Similarly, findings from counties such as Kericho, Bungoma and Kiambu suggest that absence of learner friendly infrastructure limits engagement in practical and collaborative CBE activities, which are central to competency development. These studies further reveal that teachers often struggle to implement hands on, activity-based learning approaches in environments that are not physically accessible, thereby negatively affecting learner participation, independence and overall competency attainment.

Policy analyses indicate that resource allocation, technical expertise and stakeholder coordination significantly influence infrastructure adaptation for inclusion. Jeptekeny and Keter (2025) argue that while Kenya has inclusive education policies and CBC frameworks, implementation is undermined by inadequate prioritization of accessible physical spaces. Without deliberate infrastructural support, learners with MI remain marginalised and the transformative goals of CBE learner centered, participatory and skills focused education are compromised.

Infrastructure accessibility is recognised as fundamental to effective CBE. Accessible environments enhance learner independence, engagement and mastery of competencies, while inadequate infrastructure creates barriers to participation, social inclusion and learning outcomes.

Despite the evidence, there is limited research directly linking infrastructure accessibility to CBE implementation

for learners with mobility impairments in Kenya, particularly at the county and school levels. Existing literature addresses inclusive education broadly without focusing on the interaction between infrastructure and CBE specific practices. This gap underscores the need for research that examines how infrastructure adaptations, such as ramps, accessible toilets and learning stations influence learners' competency outcomes and teachers' instructional practices.

The reviewed literature confirms that infrastructure accessibility is a critical determinant of effective CBE implementation, shaping learners' participation, engagement and competency development. While global and international studies provide a strong theoretical and empirical basis, local evidence highlights persistent barriers in Kenyan public schools particularly for learners with mobility impairments.

The research builds on the findings by investigating how infrastructure accessibility influence the implementation of CBE in public inclusive primary schools within Nyamira county. By examining physical adaptations alongside CBE practices, the study will provide evidence-based insights into how schools can create enabling environments for learners with MI, contributing to inclusive, competency-based education policy and practice.

#### ➤ *Summary of Literature Review*

The review of literature revealed that the implementation of Competency-Based Education for learners with disabilities has gained global attention as a strategy for equipping learners with functional skills for life and work. Studies highlight that the success of CBE largely depends on the adequacy and effective utilization of learning resources, ranging from assistive devices, infrastructure, and instructional materials to technological tools (UNESCO, 2020). However, global reports show persistent disparities in resource provision for special schools, limiting access to quality education for physically disabled learners, especially in low-income regions (World Bank, 2021).

Further, the literature emphasized that teacher competencies play a crucial role in facilitating inclusive competency-based learning. Teachers require appropriate training and continuous professional development to effectively apply inclusive pedagogy approaches and competency-based strategies. In addition, time adaptability and flexibility within school programs are necessary to allow learners adequate time to master competencies and participate in practical learning activities (KICD, 2017; Ngugi, 2020). Despite these insights, limited empirical research has examined how these factors collectively influence the implementation of CBE among learners with mobility impairments in public inclusive primary schools, thus creating a need for further investigation.

#### ➤ *Conceptual Framework*

B. Swaen (2021) defined conceptual framework as visual format which defines the relevant variables in research and shows how they are related to each other. It is used to show the cause and effect of variables. The study used conceptual framework to answer the research questions. In

this study, the independent variables were institutional factors and the dependent variable in this study was Implementation of Competency-Based Education. Moderating or the

intervening variables were administrative support and community and parental involvement.

• *Independent Variables*

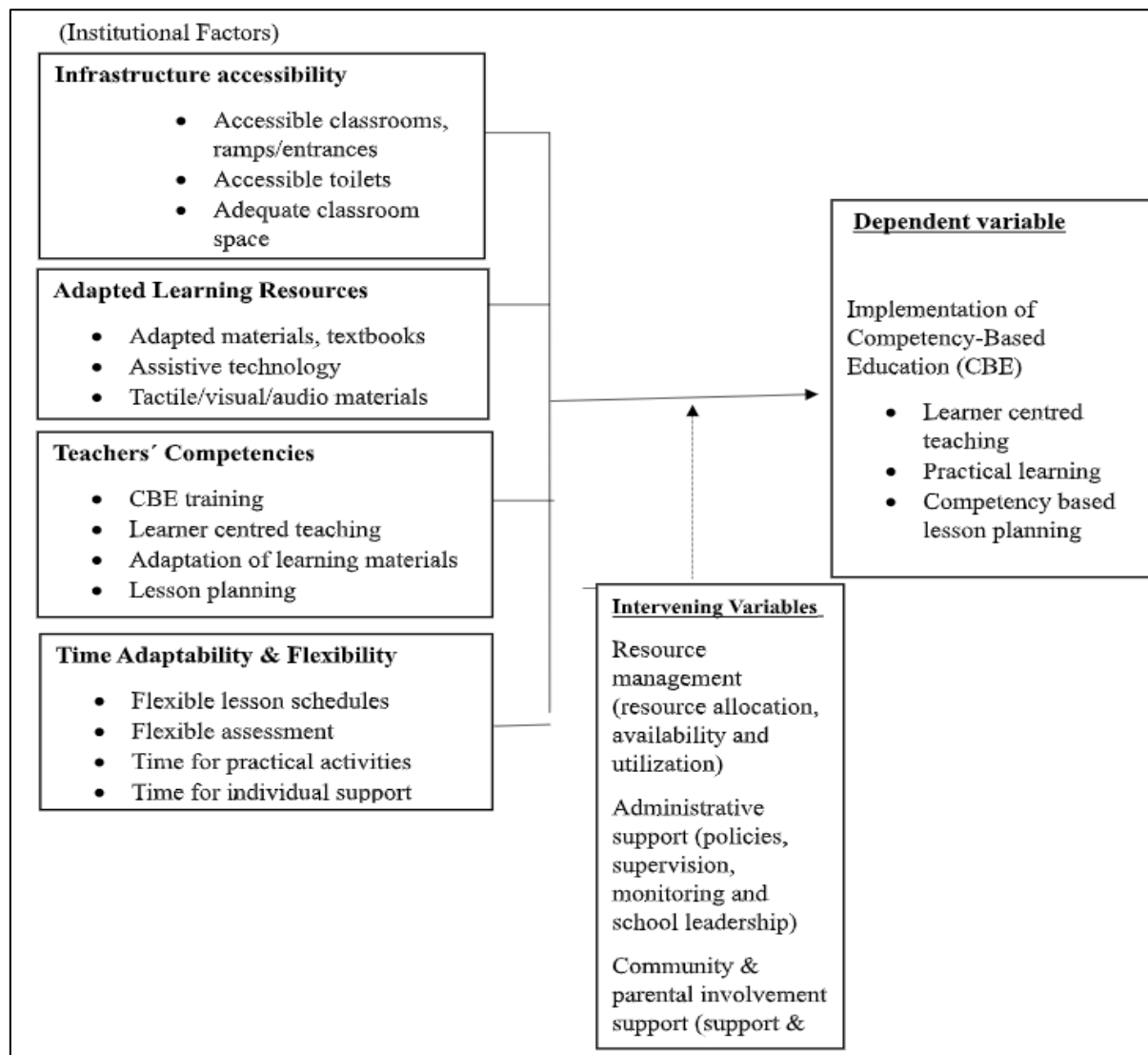


Fig 1 Independent Variables

### III. RESEARCH METHODOLOGY

➤ *Research Design*

This study used a descriptive survey design. According to Aggarwal and Ranganathan (2019), a descriptive study is designed to describe the distribution of one or more variables without regard to any causal or other hypothesis. The main advantage of this type of design is that it enables the researcher to assess the situation within the study area at the time of the study. Thus, the researcher deems the design appropriate for the study as it allows for investigation of the existing institutional factors influencing the implementation of competency-based education amongst learners with mobility impairments in Nyamira county. Therefore, the researcher used the design to explore the relationship between infrastructure accessibility, special learning resources, competencies of teachers and time adaptability and

implementation flexibility in Implementation of Competency-Based Education amongst learners with physical impairments affecting mobility in Nyamira county.

➤ *The Target Population*

The target population in a study is the entire set of units for which the study data are to be used to make inferences (Duncheon, 2020). The target population of the study therefore constituted 23 inclusive schools in Nyamira county. In the schools, there were 23 head teachers, 300 students and 142 teachers.

➤ *Sample Size and Sampling Techniques*

According to Stratton (2021), sampling is the selection of a given number of subjects from a defined set of populations to represent the entire population. To derive the sample size for this study, the population size, margin of error,

and sampling confidence level was calculated. The target population was amongst various respondents from different inclusive schools in Nyamira County which included 23 head teachers, 300 students and 142 teachers.

The sample scope for the Study was verified using Yamane (1973) formula as follows:

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

Where:

$n$  = Sample Size,

$N$  = Total Population

1 = Constant

$e^2$  = estimated standard error at 95% confidence level

The sample size distribution is illustrated in table 3.1 below.

$$n = \frac{465}{1 + 465(0.05^2)}$$

$$= \frac{465}{2.2125}$$

$$= 215.029$$

$$= 215 \text{ participants}$$

Table 1 Distribution of Sample Size, Nyamira County

| Occupation                        | Target population (N) | Sample size (n) | Technique of Sampling |
|-----------------------------------|-----------------------|-----------------|-----------------------|
| Teachers                          | 142                   | 65              | Simple random         |
| Head teachers                     | 23                    | 11              | Purposive             |
| Students with physical disability | 300                   | 139             | Purposive             |
| <b>Total</b>                      | <b>465</b>            | <b>215</b>      |                       |

Source: Researcher

The study employed both purposive sampling and simple random sampling techniques to select schools and respondents involved in the implementation of CBE among learners with physical impairments affecting mobility in Nyamira county. The choice of these techniques was guided by systems theory, which views an education system as an interconnected system composed of interdependent sub systems such as administration, teachers, infrastructure, resources and time structures. A weakness in one component affects the effectiveness of the entire system. Purposive sampling was used to select public primary schools enrolling learners with mobility impairments, mobility impairment learners and headteachers while simple random sampling was used to select the teachers taking part as it avoids bias and teachers are given equal opportunity to participate.

#### ➤ Pilot Study

A pilot study was conducted in two purposively selected public primary schools in Nyamira county that had similar characteristics to the study schools but were not included in the final sample. The purpose of the pilot was to test the clarity, relevance and practicability of the teachers' questionnaire, head teachers' interview guide and observation checklist. A small group of head teachers and teachers participated to help assess wording, sequencing and the time required to complete the instruments. Data obtained was also used to compute Cronbach's Alpha for the Likert scale section of the teachers' questionnaire in order to determine internal consistency reliability. Findings from the pilot informed necessary revisions, rephrasing or removal of unclear items before the main data collection to enhance the reliability and overall quality of the study instruments.

#### ➤ Data Analysis

Primary data from the field was cleaned to eliminate errors made by respondents. Data collected through teachers'

questionnaire was coded and entered into the SPSS for analysis, where descriptive analysis such as frequencies, percentages, means and standard deviations were used to summarize findings according to the study objectives. Qualitative data from the head teachers' interview guide was transcribed and analyzed thematically by organizing responses into categories and emerging themes aligned with the study objectives. Data from the observation checklist was analyzed descriptively and integrated with questionnaire and interview findings to enhance interpretation, after which results were presented in tables and discussed in relation to the research objectives to draw conclusions and recommendations.

## IV. RESULTS AND DISCUSSIONS

#### ➤ Introduction

The chapter discusses, analyses, interprets and presents the findings of the study regarding the institutional factors influencing the implementation of CBE among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira County, Kenya. The chapter starts with demographic of respondents and response rate. The results are presented in relation to the four study objectives: infrastructures accessibility, adapted learning resources, teachers' competencies, and time adaptability and flexibility in school programmes. The results for each objective include quantitative results, qualitative results, and observation findings, as well as a discussion. A summary of the major findings is presented at the end of the chapter.

#### ➤ Response Rate

The study aimed at obtaining information from 65 teachers and 11 headteachers from public inclusive primary schools of Nyamira County, which was a total of 76 respondents.

Table 2 Response Rate of Respondents.

| Category of Respondent | Target Sample | Actual Response | Response Rate (%) |
|------------------------|---------------|-----------------|-------------------|
| Teacher                | 65            | 65              | 100               |
| Headteacher            | 11            | 11              | 100               |
| Total                  | 76            | 76              | 100               |

Source: Field Data (2026)

Mugenda and Mugenda (2003) indicate that 70 percent and higher is acceptable for any data analysis and reporting. All the questionnaires filled by the teachers were returned and all the teachers whose consent was sought were involved in the process of return of questionnaires.

Thus, the percentage obtained in this study was regarded as very high and enough to be analyzed, interpreted and generalized. The high response rate provided enhanced reliability and credibility in the study results as the opinions of all respondents targeted were captured.

#### ➤ Demographic Characteristics of Respondents

Demographic information was deemed to be significant as it would give an idea of the background characteristics of

the respondents and their possible influence on the implementation of Competency Based Education for learners with mobility impairment. The factors studied regarding the demographics were gender and experience in teaching and training in Competency Based Education. The results are summarized in frequencies and percentages and discussed within the context of the study.

#### • Distribution of Respondents by Gender

The study sought to establish the gender distribution of the respondents. The findings are presented in figure 2.

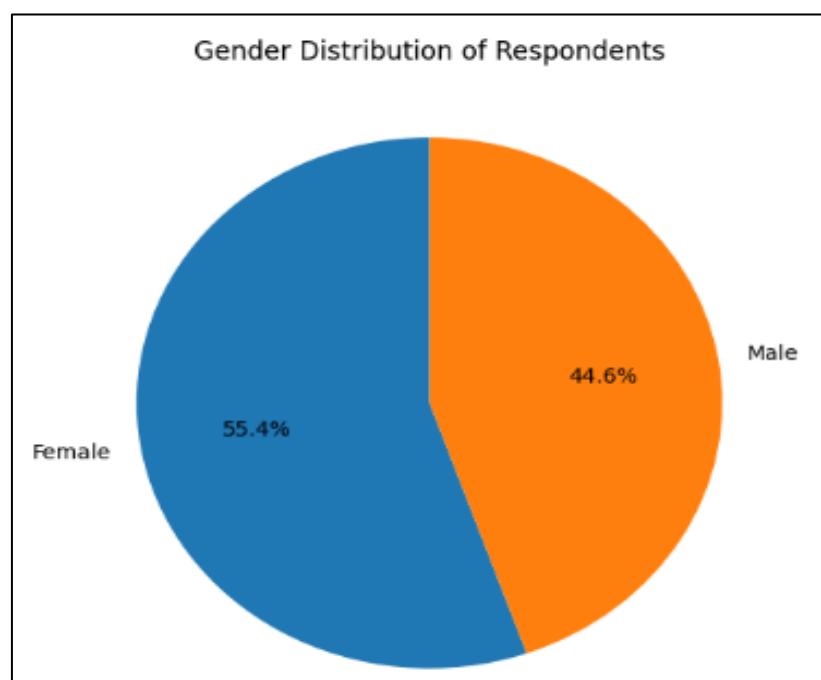


Fig 2 Distribution of Respondents by Gender

The findings in figure 2 show that 44.6% of the respondents were male while 55.4% were female. This implies most of the respondents were female teachers. The study involved both genders, thus giving a good representation of both genders views on institutional factors influencing the implementation of Competency Based Education among learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira County.

#### • Teaching Experience of Respondents

It is important to have teaching experience in curriculum implementation because it affects the teachers, their knowledge, skills and exposure to instructional practices. The purpose of this study was to define the teaching experience of the respondents so that they can give informed opinion on how Competency Based Education is implemented to the learners who have mobility impairments. The results in Figure 3 are reported.

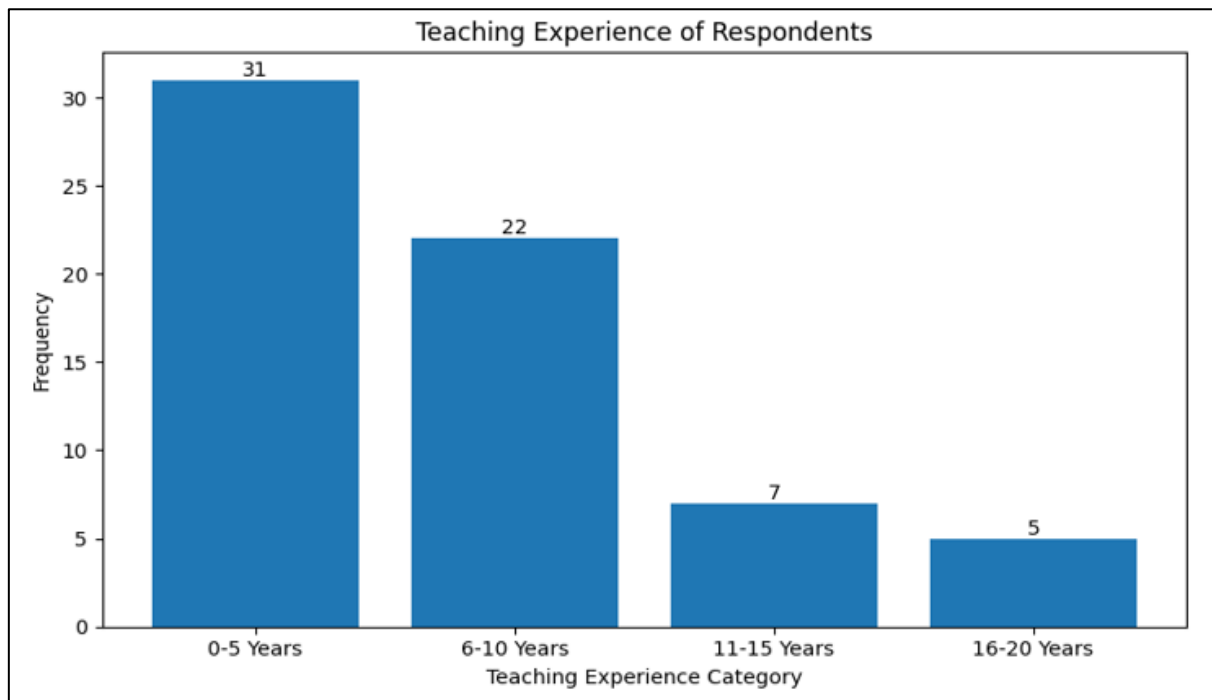


Fig 3 Teaching Experience of Respondents

The distribution of the respondents according to experience in teaching is presented in figure 3. It was observed that the largest group of the respondents (31; 47.7%) had 0–5 years of teaching experience. Twenty-two (33.8%) had six to ten years of teaching experience, followed by 7 (10.8%) respondents who had 11-15 years of teaching experience and 5 (7.7%) respondents who had experience of 16 and above years of teaching.

The results indicated that most of them were in the early to mid-career levels as teachers (0-10 years). This suggests that the majority of respondents were involved in the implementation of Competency Based Education and hence had good input with regard to the factors that could be facing learners with physical impairments affecting mobility in public inclusive primary schools.

- *Distribution of Respondents by Training in Competency-Based Education*

The training on CBE is crucial for the successful implementation of the CBE curriculum, as it equips teachers with the knowledge, skills and pedagogical strategies necessary for competency-based teaching. In this study, CBE related training refers to workshops, seminars, in-service training, capacity building programs and other professional development activities focused on the implementation of CBE. The study sought to determine if respondents had received CBE related training and to establish the extent to which such training had prepared them to implement CBE in inclusive primary schools for learners with MI. The results are shown in Figure 4.

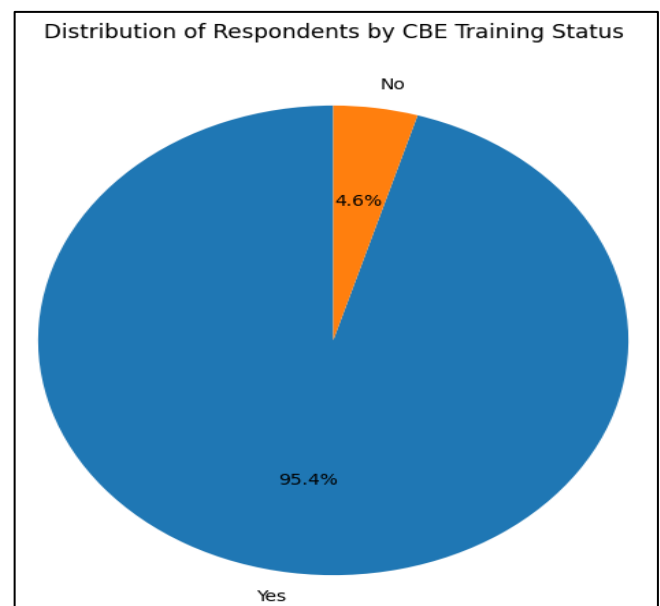


Fig 4 Distribution of Respondents by Training in CBE

The analysis revealed that 62 (95.4%) of the respondents received training on Competency Based Education and 3 (4.6%) did not receive any training on Competency Based Education.

The results indicated that majority of teachers had received CBE training and thus already were likely to have the knowledge and skills to implement the curriculum. This level of training suggests that the respondents have been well informed and have the capacity to give reliable answers that provide insights into the institutional factors influencing the implementation of CBE for learners with mobility impairment in public inclusive primary schools.

- *Distribution of Respondents by Training in Inclusive Education*

Training in Inclusive Education equips teachers with the knowledge and skills required to effectively support learners with diverse educational needs, including those with mobility

impairments. The study sought to establish whether respondents had received training in Inclusive Education in order to determine their competencies in implementing Competency-Based Education in inclusive learning environments. The findings are presented in Table 3.

Table 3 Training in Inclusive Education

| Trained in Inclusive Education | Frequency | Percentage (%) |
|--------------------------------|-----------|----------------|
| Yes                            | 50        | 77             |
| No                             | 15        | 23             |

The findings indicate that 77% of the respondents had received training in Inclusive Education, while 23% had not received such training. This finding is important because training in inclusive Education enhances teachers' capacity to address the learning needs of learners with mobility impairments and effectively implement Competency-Based Education within inclusive school settings.

Competency Based Education among learners with mobility challenges in the public inclusive primary schools in Nyamira County. The teachers were asked to respond to questions about the condition of the school's infrastructure and facilities, with answers ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree. The findings are presented in terms of frequencies, percentages, mean scores and standard deviations.

#### A. Quantitative Analysis

➤ *Infrastructure Accessibility Influence the Implementation of Competency-Based Education Among Learners with Physical Impairments Affecting Mobility*

The first objective aim was to explore the influence of infrastructure accessibility on implementation of

- *Quantitative Findings on Infrastructure Accessibility*

Table 4 presents teachers' responses regarding infrastructure accessibility in their schools.

Table 4 Teachers' Responses on Infrastructure Accessibility

|                                             | Mean | Std Dev | Interpretation  | Rank |
|---------------------------------------------|------|---------|-----------------|------|
| Infrastructure supports CBE activities      | 3.09 | 1.39    | Moderate Extent | 1    |
| Physically accessible                       | 2.65 | 1.6     | Moderate Extent | 2    |
| Functional ramps & accessible pathways      | 2.43 | 1.37    | Low Extent      | 3    |
| Classroom furniture supports mobility needs | 2.37 | 1.38    | Low Extent      | 4    |
| Adapted sanitation facilities               | 2.18 | 1.22    | Low Extent      | 5    |

Source: Field Data (2026)

Table 4 provides teachers' responses concerning infrastructures accessibility in public inclusive primary schools. The interpretation of the mean scores was based on the five-point rating scale 1.00-1.80 represented a very low extent, 1.81-2.60 a low extent, 2.61-3.40 a moderate extent, 3.41-4.20 a high extent and 4.21-5.00 a very high extent. The results revealed that infrastructure had the highest mean value (M = 3.09 and SD = 1.39), which was the highest result. This implies that teachers perceived the available school infrastructure as supporting CBE activities however the moderate rating indicates that the infrastructure was not perceived as fully adequate or consistently supportive of all the requirements of CBE. Physically accessible also had a moderate extent, with a mean score of 2.65 (SD = 1.60), and being ranked second. This indicates that teachers perceived the school environment as physically accessible to some extent. However, the rating does not mean that schools were accessible to learners with MI rather it suggests that some aspects of the school environment provide access while other aspects may present barriers. The relatively high standard deviation indicates variations in teachers' responses suggesting that the level of physical accessibility may differ across schools.

The low extent ratings for functional ramps (M = 2.43, SD = 1.37), classroom furniture that supports mobility needs (M = 2.37, SD = 1.38) and adapted sanitation facilities (M = 2.18, SD = 1.22) were ranked third, fourth and fifth respectively. This indicates that many schools did not provide essential aids needed by students with mobility challenges.

In general, the findings indicate that although teachers perceived general school infrastructure as supporting CBE activities to a moderate extent, specific aspects of physical accessibility were inadequate. The low rating for functional ramps and accessible pathways, mobility supportive classroom furniture and adapted sanitation facilities indicate specific instructional gaps that may restrict the participation, movement, comfort, independence of learners with MI. Therefore, the findings suggest a need for schools to strengthen and adapt their physical infrastructure so that CBE can be implemented in an inclusive environment that accommodates the diverse needs of all learners.

- *Qualitative Findings on Infrastructure Accessibility*

The qualitative finding on infrastructure accessibility was obtained from two complimentary sources: semi structured interviews for headteachers and direct observation

conducted by the researcher using observation checklist. The interview guide contained five questions focusing on the current state of physical infrastructure, infrastructural barriers affecting the. Implementation of CBE, the adequacy of ramps, pathways, classrooms and sanitation facilities, the effects of infrastructural limitations on competency development among learners with MI, and measures taken by school to improve accessibility and challenges encountered.

The observation checklist was used to independently assess the accessibility feature available within the schools. It covered the presence of ramps at classroom entrances, handrails along ramps, wide doorways suitable for wheelchair users, spacious classroom layouts that allow free movement, clear pathways within the school compound, accessible staffrooms and administration blocks, accessible playgrounds and toilets. The use of both instruments enabled the study to compare what headteachers reported with accessibility features observed by the researcher.

#### ✓ *Current State of Infrastructure Accessibility*

The results indicated that there is a level of progress that has been made across different schools in terms of making physical space accessible to learners with mobility impairment. A few headteachers said that they observed ramps, modified pathways, wider classroom entries and partially altered sanitary areas.

##### ▪ *For Example, One Headteacher Stated:*

*“The school has three permanent classrooms with ramps and widened doors for wheelchair users.”* (School H)

This response indicates that some efforts had been made to modify the environment to accommodate learners who use wheelchairs.

However, the results also indicated that there was not a consistent increase in school accessibility. Some headteachers said that interventions to make the school more accessible were only being made in parts of the school, and some facilities would not be accessible to learners with mobility impairments. Some schools reported that ramps had been built in lower primary classes but not in the upper primary classes (School D) and some schools said that their facilities had been improved but many were still in need of improvement (School J).

##### ▪ *Another Noted:*

*“Some buildings are available, but many facilities still need improvement.”* (School J)

These findings suggest that although efforts have been made to improve accessibility, most schools have not achieved full compliance with inclusive infrastructure requirements necessary for effective implementation of Competency-Based Education.

#### ✓ *Infrastructural Barriers Affecting the Implementation of CBE*

The results also indicated that infrastructural barriers is still a great problem in implementing Competency Based

Education for learners with mobility impairment. Headteachers reported various challenges such as unpaved paths, inaccessible classrooms, inadequate ramps, overcrowded classrooms, narrow classroom doors and lack of adapted sanitation services.

Many of the school buildings were built without considering the needs of learners with disabilities, as several respondents noted. Thus, barriers remain to mobility and access to learning activities.

##### ▪ *A Headteacher Observed:*

*“There are no pavements, ramps and class entrances are not favourable and also congestion in classrooms.”* (School I)

##### ▪ *Another Reported:*

*“Lack of ramps, rough pathways, narrow classroom doors and overcrowded classrooms.”* (School K)

These responses indicate that infrastructural barriers continue to limit the ability of learners with mobility impairments to access learning spaces and participate effectively in competency-based activities.

It corresponds with the areas assessed through observation checklists which specifically examined presence of ramps, handrails, wide doorways, spacious classroom layouts and clear pathways. It also included other areas that learners use during school days like accessible and adapted toilets.

#### ✓ *Funding Constraints*

The results of the interviews showed that lack of funds is a significant challenge for enhancing school access. Headteachers recognised the need for infrastructure modification but noted that the funding of accessibility projects had been held up due to limited funding hence a major challenge they face.

A number of schools indicated that they were still working on the construction of pathways, ramps and/or other accessibility facilities but this was hampered by limited funding. The primary challenge to full accessibility was identified as funding constraints in schools.

##### ▪ *One Respondent Stated that the Challenge they Encounter is:*

*“The school is trying to make pavements though having financial constraints.”* (School I)

##### ▪ *Another Explained:*

*“The school has built a few ramps but lacks enough funding for full implementation.”* (School J)

##### ▪ *Similarly, School K Reported:*

*“The school attempted to construct pathways, but financial constraints delayed completion.”*

These findings suggest that although school administrations recognize the importance of accessible

infrastructure, inadequate funding limits their capacity to undertake comprehensive modifications necessary for inclusive Competency-Based Education implementation.

✓ *Effects of Infrastructural Limitations on Learner Participation*

The results showed that the infrastructural limitations have a negative impact on learners with mobility impairments to participate and develop competence as headteachers reported that physical barriers restrict learners' participation in practical, outdoor and co-curricular competency-based activities. Learners' mobility and opportunities for active engagement are limited due to muddy pathways, uneven terrain and inaccessible learning environments, respondents stated.

▪ *One Headteacher Explained:*

*"Learners are unable to participate effectively in outdoor and practical lessons."* (School J)

▪ *Another Noted:*

*"Learners fail to participate fully in practical and outdoor competency activities."* (School K)

These responses indicate that infrastructural limitations affect the independency of learners, their engagement and the acquisition of competencies. A process that relies on practical engagement, collaboration and active learning and inaccessible infrastructure can greatly hamper the achievement of intended learning outcomes for learners with mobility impairments.

• *Summary of Qualitative Findings on Infrastructure Accessibility*

The qualitative results showed that while some schools had built ramps, installed pathways and adapted learning spaces, there are still significant infrastructure limitations in some schools. The major barriers that impinge upon accessibility were inadequate ramps, inability to access classrooms, limited adapted sanitation facilities, rough pathways, and inadequate funding. The study revealed the following challenges that affect learners' participation in practical, collaborative and outdoor competency-based learning activities in public inclusive primary schools in Nyamira County and affect the effective implementation of Competency Based Education in the county:

• *Discussion of Findings on Infrastructure Accessibility*

The study findings showed that infrastructure accessibility has a significant impact on the implementation of Competency Based Education for all learners. Based on the quantitative results, respondents generally felt that accessibility services like ramps, adapted toilets, accessible pathways and disability friendly classrooms were not adequate. The overall average score also showed that infrastructure was one of the challenges for the effective implementation of Competency-Based Education in the institutional aspect.

The qualitative results obtained from interview guides corroborated these findings as headteachers mentioned the lack of ramps, classrooms that were not accessible, rough pathways, narrow classroom entrances and the absence of adapted sanitation facilities. The results of the observation checklists also confirmed that there were a large number of schools with inadequate accessibility features to assist in the independent mobility and active involvement of learners with mobility impairments.

The result confirms the propositions of the Systems Theory which was used to direct the study. A school is a whole system, consisting of different parts that interact with each other to reach teaching objectives, in Systems Theory. The theory is that the good working of all the subsystems in the institution is crucial to the effective implementation of educational programmes. Physical infrastructure (buildings, equipment, and space) and physical accessibility (how easy it is to get around) are important aspects of the school system, since they set the context in which teaching and learning take place. Poor infrastructure hinders the education system and reduces the scope of students' engagement in competency-based activities. As a result, students who are mobility challenged could have a problem to access learning opportunities, which would lower the effectiveness of the implementation of Competency Based Education.

The results are in line with the studies reviewed in Chapter Two that found that infrastructure plays a fundamental role in the efficiency of implementing inclusive education. For instance, Chongo et al. (2016) and Walton and Spencer (2017) have conducted research that shows that the school setting is inaccessible to learners with physical disabilities which limits their participation and learning. Likewise, UNESCO (2020) noted that inclusive learning environment needs to be supported by an accessible physical environment that makes it possible for learners with disabilities to be able to fully engage in the learning process.

In general, the results showed that the infrastructure accessibility improvement of the schools is very important in implementing Competency Based Education for students with mobility impairment in Public Primary Schools with inclusive education.

➤ *Adequacy of Adapted Learning Resources in Supporting the Implementation of Competency-Based Education Among Learners with Mobility Impairments*

The second study aimed at determining whether the learning materials are adequate for implementation of Competency Based Education for learners with mobility impairments in public inclusive primary schools in Nyamira County. Teachers were asked to mark how much they agreed with the statements about the availability and sufficiency of adapted learning resources. Data is reported in frequencies, percentages, means and standard deviations.

- *Quantitative Findings on Adapted Learning Resources*

Table 5 Teachers' Responses on Adapted Learning Resources

|                                                                 | Mean | Std Dev | Interpretation  | Rank |
|-----------------------------------------------------------------|------|---------|-----------------|------|
| Resource inadequacy affects effective CBE                       | 3.77 | 1.48    | High Extent     | 1    |
| Teaching & learning resources are sufficient for CBE activities | 2.65 | 1.35    | Moderate Extent | 2    |
| Access instructional materials without difficulty               | 2.63 | 1.56    | Moderate Extent | 3    |
| Learning materials are adapted                                  | 2.52 | 1.35    | Low Extent      | 4    |
| Adequate assistive devices                                      | 2    | 1.12    | Low Extent      | 5    |

Source: Field Data (2026)

Table 5 shows teachers' responses on adapted learning resources and their impact on implementing CBE with students who have mobility impairment. The results indicate that the mean score for the statement "resource inadequacy affects effective CBE" was 3.77 (SD = 1.48), which ranked as the highest with all the respondents having a high agreement level. This indicated that the teachers had a strong feeling of learning shortcomings due to lack of learning resources as a major hurdle for effective implementation of Competency-based Education.

Teaching and learning resources are sufficient for CBE activities" (M = 2.65, SD = 1.35) and "access instructional materials without difficulty" (M = 2.63, SD = 1.56) were rated at a moderate level in the second and third position respectively. That means that access and adequacy were moderate, although resources were available.

In contrast, "learning materials are adapted" (M = 2.52, SD = 1.35) and "adequate assistive devices" (M = 2.00, SD = 1.12) were rated at a low extent, ranking fourth and fifth, respectively. The implications of these findings indicate that schools were not adequately equipped with materials and assistive devices that enabled learners with mobility impairments to learn effectively.

In general, the results show that the adapted learning resources are still lacking significantly in many public inclusive primary schools. The deficit of assistive devices and adapted teaching materials has a negative influence on the implementation of Competency Based Education and on the meaningful participation of learners with mobility problems in education.

➤ *Qualitative Findings on Adapted Learning Resources*

The interview findings from headteachers revealed four major themes regarding adapted learning resources that were derived from the interview guides.

- *Availability of Adapted Learning Resources*

The results showed that a small number of mobility impaired learners had been provided with some adapted learning resources in some schools. These included wheelchairs, modified desks, mobility aids and specific teaching equipment. Headteachers in response to what assistive devices and adapted learning materials are available in schools reported an improvement in access to learning and participation in classroom activities through such resources.

✓ *One Headteacher Noted:*

*"There are some adapted desks and wheelchairs that support learners with mobility impairments in learning activities in the school."*

▪ *Another Responded:*

*'We have a few adapted resources, although they are not enough for every learner who requires them.'*

These efforts notwithstanding, respondents recognized that resources were inadequate to support the needs of all learners who needed support.

✓ *Inadequacy of Adapted Learning Resources*

A lack of suitable, varied learning materials was the most common issue mentioned by most headteachers. Schools reported a lack of assistive devices and mobility support equipment, as well as having limited access to specialized instructional materials.

▪ *A Headteacher Stated:*

*'There are insufficient resources to meet the needs of those students in need of support.'*

▪ *Another Headteacher Noted:*

*'Some learners have to share the available adapted materials because we do not have enough resources for individual use.'*

The results indicate that there is still need for adapted learning resources which hinders the implementation of Competency Based Education.

✓ *Resource Mobilization Challenges*

Additionally, it was found that schools were having problems in accessing adapted learning resources because of financial constraints and a lack of external support. Headteachers indicated that there is a need for significant financial resources for procurement of assistive devices and adapted instructional materials, a goal that many schools cannot meet.

▪ *One Respondent Observed:*

*"The school relies on scarce government funding, and most adapted resources are costly."*

▪ *Another Headteacher Said:*

*"We sometimes depend on support from parents and other partners, but such assistance is always not available."*

The results demonstrate that mobilization of resources is still a great challenge for inclusive Competency Based Education.

✓ *Influence of Adapted Learning Resources on Competency Development*

The results showed that the adapted learning resources facilitated the learning process and improved learner participation, independence and competency acquisition. Headteachers reported that where learners used appropriate assistive devices and adapted materials, they were able to be involved more actively in practical and collaborative learning activities.

• *Observation Checklist Findings on Adapted Learning Resources*

Table 6 Observed Adapted Learning Resources

| Resource                         | Available | Not Available |
|----------------------------------|-----------|---------------|
| Wheelchairs                      | 4         | 7             |
| Adapted desks and chairs         | 3         | 8             |
| Mobility aids (walkers/crutches) | 2         | 9             |
| ICT assistive devices            | 1         | 10            |
| Adapted instructional materials  | 3         | 8             |
| Resource rooms                   | 2         | 9             |

The observation of availability of adapted learning resources in the sampled public inclusive primary schools is presented in Table 6. The results revealed that most of the schools had inadequate resources to cater for the mobility impaired learners. Only four schools had wheelchairs and seven schools had none. Likewise, adapted desks and chairs were seen in just three schools while eight schools did not have these facilities.

The results also indicated that mobility support and/or provision of resource rooms existed in two schools, and ICT assistive devices in one school. In 3 schools adapted instructional materials were present but in most of the observed schools, they were not present.

The findings of the observations confirm overall that most public inclusive primary schools had adapted learning resources that were insufficient. These findings corroborate the questionnaire responses where the respondents reported that there are very few assistive devices and learning materials available for the CBE, and interview responses showed that resource inadequacy is a major difficulty in implementing CBE amongst learners with mobility impairment. Specialized resources will likely be scarce, impacting on learner participation, access and attainment of learner outcomes.

➤ *Discussion of Findings on Adapted Learning Resources*

The results of the study showed that the effect of the adapted learning resources on the implementation of Competency Based Education for learners with mobility disability is significant. The results of the quantitative data showed that the learning resources used were not adequate, while the qualitative data showed that there was shortage of assistive devices, adapted learning materials, mobility aids

▪ *One Headteacher Explained:*

*“Learners are more successful and actively engaged when they can access the right support materials.”*

▪ *Another Noted:*

*“When learners have appropriate assistive devices, they participate more independently in practical activities and are able to demonstrate their abilities.”*

The results of this study show the importance of adapted learning resources for the implementation of Competency Based Education for learners with mobility impairments.

and appropriate information and communication technology resources. These findings were further supported by observations conducted in the schools, which indicated limited availability of specialized resources required to facilitate the participation of learners with mobility disabilities in learning activities.

The findings can be explained using Systems Theory which views an education institution as a system comprising interrelated components, including inputs, process, outputs and feedback. In the context of this study, adapted learning resources, physical facilities, teachers and instructional materials constitute important inputs that support teaching and learning processes. When these inputs are inadequate, teachers may experience difficulties in implementing learner centered activities, facilitating practical tasks and assessing learners according to their individual abilities and competency levels. Therefore, the inadequacy of adapted learning resources affect not only access to learning but also the teaching and assessment process through which CBE is implemented.

The findings also demonstrate the important role played by teachers in the effective utilization of adapted learning resources. The availability of resources alone does not guarantee effective CBE implementation, teachers must also possess the knowledge and skills required to select, adapt and use them appropriately. Teachers are expected to organize practical learning activities, modify instructional materials where necessary and provide appropriate support. This suggests that the provision of adapted learning resources should be accompanied by continuous professional development and appropriate guidance on resource utilization hence the relationship between resource provision and

teachers' capacity to use resources is essential in effective implementation of CBE.

The results are in line with studies that were reviewed in Chapter Two, which highlight the role of adapted instructional materials in fostering inclusive education. The research of Florian (2019) and UNESCO (2020) has shown the positive relationship between learning resources and participation and learning outcomes of learners with disabilities. Likewise, CBE is considered a key component of successful implementation of CBE and the KICD accepts the use of adapted learning resources to ensure learners participate in educational activities.

The results, therefore, indicate that augmenting the use of assistive devices, adapting learning materials, providing mobility aids, and providing ICT resources is needed in order

- *Quantitative Findings on Teachers' Competencies*

Table 7 Teachers' Responses on Teachers' Competencies

|                                | Mean | Std Dev | Interpretation  | Rank |
|--------------------------------|------|---------|-----------------|------|
| Adapted CBE activities         | 4.15 | 0.96    | High Extent     | 1    |
| Understand CBE                 | 4.08 | 1.11    | High Extent     | 2    |
| Training in inclusive pedagogy | 3.75 | 1.39    | High Extent     | 3    |
| Confidence in assessment       | 3.52 | 1.42    | High Extent     | 4    |
| Lack of training affects CBE   | 3.32 | 1.52    | Moderate Extent | 5    |

Table 7 presents teachers' responses in terms of competencies in the implementation of Competency Based Education for learners with mobility impairments. Analysis found that the teachers' mean score for CBE activities was highest ( $M = 4.15$ ,  $SD = 0.96$ ), with the highest rank, indicating that the teachers were very good in adapting learning activities to accommodate learners with mobility impairments. This was closely followed by understanding of CBE ( $M = 4.08$ ,  $SD = 1.11$ ) which was also high, indicating teachers' preparedness.

Likewise, inclusive pedagogy ( $M = 3.75$ ,  $SD = 1.39$ ) and confidence in assessment ( $M = 3.52$ ,  $SD = 1.42$ ) were rated highly, and were third and fourth, respectively. The outcomes revealed that the teachers' overall knowledge and skills in implementing Competency Based Education in inclusive classroom were relatively high.

Lack of training in CBE implementation recorded the least mean score ( $M = 3.32$ ,  $SD = 1.52$ ), in fifth position, and with a moderate extent of agreement. This implies that although teachers will in general be prepared, there will be some areas where they might lack specialised training, and this may impact the effective implementation of CBE for learners with mobility impairments.

The results showed that teachers' readiness and competency are good in implementing Competency Based Education. Teachers showed good knowledge and understanding of CBE and good flexibility for learning activities and confidence in their teaching. However, ongoing teacher professional development in inclusive pedagogy and

to improve the implementation of Competency-Based Education among learners with mobility impairments in public inclusive primary schools.

➤ *Teachers' Competencies in the Implementation of Competency-Based Education Among Learners with Physical Impairments Affecting Mobility*

The third target of the study aimed at assessing teachers' competencies on Competency Based Education for learners with mobility challenges in public inclusive primary schools of Nyamira County. The teachers were asked to agree with the following statements about training, skills, knowledge and competencies needed to implement the Competency Based Education in Inclusive learning environments. The findings are presented using frequencies, percentages, mean scores and standard deviations.

assessment still needs to be conducted to further enhance the implementation of Competency Based Education for learners with mobility impairments.

- *Qualitative Findings on Teachers' Competencies*

The headteachers' responses were analysed into four major themes, namely: CBE training, knowledge of inclusive pedagogy, professional development needs and challenges for teachers.

✓ *Training of Teachers on CBE*

The results showed that the majority of the teachers had attended some training programme related to Competency Based Education through workshops, seminars and government sponsored programme. Headteachers, however, noted that training offered was sometimes inadequate to meet the special needs of learners with disabilities. The teachers reported understanding the general principles of Competency Based Education and needed more specific training about implementing Competency Based Education in an inclusive way.

▪ *One Headteacher Stated:*

*"Additional training is required to support learners with special needs effectively; most teachers have been trained in CBC."*

The result indicates that, although CBC training has been introduced, it still requires more capacity building to enhance teachers' capacities in inclusive education.

### ✓ Knowledge of Inclusive Pedagogy

The results showed that there was a level of knowledge about inclusive teaching approaches that differed. Some teachers were able to make adaptations to the learning activities and instructional strategies to support students with mobility issues, but others struggled with making changes to learning experiences. The need for teachers to have specialized knowledge and skills for the implementation of Competency Based Education was highlighted by the respondents.

#### ▪ A Headteacher Observed:

*“Some teachers can adapt the learning activities successfully; some teachers need more training in inclusive learning approaches.”*

The results suggest that differences in teacher skills can have an impact on the quality of student learning experiences with mobility challenges.

### ✓ Professional Development Needs

There was a significant demand for ongoing professional development programmes in the area of inclusive education, along with Competency Based Education implementation. Teachers need to keep being given the opportunity for reskilling through regular refresher courses, headteachers reported, particularly in assessment and curriculum adaptation and support of learners.

#### ▪ One Headteacher Noted:

*“It is important to note that continuous training is needed "because training methods are constantly changing and teachers require modern skills.”*

The results indicate that the teacher's professional development is needed to increase teacher competence and improve the implementation of the Competency Based Education.

### ✓ Challenges Faced by Teachers

The headteachers came up with several problems that hinder the effectiveness of Competency Based Education in teachers. These encompassed poor training, high class sizes, lack of adapted learning materials and an inadequate support service. Some participants spoke about the challenges for teachers to do both the curriculum tasks and cater for the needs of learners with mobility challenges.

#### ▪ A Headteacher Explained:

*“Resources and high-class sizes are challenges for teachers to provide individualized support.”*

The results indicate that the institutional constraints have negative impact on teacher effectiveness in CBE.

### • Quantitative Findings on Time Adaptability and Flexibility

#### • Discussion of Findings on Teachers' Competencies

Based on the results of the study, it can be concluded that the competencies of teachers greatly affect the implementation of Competency-Based Education for learners of mobility impairments. The quantitative results revealed moderate level of competencies in the teachers and qualitative results revealed teacher training deficiencies in relation to inclusive pedagogy, assessment of learners with special needs. Findings from observations also indicated differences in teachers' capacity to adapt instruction and learning activities to meet the needs of various learners.

The results confirm the importance of Systems Theory in which the effectiveness of the educational system relies on the ability and competency of human resources. Teachers are an integral part of the school environment as they are directly involved in teaching and learning processes. Therefore, the teachers' competencies are not good enough to support the implementation of Competency Based Education and decrease the opportunities of students with mobility impairments to gain the intended competencies.

The results are like those of previous studies mentioned in Chapter Two. For instance, Darling-Hammond (2017) found that teacher effectiveness is a key factor in successful curriculum implementation and student success. Likewise, Florian (2019) noted that inclusive education will be successful if teachers are able to adjust the learning process and give personalized attention to students with disabilities. The results also support the Teachers Service Commission (TSC) and the Ministry of Education's assertions that continuous professional development is a viable means of enhancing curriculum implementation.

The findings, therefore, indicate that it is necessary to strengthen the competency-based education and special needs education teacher training to improve the competency-based education implementation among learners with mobility impairment in an inclusive manner.

#### ➤ Time Adaptability and Flexibility within School Programs affect the Implementation of Competency-Based Education Among Learners with Physical Impairments Affecting Mobility

The fourth objective of the research was to find the effect of time adaptability and flexibility of school programmes affect the implementation of Competency Based Education for learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira County. Teachers were asked to report their agreement with statements about flexibilities in terms of lesson scheduling, assessment arrangements, individualized supports and allocation of time for competency development. Data is displayed with frequencies and percentages, mean scores and standard deviations.

Table 8 Teachers' Responses on Time Adaptability and Flexibility

|                             | Mean | Std Dev | Interpretation | Rank |
|-----------------------------|------|---------|----------------|------|
| Time constraints affect CBE | 3.75 | 1.39    | High Extent    | 1    |

|                             |      |      |                 |   |
|-----------------------------|------|------|-----------------|---|
| Learners need extended time | 3.46 | 1.49 | High Extent     | 2 |
| CBE requires more time      | 3.08 | 1.54 | Moderate Extent | 3 |
| Timetable flexibility       | 2.85 | 1.35 | Moderate Extent | 4 |

Source: Field Data (2026)

Table 8 shows the teachers' answers regarding the time adaptability and flexibility in the implementation of Competency Based Education of students with mobility impairments. The results show that time constraints were related with implementation in CBE with the highest mean score ( $M = 3.75$ ,  $SD = 1.39$ ), and were ranked first, which means that there is a high extent of agreement among the respondents. This indicates one of the main problems in the successful implementation of Competency Based Education is limited instructional time.

The same applies to learners need extended time, that had a mean score of 3.46 ( $SD = 1.49$ ) indicating a high degree of agreement and ranking 2nd. In this context, it is important to highlight that learners with mobility impairments may need more time to successfully engage in learning activities and to demonstrate competency.

The timetable flexibility and CBE received the third and fourth highest scores respectively with a mean score of 3.08 ( $SD = 1.54$ ) and mean score of 2.85 ( $SD = 1.35$ ) respectively. Both statements had moderate ratings meaning that people recognized that more time and flexibility was needed for children and young people with mobility impairments and that the current school timetables were moderately flexible.

The overall results show that the implementation of Competency Based Education is in the middle range in relation to time adaptability and flexibility. The findings indicate that a lack of flexibility of school programmes and/or time constraints may restrict the effective participation of learners with mobility impairments in competency-based learning activities. As such, schools should consider more flexible scheduling and make additional instructional time available to maximize effective implementation of Competency Based Education.

#### • Qualitative Results of Time Adaptability and Flexibility

Four broad themes emerged from the analysis of interview data obtained from the headteachers, namely, the provision of adequate time for allocation, flexibility of school timetables, challenges faced by pupils with mobility problems and the impact of time constraints on the implementation of Competency Based Education.

#### ✓ Adequacy of Time Allocation

The results indicated that the schools overall tried to provide adequate time for learning activities with learners with mobility impairments. Headteachers reported that teachers sometimes extended support and additional time when needed so that students can participate in the classroom activities. But it was recognized that the requirements of the Competency Based Curriculum at times posed challenging situations for the flexibility to give individual attention to all learners needing support.

#### ▪ One Headteacher Observed:

*"The amount of extra time allocated to learners who need support, particularly when carrying out practical activities, is usually the teachers' responsibility."*

The results indicate that there is an understanding of the need for appropriate time allocation in meeting the needs of learners with mobility impairment in school.

#### ✓ Flexibility of School Timetables

The results showed some differences in the levels of flexibility within school programmes. Some headteachers mentioned that schools adjusted timetables to cater for learners with mobility difficulties, especially for practical lessons and co-curricular activities. Other respondents mentioned that schedules were too strict to provide individualized support. While flexibility was desired, it was sometimes limited due to curriculum requirements and staffing limitations, as indicated by the respondents.

#### ▪ A Headteacher Stated:

*"Timetable may be flexible as required; the demands of the curriculum sometimes do not allow for flexibility."*

The results indicate that there is some flexibility in the school-based programmes, but there are still difficulties in meeting learners' needs completely.

#### ✓ Challenges Faced by Students with Mobility Impairment(s)

The results also indicated that students with mobility disabilities sometimes need extra time to get to and from classrooms, facilities and to engage in hands-on work. Some headteachers reported that movement issues sometimes impact on their pupils' willingness to engage in lessons and co-curricular offerings. Some students will need support to navigate within the school premises, particularly where the infrastructure is inaccessible, were reported by several respondents.

#### ▪ One Respondent Explained:

*"Some learners have delayed transitions between learning areas, particularly areas that are not fully accessible."*

The results suggest that issues of mobility hinder effective use of instructional time.

#### ✓ Time Limits Impact Competence Building

The findings showed that there is a negative relationship between the lack of time flexibility and the participation of learners in acquiring competence. Headteachers observed that when time for instruction is limited, some learners who need extra support might not be able to engage in practical and/or collaborative learning activities. Respondents also reported

that a rigid schedule can decrease opportunities to adjust instruction and assessment to the individual learner.

▪ *A Headteacher Remarked:*

*“Limited time constrains teachers' capacity to afford individualized support in competency-based activities.”*

The results indicate that flexibility in both scheduling and assessment is crucial for the successful implementation of CBE.

• *Discussion of Findings on Time Adaptability and Flexibility*

The results showed that the time adaptability and flexibility in implementing Competency-Based Education are important considerations for learners with mobility impairments. The quantitative results showed moderate flexibility in regard to scheduling, assessment and learner support. Qualitative results showed that schools made efforts to allocate extra time and resources for learners with mobility problems, but these were sometimes constrained by the curriculum demands. Observations also revealed that time and mobility were an issue for some learners and made them unable to fully engage in learning activities.

The results corroborate Systems Theory, which focuses on the fact that the successful operation of one part of a system is dependent on the responsiveness and adaptability of other parts of the system. Time allocation and programme flexibility are significant aspects of the organizational system in the school. Learners with mobility impairments can more easily demonstrate competencies and achieve learning

outcomes when sufficient flexibility is provided in order to allow for them to participate in learning activities. On the other hand, inflexibility in schedules can restrict the involvement of learners and compromise the success of Competency Based Education.

The results are similar to those found in the literature reviewed in Chapter Two. The competency-based approaches are based on flexible learning paths that respond to learner needs and learning styles, as Sturgis and Patrick (2010) stated. Like Sahlberg (2015), it is noted that a learner-centred education approach necessitates flexible teaching practices for diverse learners. The results also reinforce the concepts of Competency-Based Education: personalized learning, mastery, and student engagement.

Thus, it is concluded that to improve the implementation of Competency-Based Education in public inclusive primary schools, there should be more flexibility in scheduling, assessing and supporting learners with mobility impairment.

➤ *Summary of Major Institutional Factors Influencing the Implementation of Competency-Based Education*

The study aimed at identifying and ranking the major institutional factors impeding implementation of Competency Based Education for learners with physical impairments affecting mobility in Public inclusive primary schools in Nyamira county. Mean scores were calculated for each objective and a composite mean score for each was calculated and used to determine the relative magnitude of each challenge.

Table 9 Ranking Institutional Factors Influencing the Implementation of Competency-Based Education

| <b>Institutional Challenge</b>         | <b>Mean</b> | <b>Rank</b> |
|----------------------------------------|-------------|-------------|
| Infrastructure Accessibility           | 2.544615    | 1           |
| Adequacy of Adapted Learning Resources | 2.713846    | 2           |
| Time Adaptability and Flexibility      | 3.284615    | 3           |
| Teachers' Competencies                 | 3.766154    | 4           |

Table 9 shows the rank order of challenges that learners with mobility impairment face in implementing CBE. Ranking 1st was Infrastructure Accessibility (M = 2.54) followed by Adequacy of Adapted Learning Resources (M = 2.71) in 2nd place. Teacher Competencies was the least problematic challenge (M = 3.77), followed by Time Adaptability and Flexibility (M = 3.28).

The results indicate that lack of Competency Based Education infrastructure and learning resources are the main challenges for implementing Competency Based Education, not only teacher competencies. This emphasises the importance of greater access and access to adapted learning resources in mainstream inclusive primary schools.

➤ *Discussion of Findings Based on Systems Theory*

The results indicated that there are institutional factors that play a major role in the implementation of Competency Based Education for learners with mobility challenges in public inclusive primary schools in Nyamira County. The factors identified as greatest issues were infrastructure

accessibility, adapted learning resources and time adaptability, with teacher competencies as the least.

The findings affirm the Systems Theory which sees a school as a whole system whose parts need to work together in an effective way to realize educational objectives. The study revealed that poor infrastructure and lack of adapted learning resources reduce the participation of learners in competency-based activities and lack of time flexibility reduces the competence of the learners to participate in learning. While teachers were generally prepared to implement CBE, and were good at it, institutional barriers such as accessibility and resources hindered the effectiveness of their efforts.

The results are in line with the literature reviewed, which highlights the importance of inclusive Learning Environment and adequate resources, competent teachers and flexible school programmes to implement successful CBE. The study shows that an overall improvement of infrastructure, adapted learning resources and programme

flexibility are necessary for an enhanced implementation of Competency Based Education among learners with mobility impairments.

#### ➤ Chapter Summary

The findings revealed the institutional factors experienced from the implementation of Competency Based Education to learners with physical impairments affecting mobility in public inclusive primary schools in Nyamira County were presented, analyzed and discussed in this chapter. The results were presented by the four objectives of the study.

The study revealed that the main problem in the implementation of Competency Based Education is infrastructure accessibility, and the next one is inadequate learning resources adapted to Competency Based Education. The results also indicated that the level of competence of the teachers in implementing Competency Based Education had to be considered high, but continuous professional development was needed in the field of inclusive education. Besides, the time adaptability and flexibility were found to affect the involvement of learners in the competency learning activities.

Regarding the findings, it was discussed with the consideration of the Systems Theory and the relevant literature, which highlight the importance of accessible infrastructure, adequate learning materials, competent teachers, and flexible school programmes for supporting inclusive Competency Based Education. The summary of findings, conclusions, recommendations, implications of the study and areas for further study are presented in the next chapter.

## V. SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

### ➤ Introduction

This chapter summarizes this study, draws conclusions from the findings, makes recommendations based on the conclusions, discusses implications of the study, and suggests future research. The conclusions and recommendations come after findings and discussion presented and reported in chapter four which focused on institutional factors influencing the implementation of Competency Based Education among learners with physical impairments affecting mobility in public inclusive primary schools of Nyamira County Kenya.

### ➤ Summary of Findings

#### • Infrastructure Accessibility

The study concluded that factors such as accessibility of infrastructure and mobility issues have a significant impact on the implementation of Competency Based Education for learners with mobility impairments. The findings in quantitative methods were identified as the lack of ramps, adapted toilets, accessible pathways and disability friendly classrooms. Qualitative results also showed that most of the schools had inadequate infrastructure for learners with

mobility impairments and that physical barriers existed in the school environment as evidenced by observations. The results also showed that funding for schools was inadequate in enhancing accessibility infrastructure.

#### • Adapted Learning Resources

The study identified that in a number of schools, adapted learning resources were not available. The teachers indicated that they faced a shortage of assistive devices, adapted instructional materials, mobility devices and special equipment required for an effective implementation of Competency Based Education. Headteachers also mentioned problems of securing adequate resources because of financial limitations. The results of the observation showed that there is difference in availability of adapted learning resources in schools.

#### • Teachers' Competencies

The study concluded that teachers' competencies have a significant effect on implementing Competency Based Education for learners with mobility disabilities. While there was training of Competency Based Curriculum, gaps in Special Needs Education training, inclusive pedagogy and competency assessment were found. Headteachers highlighted the importance of ongoing professional development to improve teachers' capacity to effectively support a pupil with a mobility impairment.

#### • Time Adaptability and Flexibility

The study revealed that the time adaptability and flexibility in school programmes have an effect on the implementation of Competency Based Education. Schools attempted to offer extra support and flexibility for learners with mobility impairments; however, curriculum requirements and limited resources limited their ability to do so. The results suggested that some students needed more time to engage in learning activities, practical activities and assessments.

### ➤ Conclusions

#### • Infrastructure Accessibility

Insufficient infrastructure and physical obstacles are significant factors that hinder the implementation of Competency Based Education for students with mobility challenges. Ramp access and adapted toilets and access pathways and disability-friendly facilities are limited and can reduce the opportunities for access to, and participation in, learning and competency development.

#### • Adapted Learning Resources

The study results showed that the lack of adapted learning resources is negatively impacting in implementing Competency Based Education. Limited access, mobility aids, adapted instructional materials and resources for learners affect their participation, independence and attainment of intended competencies.

- *Competencies of Teachers*

The study concludes that teacher competencies play an important role in the success of the implementation of Competency Based Education for learners with mobility impairments. Some teachers have been trained in Competency Based Curriculum but there is limited training in Special Needs Education and pedagogies for supporting learners with mobility impairments.

- *Time Adaptability and Flexibility*

The study's findings indicate that flexibility in assessment, mobility support and instructional support positively impacts implementation of Competency-Based Education for learners with mobility impairments. Some schools, however, lack flexibility and set stifling learning programmes, which restrict learners' participation in competency-based learning activities.

➤ *Recommendations*

- *Ministry of Education*

The Ministry of Education should enhance the financial allocation of its budget for inclusive education programmes, in order to build accessible infrastructure and provide adapted learning resources. The Ministry should also enhance monitoring systems to guarantee the accessibility at schools and the implementation of inclusive education policies.

- *Teachers Service Commission*

The Teachers Service Commission should beef up teacher training programmes through intensive training of teachers on Competency Based Education, Special Needs Education and inclusive pedagogy. Teachers with Special Needs Education expertise should also be deployed by the Commission to the inclusive schools.

- *School Administrators*

There is a need to make a priority of the improvement projects for accessibility at schools, such as constructing ramps, adjust toilets, and other accessible pathways. They should also advocate for the availability of adapted learning resources and support services, as well as mobilize resources and build partnerships with stakeholders.

- *Kenya Institute of Special Education*

KISE should organize teacher training programs on inclusive education to be expanded and offer technical assistance for the schools that are implementing Competency Based Education for learners with disabilities. The institute should also help schools to create and make use of adapted teaching materials.

- *County Government*

The County Government of Nyamira needs to work with schools and other stakeholders for better infrastructure and inclusive education for children. Disability inclusion and resource support mechanisms should be integrated into County-level education programmes.

- *Development Partners and other Stakeholders*

Assistive devices adapted learning materials and infrastructural improvements to be provided to schools by development partners, non-governmental organizations and community stakeholders. Partnership should also be aimed at raising awareness and advocacy for inclusive education.

➤ *Implications of the Study*

- *Policy Implications*

The results emphasize the importance of the effective implementation of inclusive education policies and investment in accessibility infrastructure and adapted learning materials.

- *Administrative Implications*

School planners and decision makers should incorporate accessibility and inclusive education agenda in school planning and resource allocation.

- *Teacher Development Implications*

Inclusive pedagogy, Special Needs Education and adaptation of Competency Based Education for learners with disability should be given greater focus in teacher training institutions and professional development programmes.

- *Inclusive Education Implications*

The results show that school support, which demonstrates inclusive practices by responding to the needs of students with disabilities through equitable participation is needed for the effective implementation of Competency Based Education.

➤ *Areas of Further Research*

Issues of implementation of Competency Based Education in public primary schools for learners with visual impairment.

Influence of teacher professional development in the implementation of CBE among learners with physical disabilities.

## DEDICATION

I dedicate this thesis to my beloved parents, Irene Cheronno and Josiah Obegi, for their unwavering love, sacrifices and support and to my best friend, Felix Nyasani, for the encouragement and motivation that made this achievement possible.

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