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Inclusive and Flexible Education Pathways for Nomadic Pastoralists: A Case of Kajiado County, Kenya

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Abstract
The study explored the use of inclusive and flexible approaches to education for nomadic pastoralists and marginalized learners in Kajiado County, Kenya. Inclusive and flexible education pathways are approaches to education that ensure all learners, regardless of their background, abilities, age, gender, socioeconomic status, or location, have equitable opportunities to access, participate in, and successfully complete quality education through multiple learning routes and delivery modes. These pathways recognize that learners have diverse needs and circumstances, allowing them to enter, exit, and re-enter education at different stages while achieving recognized qualifications. The objectives of the study were: to examine the characteristics of inclusive and flexible education pathways; examine how instructors in Kajiado County use these approaches; identify the challenges instructors face in using these approaches; propose strategies for strengthening inclusive and flexible education approaches. Anchored on connectivism theory, the study adopted convergent mixed methods research design. The sample consisted of 25 instructors across the County and 6 sub-county directors. Ethical considerations were adhered to throughout the study. The findings revealed that there is need for flexible instructional arrangement, culturally responsive teaching, parental and community engagement and use of alternative teaching and learning resources. These findings may offer solutions to policy makers and education stakeholders on how to address challenges related to inclusive and flexible education among the nomadic and marginalized learners across Kenya and the African Continent.

Key Words: Inclusive and Flexible Education, Pathways, Nomadic, Marginalized Learners Connectivism Theory

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I. Introduction to the Study

Education is widely recognized as a fundamental human right and an important instrument for individual development, social inclusion and national development (UNICEF, 2026). Sustainable Development Goal 4 calls for inclusive and equitable quality education and lifelong learning opportunities for all. Inclusion therefore requires education systems to identify and remove barriers that prevent certain groups of learners from accessing, participating in and benefiting from education. UNESCO (2023) emphasizes that exclusion can be associated with poverty, geographical location, ethnicity, language, disability, gender and other learner characteristics or circumstances.

Inclusive education according to Kenya Institute for Public Policy Research and Analysis (KIPPRA) (2024), is a process through which all learners' needs are considered in the education system. The continental education strategy for Africa (African Union Commission) AUC, 2025) provides a framework for advancing equitable inclusive and quality education for children, youth and adults across Africa. Addressing inclusivity not only means access to education but also refining learning methods that allow all children to learn and develop skills that are required in the labor market. Sustainable Development Goal (SDG) number 4 calls for inclusive and equitable quality education to promote lifelong learning opportunities for all (United Nations) UN, 2015).

However, universal access to education remains difficult to achieve where conventional education systems are designed around relatively stable populations, fixed school calendars, standardized instructional arrangements and learners who can consistently attend school. This challenge is particularly significant for nomadic pastoralist communities. The traditional organization of education generally assumes that learners live in relatively permanent settlements, attend school according to predetermined schedules and progress through a standardized sequence of grades. Such an arrangement is a disadvantage to learners whose circumstances require greater

flexibility. A major principle of inclusive education is that differences among learners should not automatically become grounds for exclusion. Learners may differ in their abilities, languages, cultural backgrounds, socioeconomic circumstances, geographical locations and learning needs.

An inclusive system therefore adapts its structures and practices to accommodate diversity rather than requiring all learners to conform to a single model. For nomadic pastoralist communities, inclusion requires education systems to take account of mobility, pastoral livelihoods, distance from schools, climatic conditions, cultural practices and language. Kenya's education policy framework has explicitly recognized these issues and encouraged innovative and flexible community-based interventions for nomadic communities.

Flexible education refers to arrangements that provide learners with greater flexibility regarding where, when, how and sometimes what they learn. Flexibility may involve time, location, curriculum organization, learning resources, assessment, progression and mode of delivery. Flexible education challenges the rigid model of education by providing alternatives concerning time, place, place, place, pace, mode of delivery, curriculum organization and progression. Flexibility enables learners to access education through different routes and to continue learning despite interruptions in their lives. UNESCO (2023) explains how flexible pathways can widen access to education, connect formal and non-formal learning, and provide online, blended and alternative learning opportunities. Martin and Furiv (2022) examined alternative entry routes, progression between programs and policies supporting equitable access to higher education. UNESCO's International Institute for Educational Planning identifies flexibility as an important mechanism for promoting equity and responding to increasingly diverse learner populations. Flexible pathways can enable learners to enter, progress through and exit education according to their circumstances while facilitating successful transitions.

Open and distance learning is one important form of flexible education. UNESCO notes that open and distance learning can involve teacher-learner separation by space or time, two-way communication, use of media and technology and more personalized learning experiences. Such approaches can address geographical and mobility-related barriers to education. In the Kenyan context, distance learning has significant relevance to nomadic communities. UNESCO reports that Kenya's policy framework for nomadic education has supported open and distance learning, including community radio as a means of reaching nomadic populations. Kenya's 2021 ICT in Education and Training policy also supports blended, remote, open, distance and e-learning approaches. Flexibility, however, should not be interpreted simply as replacing face-to-face education with technology. For communities with limited electricity, connectivity or digital devices, flexibility may involve low-technology approaches such as radio, printed learning materials, community facilitators and mobile teachers. The appropriate model should therefore reflect local circumstances.

Education pathways refer to the routes through which learners enter, progress through, leave and potentially return to education (UNICEF, 2023). A rigid pathway assumes that learners begin education at a particular age, attend continuously, progress annually and complete within a prescribed period. Such an arrangement can disadvantage learners whose circumstances require temporary interruption or alternative forms of learning. Flexible pathways provide opportunities for learners to move between different learning arrangements. For example, a pastoralist learner may participate in a mobile learning program during periods of community movement, attend a conventional school when the family settles and subsequently use distance or community-based learning when circumstances change. The concept is particularly important for lifelong learning. Kenya's recent policy discussions around competency-based education and training and micro-credentials have also emphasized flexible and modular learning pathways and recognition of skills (RoK, 2021).

Evidence from Kajiado also illustrates that education participation can be affected by socioeconomic, sociocultural and school-related factors. Research conducted in the former Kajiado District identified gender disparities in primary education and associated these disparities with socioeconomic, sociocultural and school factors. More recent research has also examined how drought, household circumstances, pastoralist culture and nomadic lifestyles influence children's access to education in Kajiado (Graham, 2024; Karisa & Mwikamba, 2024).

These circumstances suggest that improving educational participation among pastoralist communities requires more than increasing the number of conventional schools. It requires approaches that are responsive to learners' social, cultural, geographical and livelihood contexts.

1.1 Rationale of the Study

Although inclusive education and alternative learning approaches are increasingly emphasized in education policy and development discussions, there is a need to understand how these approaches are implemented in the specific context of Kajiado County. It is important to establish the characteristics of inclusive and flexible education, examine how instructors apply these approaches, identify the challenges they encounter, and determine strategies that could strengthen their implementation. Understanding instructors' experiences is essential because they translate education policies into practical teaching and learning experiences.

1.2 Statement of the Problem

Despite constitutional, policy and international commitments to inclusive and equitable education, learners in nomadic pastoralist communities continue to experience barriers to educational participation and completion. The Constitution of Kenya, 2010 requires the State to put in place affirmative action programs that provide minorities and marginalized groups with special opportunities in education.

Kenya has also developed policies specifically addressing nomadic education. The policy framework recognizes the need for mobile schools, open and distance learning and innovative community-based interventions (MoE, 2023). Nevertheless, the existence of policies has not necessarily guaranteed effective implementation. Learners in pastoralist communities continue to encounter difficulties associated with geographical distance, mobility, poverty, climatic conditions, inadequate infrastructure, limited learning resources, teacher availability, cultural expectations and inappropriate or inflexible education arrangements (AUC, 2025). UNESCO's national study on out-of-school children in Kenya highlighted social-cultural, economic and digital barriers to education and identified the need for stronger strategies to reach children who remain outside formal schooling.

The problem is therefore not simply whether educational opportunities exist, but whether those opportunities are sufficiently inclusive, accessible, flexible and responsive to the circumstances of nomadic and marginalized learners. Consequently, the study sought to examine how instructors in Kajiado County currently apply inclusive and flexible education approaches, the challenges they encounter and the strategies that can strengthen these approaches. Evidence from such a study may assist policymakers, education administrators, instructors, communities and development partners in designing interventions that are responsive to the realities of pastoralist learners.

1.3 Objectives of the Study

The following objectives guided the study:

1. To examine the characteristics of inclusive and flexible education pathways for nomadic pastoralists and marginalized learners in Kajiado County.
2. To determine how instructors in Kajiado County use inclusive and flexible education approaches.
3. To examine the challenges instructors face when implementing inclusive and flexible education approaches.
4. To identify strategies that can strengthen inclusive and flexible education approaches for nomadic pastoralists and marginalized learners.

1.4 Theoretical Framework

The study was anchored on connectivism theory, whose proponents are George Siemens (2005) and Stephen Downes (2005). Siemens is widely recognized as the principal proponent of connectivism. He argued that learning in a digital society depends on the ability to form, maintain, and navigate networks of knowledge. He emphasized that knowledge does exist outside the individual, including in technological systems and communities. Siemens (2005) identified several principles that explain how learning occurs in connected environments. These include the following: learning involves connecting information sources. Learners develop understanding by linking ideas, people, resources, and experiences; learning may reside in non-human appliances; knowledge can be stored and accessed through databases, digital libraries, educational applications, and other technological systems; the capacity to know more is more important than what is currently known; learners need skills to find, evaluate, and use new information as circumstances change; nurturing and maintaining connections is essential. Learners benefit from maintaining relationships with teachers, peers, mentors, and learning communities; the ability to see connections between fields, ideas, and concepts is a core skill; learning improves when learners recognize relationships among different areas of knowledge and that currency of knowledge is important. Learners must continually update their knowledge because information and circumstances change. Decision-making is itself a learning process and learners must judge which information is useful, reliable, and relevant to a particular situation. Downes (2005) also emphasized the importance of diversity, autonomy, openness, and connected participation in effective learning networks.

1.4.1 Application of the Theory to Nomadic Learning

Nomadic learning refers to educational approaches designed for learners whose families or communities move from one location to another, often because of pastoralism, seasonal migration, livelihood activities, or environmental conditions. In Kenya, this is particularly relevant to pastoralist communities in counties such as Kajiado, where some families move in search of pasture and water for livestock. Such movements may make regular attendance at a fixed school difficult. Connectivism can support these learners by linking them to teachers, learning materials, peers, community knowledge, and educational institutions regardless of their physical location.

Through Mobile learning (m-learning), teachers can share short lessons, notes, audio recordings, revision exercises, and assignments through mobile phones. Learners can study when they are away from school, subject to device access, electricity, network coverage, and data affordability. For example: A teacher can send Kiswahili and Mathematics exercises to learners who have temporarily moved with their families to another grazing area.

Community-based learning networks can help teachers work with parents, elders, community volunteers, local leaders, and other education stakeholders to establish learning groups in locations where pastoralist families gather. For example, a community volunteer can supervise reading activities while maintaining communication with the learner's regular teacher.

Radio and offline learning resources such as; educational radio programs, recorded audio lessons, downloaded videos, and printed learning packs can provide learning opportunities in areas with limited internet access. For example, learners can listen to a recorded science lesson on a basic phone and complete related activities in a printed workbook.

Connectivism allows formal education to connect with indigenous knowledge held by elders, parents, livestock keepers, and other community members. For example, learners can study mathematics by calculating livestock numbers, compare rainfall patterns using local observations, and discuss environmental conservation with experienced pastoralists.

Teacher collaboration and remote support: teachers in mobile schools, satellite learning centers, and alternative education programs can share resources and coordinate learner support through phone calls, messaging, or online communities. For example, a teacher in Kajiado can consult another teacher to obtain age-appropriate literacy activities for a learner returning to education after a period of migration.

Flexible entry, exit, and re-entry into education: learning records, portfolios, competency-based assessments, and coordination between schools can help learners resume their education after moving between locations. For example, a learner can temporarily leave one learning center during seasonal migration and continue at another center using a learning record showing completed work and competencies.

II. Review of Related Literature

The review of related literature was guided by following research questions: What are the characteristics of inclusive and flexible education pathways for nomadic pastoralists and marginalized learners? How do instructors in Kajiado County use inclusive and flexible education approaches? What challenges do instructors face in implementing inclusive and flexible education approaches? What strategies can be implemented to strengthen inclusive and flexible education approaches?

2.1 Characteristics of Flexible Education

Flexible education has become an important approach to expanding equitable access to quality education, particularly for learners whose social, economic, geographical, cultural or personal circumstances make participation in conventional schooling difficult. It is especially relevant to nomadic and pastoralist communities, marginalized learners, working adults, out-of-school children and learners living in remote areas.

According to UNESCO (2020) and Bates (2019), Flexible education refers to an educational approach that allows variation in the time, place, pace, mode, content, learning pathways and methods of assessment through which learners access and complete education. It provides alternative opportunities for learners to enter, continue, interrupt and resume learning according to their circumstances while working towards recognized learning outcomes and qualifications. Flexible education is related to, but not synonymous with, distance education, online learning, open education and non-formal education. Distance education emphasizes the separation of teachers and learners; online learning focuses on digital delivery; open education emphasizes the removal of barriers to participation; and non-formal education refers to organized learning outside the formal education system. Flexible education can incorporate elements of all these approaches.

The literature identifies several interrelated characteristics of flexible education. Collis and Moonen (2001), Collis and Moonen (2011), and the UNESCO-supported handbook on flexible learning identify learner choice, adaptability, learner-centered teaching and flexibility in the organization of learning as central features.

Flexibility in time: Flexible education allows learners to participate in learning at times that accommodate their personal circumstances. Learning schedules may include evening classes, weekend sessions, seasonal programs, intensive learning periods or asynchronous activities that learners complete when available. For nomadic pastoralist communities, flexible scheduling is particularly important because children may participate in livestock herding, household responsibilities and seasonal migration. Education providers can coordinate learning periods with community livelihood patterns without abandoning curriculum requirements.

Flexibility in location: Flexible education allows learning to take place in different settings rather than exclusively in permanent school buildings. Learning may occur in community centers, mobile schools, satellite learning centers, homes, temporary settlements or through distance-learning arrangements. Krätli and Dyer (2009) explain that conventional schooling structures often conflict with pastoralist mobility because they are designed around permanent settlements and fixed school locations. Their analysis supports considering educational models that accommodate mobility while maintaining equivalent quality and recognition.

Flexibility in learning pace: Learners are provided with opportunities to progress at different rates depending on their abilities, prior knowledge, learning circumstances and available study time. Some learners

may require additional time to master concepts, while others may progress more quickly. This characteristic is relevant to pastoralist learners who may experience interruptions caused by migration, drought, household responsibilities or temporary school absences. Flexible pacing can help them resume learning without unnecessarily repeating already mastered content.

Flexibility in curriculum and content: Flexible education may adapt the sequencing, contextualization and presentation of curriculum content to learners' needs and experiences. The objective is to make learning meaningful and accessible while retaining essential competencies and learning standards. For learners in Kajiado County, teaching examples can incorporate pastoral livestock production, environmental conservation, water management, indigenous knowledge, local languages and community livelihoods. Such contextualization can improve the relevance of learning while ensuring that learners acquire the competencies required by the national curriculum.

Flexible teaching and learning methods: Flexible education employs varied instructional approaches rather than relying exclusively on teacher-centered classroom instruction. These approaches may include; Group discussions and collaborative learning, demonstrations and practical activities, project-based and experiential learning, independent and self-directed study, mobile and distance learning, peer tutoring and community-based instruction. These methods can accommodate different learning needs, abilities, experiences and preferences. They also align with constructivist perspectives, which emphasize learners' active participation in constructing knowledge through experience and interaction.

Multiple learning pathways: Flexible education provides different routes through which learners can access, continue and complete education. These may include formal schooling, non-formal education, alternative basic education, open and distance learning, mobile schooling and recognized equivalency programs. Multiple pathways are important for learners who have dropped out, started school late, missed substantial periods of schooling or need to combine education with work and family responsibilities. However, pathways must offer credible learning outcomes and appropriate mechanisms for transition into further education or training (Lanyasunya, Ogogo, & Waweru, 2012).

Flexible entry, exit and re-entry: Unlike rigid educational arrangements that assume uninterrupted attendance, flexible education recognizes that learners may temporarily leave education and later return. Appropriate re-entry arrangements, placement assessments, credit recognition and bridging programs can help learners resume their studies. This characteristic is particularly significant for mobile pastoralist families whose movement may interrupt children's attendance. It is also relevant to adolescent mothers, out-of-school youth and learners affected by poverty or other circumstances.

2.2 Use of Inclusive and Flexible Approaches in African Pastoralists Communities

Mobile schools and community-based learning: Mobile schools are among the most widely discussed flexible education approaches for pastoralist communities in Africa. They are designed to bring educational services closer to learners by operating in temporary settlements, grazing areas or locations where pastoralist families reside. In some models, teachers and learning materials move with communities; in others, mobile or temporary learning centers are established to serve children who cannot attend conventional schools regularly (Ngugi, 2016). Adan (2008) and Aden (2011) found that mobile schools could reach children beyond the effective catchment areas of conventional schools. However, their sustainability was affected by inadequate resources, limited government support, curriculum-related difficulties and climatic conditions.

Alternative Basic Education in Ethiopia: Alternative Basic Education (ABE) is an important example of flexible education in pastoralist areas of Ethiopia. It provides an alternative route to basic education for children who face barriers to accessing conventional schools. The model has been used to address the educational needs of underserved communities through arrangements intended to be more responsive to local circumstances. UNICEF Ethiopia's (2018) Impact Evaluation of Alternative Basic Education in Ethiopia examined the implementation and effects of ABE. The evaluation provides an important evidence base for understanding alternative basic education in pastoralist regions and the factors that influence program effectiveness.

Boru (2020), in a study of children from the Borena pastoralist community in Ethiopia, found that educational participation was closely connected to livestock keeping, children's herding responsibilities and the perceived economic costs of schooling. The study also identified rotational enrolment and turn-based attendance as community responses to the tension between education and pastoral livelihoods. However, such arrangements raised concerns about children's educational rights and continuity of learning. Boru consequently emphasized the need to diversify education delivery and make schooling more relevant to pastoralist communities.

The Ethiopian experience suggests that alternative basic education should not merely reproduce conventional schooling in a different location. Instead, it should provide flexible schedules, locally relevant learning, appropriate language support and recognized routes into further education.

Open, distance and digital learning: Open, distance and digital learning offer additional opportunities for pastoralist learners who cannot attend school consistently because of geographical mobility, long travel distances or household responsibilities. Possible delivery methods include educational radio, printed self-learning materials,

offline digital content, mobile devices and supported remote instruction (Dyer, 2016; Aderinoye, Ojokheta & Olojede 2007). For pastoralist communities in Africa, the most appropriate model may therefore be a blended flexible learning system in which face-to-face instruction, radio, printed materials and digital resources complement one another. Digital learning is more likely to be inclusive when combined with offline resources, community learning centers, teacher support and other non-digital approaches.

According to UNICEF (2021) Somalia provides another important example of flexible education for pastoralist and displaced children. Alternative Basic Education programs offered by the government and partner support, have created educational entry points for children who experience barriers to formal schooling because of location, distance, language and cost. Learning centers have provided instruction in learners' mother tongue and offered opportunities for progression into formal secondary education. Community education committees and child-to-child clubs also support program implementation. Gender-sensitive sanitation and menstrual hygiene interventions are also included to address barriers affecting girls.

2.3 Challenges Faced in Implementing Inclusive and Flexible Education Approaches

Inclusive and flexible educational approaches aim to ensure that all learners, regardless of their geographical location, socioeconomic status, gender, disability, age, or cultural background, have equitable opportunities to access, participate in, and complete quality education. Among nomadic and pastoralist communities in Africa, these approaches may include mobile schools, mobile teachers, boarding schools, flexible school calendars, distance learning, community-based learning centers, radio instruction, and non-formal education programs.

Despite their potential, implementing these approaches remains challenging because pastoralist communities often depend on livestock keeping, seasonal migration, and natural resources for their livelihoods (Takaindisa, Noor, Kamunzu, & Hassan, 2026). Conventional education systems, which rely on fixed school locations, regular attendance, and standardized timetables, may not adequately accommodate these circumstances.

The challenges discussed in this paper are relevant to pastoralist communities in countries such as Kenya, Tanzania, Ethiopia, Somalia, Uganda, Niger, Chad, and Mali, although their severity varies across locations and communities.

Nomadic mobility and seasonal migration: Pastoralist households move from one location to another in search of water, pasture, and suitable conditions for livestock. This mobility can disrupt learners' attendance and continuity of learning. Learners may move away from school during droughts or grazing seasons. Children may enroll in one school but fail to complete the academic year there. Teachers may find it difficult to track learners who move across administrative boundaries. Transferring educational records and recognizing previously acquired competencies may be difficult. Education systems need portable learner records, transferable credits, mobile learning services, and mechanisms for re-entry into education (Kalla, 2025).

Inadequate educational infrastructure: Many pastoralist communities live in remote and sparsely populated areas where establishing and maintaining conventional schools is expensive.

Common infrastructural challenges include long distances between homes and schools, Inadequate classrooms, furniture, sanitation facilities, and teaching materials, limited electricity and internet connectivity, insufficient boarding facilities and safe accommodation and poor roads and difficult transport conditions among others (UNICEF, 2025). These limitations can reduce enrolment, attendance, participation, and completion, particularly where schools are not located along migration routes.

Shortage of qualified and motivated teachers: Recruiting and retaining teachers in remote pastoralist areas is often difficult because of geographical isolation, limited housing, poor transport, and inadequate professional support. Teachers may also lack preparation in: Multilingual and culturally responsive teaching, teaching learners with disabilities, multi-grade and multilevel instruction, mobile and distance education, flexible assessment and differentiated instruction. Where teachers do not understand pastoralist livelihoods, they may interpret irregular attendance as a lack of interest rather than a consequence of mobility or household responsibilities.

Weak policy implementation and institutional coordination: Some countries have policies supporting nomadic education, alternative basic education, and inclusive learning. However, implementation may be constrained by inadequate financing, weak monitoring, limited institutional capacity, and unclear responsibilities among government departments and development partners (Kalla, 2025). For instance, Kenya's policy framework for nomadic education recognizes the need to address disparities in access, quality, relevance, and gender equality. The existence of such a framework does not automatically guarantee adequate implementation at community level.

2.4 Strategies to Strengthen Inclusive and Flexible Education Approaches

Strengthening inclusive and flexible education requires the development of educational systems that respond to the diverse needs, circumstances and learning experiences of all learners. The following strategies can be implemented to strengthen inclusive and flexible education approaches.

Development of Flexible Learning Programs: Educational institutions should introduce flexible learning programs that accommodate learners' different lifestyles, schedules and geographical circumstances (UNESCO, 2020).

Community Participation and Stakeholder Engagement: Successful implementation of inclusive education requires collaboration among schools, parents, community leaders and other stakeholders. Gender-Responsive Education Programs: Educational interventions should address gender inequalities that prevent girls and boys from accessing and completing education. Recruitment and Training of Qualified Teachers: Teachers play a critical role in implementing inclusive and flexible education. Therefore, there is a need to recruit teachers who understand local languages, cultures and pastoralist lifestyles.

Gender-Responsive Education Programs: Educational interventions should address gender inequalities that prevent girls and boys from accessing and completing education. Provision of Adequate Educational Infrastructure and Resources: Governments and development partners should invest in educational infrastructure to improve access and participation.

Development of Culturally Relevant Curriculum: The curriculum should recognize and accommodate the cultural values, knowledge systems and livelihoods of different communities. Strengthening Alternative Education Pathways: Alternative education pathways should provide opportunities for learners who have dropped out of school or who cannot access conventional schooling. These may include Alternative Provision of Basic Education and Training (APBET), adult and continuing education programs, non-formal education programs, recognition of Prior Learning (RPL) and vocational and technical education among others. These pathways enable learners to enter, exit and re-enter education at different stages of their lives.

Strengthening Government Policies and Institutional Support: Government institutions should establish policies and mechanisms that promote inclusive and flexible education. Establishment of Partnerships and Networking: Educational institutions should develop partnerships with organizations that support inclusive and flexible education. Strengthening Monitoring, Evaluation and Research: Continuous monitoring and evaluation are necessary to establish whether inclusive and flexible education programs are achieving their intended objectives.

Strengthening Learner Support and Guidance Services: Learners from marginalized communities may experience social, emotional, psychological and economic challenges that affect their participation in education. Schools should therefore: Provide guidance and counselling services, establish mentorship programs, identify learners at risk of dropping out, provide psychosocial support, strengthen referral systems for learners requiring specialized assistance and promote safe and inclusive learning environments.

III. Methodology

The study employed the convergent mixed-methods research design (Creswell & Creswell 2023). In a convergent design, quantitative and qualitative data are collected and analyzed as separate strands and subsequently integrated to produce an overall interpretation. The quantitative design was cross-sectional survey while the qualitative design was a case study. This approach was appropriate for the study because it allowed the researcher to combine quantitative data from 25 instructors across the county with qualitative data from 6 sub-county directors to examine inclusive and flexible education pathways for the nomadic pastoralists. The design was appropriate because the study required both measurable information about the prevalence and use of inclusive and flexible practices and detailed accounts of instructors' experiences, perceptions and challenges. The quantitative component provided information concerning patterns and levels of implementation, while the qualitative component from the 6 sub-county directors provided contextual explanations of those patterns.

IV. Findings and Discussions

The first research question examined the characteristics of inclusive and flexible education as understood by instructors in Kajiado County. The highest-rated characteristic was allowing learners to progress at different rates, with a mean of 5.00. Other characteristics highlighted in the findings included providing access to learning outside school, recognizing cultural backgrounds, and offering alternative pathways to qualifications. The recognition of cultural backgrounds is consistent with the need to connect formal school knowledge with knowledge already available within pastoralist communities. For example, instructors can use local knowledge of livestock management, weather patterns, environmental conservation, and community practices to introduce concepts in science, mathematics, geography, and environmental studies.

These findings suggest that the instructors recognized education as a process that should respond to learners' different circumstances rather than requiring all learners to follow an identical route, at the same pace, and within the same physical setting. For pastoralist communities, flexible progression is particularly important

because livestock mobility, household responsibilities, seasonal activities, and geographical distance can interrupt regular school attendance. Alternative learning arrangements can help learners continue their education despite these circumstances.

However, eight instructors reported no formal training in inclusive and flexible education and so the findings point to an important distinction between knowing the characteristics of flexible education and having the resources, training, and institutional support to implement them effectively (Field data, October 2026).

The second research question investigated how instructors used inclusive and flexible education approaches in their institutions. Working with parents received a relatively high mean of 4.88. In contrast, digital and mobile learning recorded the lowest mean in this section, at 4.38.

The mean of 4.88 for working with parents suggests that collaboration with families was a prominent feature of the instructors' reported practices. This is important because pastoralist parents and community members possess contextual knowledge that can help instructors understand learners' attendance patterns, mobility, language needs, family responsibilities, and cultural circumstances. Collaboration can also help identify learners at risk of dropping out and develop appropriate responses.

Connectivism provides a useful explanation for this finding. Learning and educational support are strengthened when schools establish networks that link instructors with parents, community leaders, local organizations, and learners themselves. These networks enable the exchange of information and help educational institutions respond to changing learner circumstances (Field Data, October 2026). Digital and mobile learning recorded a mean of 4.38, the lowest score. In pastoralist settings, digital connections may need to be supplemented by offline and community-based alternatives.

The third research question examined the challenges instructors faced in implementing inclusive and flexible education approaches. This was the core section of the study because it identified the barriers that may prevent high awareness from translating into effective educational practice. The findings identified inadequate learning materials, classrooms, instructors, internet connectivity, digital devices, and electricity as very major challenges. Poor internet connectivity was identified as the leading challenge in the respondents' prioritization of key barriers. From a connectivism perspective, these barriers weaken the networks through which knowledge is accessed, shared, and developed. Where digital connections are unreliable, learners and instructors may be unable to access online content, communicate with other learning communities, or participate in remote instruction.

The fourth research question examined strategies that could strengthen inclusive and flexible education pathways for nomadic pastoralists and marginalized learners. The respondents emphasized collaboration among schools, parents, and communities as an important strategy for strengthening inclusive and flexible education. The respondents identified the integration of local culture and indigenous knowledge into teaching as a priority strategy. The findings identified government funding as an important requirement for addressing the resource constraints reported by instructors. Clear institutional guidelines were highlighted as a key strategy in the findings supplied. The respondents also highlighted the need to strengthen mechanisms for identifying learners at risk of exclusion.

The findings from the four research questions demonstrate that inclusive and flexible education in Kajiado County can be understood through the relationship between knowledge networks, access to learning resources, community participation, and institutional support. The four research questions collectively reveal a substantial gap between instructors' awareness of inclusive and flexible education and the conditions under which they implement it. The awareness mean of 4.97 and reported-use mean of 4.81 indicate strong positive perceptions and reported practices. However, the challenges mean of 4.62 shows that significant barriers remain. These include inadequate resources, lack of training, poor connectivity, pastoralist mobility, and insufficient institutional guidance. The strategy mean of 5.00 indicates that all proposed strategies were rated very important by the respondents.

Guided by Connectivism Theory, the study proposes that inclusive and flexible education in Kajiado County should be strengthened through interconnected learning networks that link schools, learners, families, communities, educational authorities, and appropriate digital and non-digital resources. Such networks can help maintain educational continuity when pastoralist learners experience mobility or interruptions in conventional schooling.

V. Conclusions and Recommendations

Based on the overall findings, the study draws the following conclusions: Inclusive and flexible education is essential for equitable learning opportunities. Therefore, education systems should provide adaptable learning opportunities that respond to learners' geographical, social, cultural, economic, and individual needs.

Instructors play a central role in implementing flexible educational approaches: However, successful implementation depends not only on instructors' willingness but also on their professional preparation, institutional support, availability of resources, and the flexibility of education policies.

Implementation challenges require coordinated and context-sensitive interventions: Interventions should be sensitive to pastoralist mobility, local livelihoods, household circumstances, infrastructure limitations, and differences in learners' educational needs. Addressing these challenges requires coordinated action by government agencies, education institutions, instructors, families, communities, and development partners.

Strengthening strategies require sustained investment and stakeholder collaboration: The study concludes that improving educational opportunities for pastoralist learners requires practical strategies supported by adequate financing, appropriate policies, trained instructors, relevant learning materials, and effective monitoring mechanisms. Community participation is equally important because pastoralist families and local leaders possess knowledge about mobility patterns, cultural practices, and livelihood demands that can inform the design of appropriate learning programs.

The following recommendations are proposed based on the study findings.

Recommendations to the Ministry of Education

The Ministry of Education should:

1. Strengthen policies on flexible education pathways. Develop and implement policies that support adaptable school calendars, flexible attendance arrangements, mobile education programs, and alternative learning pathways for pastoralist and other marginalized learners.
2. Promote recognition of learning across different pathways. Establish appropriate mechanisms for assessing, recognizing, and transferring learning acquired through formal schools, non-formal programs, community learning centers, and approved digital or distance-learning initiatives.
3. Increase funding for marginalized communities. Allocate adequate resources to schools and learning centers serving pastoralist populations, considering geographical isolation, population mobility, infrastructure needs, and the additional costs of flexible service delivery.
4. Strengthen inclusive education implementation. Ensure that education programs accommodate learners with disabilities, girls, over-age learners, children who have dropped out, and other groups at risk of exclusion.

Recommendations to County Education Officials

County education officials and relevant education agencies should:

1. Map pastoralist settlements and identify learners who are out of school, at risk of dropping out, or experiencing interrupted education.
2. Coordinate the establishment and support of mobile schools, satellite learning centers, community-based learning programs, and other context-appropriate educational arrangements.
3. Strengthen collaboration among schools, local administration, community leaders, parents, and relevant social-service providers to address barriers to educational participation.
4. Monitor enrolment, attendance, retention, transition, learning achievement, and completion among pastoralist learners, disaggregating data by gender, disability, age, location, and other relevant characteristics.
5. Establish mechanisms for collecting feedback from learners, families, and instructors to improve the relevance and effectiveness of flexible learning programs.

Recommendations to Instructors and School Administrators:

Instructors and school administrators should:

1. Adopt learner-centered and differentiated teaching approaches. Adapt instructional methods, learning activities, assessment techniques, and learning materials to learners' abilities, prior knowledge, language backgrounds, and circumstances.
2. Provide reasonable flexibility in learning arrangements. Where policy permits, organize catch-up lessons, remedial support, flexible assignments, and alternative arrangements for learners whose attendance is interrupted by mobility or family responsibilities.
3. Use locally relevant learning materials. Integrate examples from pastoralist livelihoods, environmental conservation, livestock management, local culture, and community experiences to make learning meaningful and engaging.
4. Strengthen continuous assessment. Use formative assessment and appropriate records of learning progress to identify learning gaps and support learners returning after periods of absence.
5. Build supportive classroom environments. Promote respect, participation, gender equality, disability inclusion, peer learning, and positive relationships among learners.
6. Participate in professional development. Engage in training on inclusive pedagogy, flexible instructional design, multigrade teaching where applicable, educational technology, and culturally responsive teaching.

Recommendations to Parents, Community Leaders, and Pastoralist Households

Parents, community leaders, elders, and pastoralist households should:

1. Participate in school management, education planning, and decisions concerning flexible learning arrangements.
2. Encourage regular learning and support children to balance educational participation with family and livelihood responsibilities.
3. Work with education officials to identify appropriate learning schedules that consider seasonal migration, livestock movements, drought, and other local circumstances.
4. Promote the education of girls and boys equally and challenge practices that unnecessarily prevent children from accessing or completing education.
5. Support community-based initiatives that encourage school re-entry, reduce dropout, and facilitate the return of learners who have missed substantial periods of schooling.

Recommendations to Development Partners and Civil Society Organizations

Development partners and civil society organizations should:
1. Support the provision of learning materials, assistive devices, teacher training, infrastructure, and appropriate technologies in underserved pastoralist communities.
2. Collaborate with government agencies to establish sustainable, community-responsive education programs rather than isolated short-term interventions.
3. Support initiatives addressing barriers associated with poverty, child protection, disability, gender inequality, and long distances to learning facilities.
4. Document and share successful models of mobile education, alternative learning, and flexible school arrangements that can be adapted to other pastoralist communities in Kenya and Africa.
5. Support monitoring and evaluation to determine which interventions improve participation, learning achievement, retention, and completion.

VI. Suggestions for Further Research

The study recommends further research into the following areas:
1. Comparative studies: Conduct comparative studies of inclusive and flexible education pathways in Kajiado County and other pastoralist counties in Kenya to establish similarities, differences, and context-specific needs.
2. Learner experiences: Investigate the experiences of pastoralist learners, particularly girls, learners with disabilities, and over-age learners, to understand their educational aspirations and barriers to participation.
3. Technology and learning continuity: Examine the effectiveness of mobile learning, offline digital resources, educational radio, and community learning centers in supporting continuity of education among mobile populations.
4. Policy implementation: Investigate the extent to which education policies supporting alternative and flexible learning pathways are implemented and identify factors that facilitate or constrain their implementation.

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