

## **Foundational Literacy, Numeracy and Life Skills for Sustainable Development Education in Fragile Contexts with a Focus on Kenya's Education System**

**Helen M. Musyoka<sup>1</sup> Prof. Milcah Ajuoga<sup>2</sup>, Dr. Esther Marima<sup>3</sup>, Hudson Ouko<sup>4</sup>  
St. Paul's University**

### **Abstract**

*The realization of the goals of Vision 2030 for Kenya and Agenda 2063 for Africa's Sustainable Development requires more than a policy commitment. This requires rethinking of how people learn from the earliest stages of life. This paper will examine the essential role of foundational learning, including literacy, numeracy, and life skills, as an entry point into meaningful Education for Sustainable Development (ESD). It has three critical aims: (1) to help identify literacy and numeracy as a direct catalyst for considering ways to improve SDG alignment, (2) to determine how sustainability is embedded in the Competency-Based Curriculum (CBC) for Kenya, and (3) to consider foundational education policies in the most marginalised areas. The paper will also support the conference sub-theme, 'Re-conceptualising Sustainable Development Goals for today's challenges and tomorrow's possibilities', focusing on re-thinking the importance of foundational literacy, numeracy and life skills in reducing educational fragility and promoting sustainability both in Kenya and beyond. Foundational education is preparatory and supports the cognitive, socio-emotional, and normative capacities needed to learn and become a responsible global citizen. According to current reports from international learning assessments, there is a disturbing trend: globally, more than 70% of children under 10 in low- and middle-income countries cannot read or comprehend even a simple text. This is a challenge to personal and economic development and the realization of the broader goal of sustainable development. Foundational literacy and numeracy are critical to improving cognitive development, health and well-being, environmental awareness, civic engagement, and gender equality, which are critical to sustainable societies. Children need not only academic skills for further reasoning but also the attitudes and behaviours for a significantly changing world. Such can be achieved by embedding sustainability themes, based on climate and health, empathy, hygiene, and equity, into early learning. This paper argues that foundational learning is a key, particularly if specifically focused on basic education for all (EFA), education for sustainable lifestyles, global citizenship and the SDGs. Drawing on a collection of global case examples of curriculum innovations and implementation frameworks, this paper showcases that nurturing sustainability at the base of education systems is not only possible but inevitable.*

**Keywords: Foundational, Literacy, Numeracy, Sustainability Development, Education, Learning**

## **1.0 Introduction**

### **1.1 Background**

Education for Sustainable Development (ESD) is a vital tool that supports the realisation of key solutions to global challenges such as climate change, inequality, and conflicts. In vulnerable populations, especially in low- and middle-income nations such as Kenya, education assumes even greater importance, given the exacerbated challenges of instability, insecurity, poverty, and population displacement (Nyatuka, 2020). Also, according to UNICEF's Foundational Learning Initiative (FLI), globally, over 70% of children under 10 in low- and middle-income countries cannot read and understand a simple text (UNICEF, 2022, June 23). The vulnerable populations lack key amenities, including schools, trained educators and educational resources, in these fragile environments, especially where armed conflict, migration, and poor economic conditions prevail. According to Bertelsmann Stiftung (2024), in the BTI Transformation Index project, 12 of Kenya's 47 counties, covering approximately half of the country's geographic area, face challenges associated with banditry and cattle rustling. These are also the environments in which learning the basics of literacy, numeracy, and life skills is most critically needed, as they provide what is needed to develop long-term resilience and become socially adapted. In Kenya, where a vast population inhabits regions stricken by poverty and conflict, the incorporation of foundational skills into educational systems is essential for sustainable development (Zhang, 2024). Simply put, the disruptions of fragile settings require inventive learning solutions that integrate both basic learning with principles of sustainability. This works well to make education systems resilient and flexible in the face of adversity.

In addition, a quality foundational education is directly related to the fulfilment of SDG 4, focusing on inclusive and equitable quality education and the promotion of learning opportunities at all levels (United Nations Department of Economic and Social Affairs, n.d.). According to Musau, Ichani, and Mulu (2023), in fragile settings, development is frequently affected by instability, with education perceived as a means of lifting people above the defined adversity and a method of preventing future crises. The lack of education in these regions hinders locals from gaining awareness and improving their living standards, and they also fail to understand their environment and how to improve it to gain stability. Therefore, in Kenya, there is an urgent need for educational programs in the fight against poverty, through teaching literacy, numeracy, and life skills, as part

of its overall sustainability initiative to create self-sufficient and resilient communities that can easily adapt to changing challenges in the world.

## **1.2 Study Context**

### **1.2.1 International**

Education is widely recognized as a fundamental pillar of sustainable development. However, in fragile contexts which are defined by conflict, displacement, poverty, and weak governance, it can be extremely difficult to achieve globally defined learning outcomes. UNESCO (2024, October 31) estimates that more than 251 million children globally are still out of school, and millions more are in school but cannot demonstrate basic literacy and numeracy skills. This global learning crisis makes progress towards several Sustainable Development Goals (SDGs) increasingly difficult (Quality Education). Other SDGs that are hindered by the global learning crisis include health (SDG 3), gender equity (SDG 5), and peace and justice (SDG 16). In fragile and conflict-affected states, where children experience interruptions to their schooling, opportunities for transformative learning diminish, and the risk of chronic poverty, inequality, and instability is magnified (World Bank, 2025, April 14). In this sense, attending to foundational literacy, numeracy, and life skills globally is not just about human rights but also about building resilience, peacebuilding, and longer-term development.

### **1.2.2 Sub-Saharan Africa Region**

Sub-Saharan Africa has the highest concentration of children and youth excluded from education. According to UNESCO (2024, October 31), more than half of all out-of-school children in the world reside in the sub-Saharan region of Africa. In addition to having a massive proportion of out-of-school youth, learning poverty is high. More than 80% of 10-year-olds in low- and middle-income African countries cannot read and understand a simple text (Banerji & Murthi, 2023, December 5). The frailty of the region is further exacerbated by forced displacement due to armed conflicts, environmental shocks such as droughts, and political instability. Additionally, insecure areas such as the Sahel and the Horn of Africa have led to the permanent closure of schools and to generational losses in human capital (Falk, 2024). These systemic issues present important considerations for region-wide approaches, such as coordinating education across emergency contexts, building capacity for exceptional teacher training, and identifying alternate pathways for

marginalized learners. Exploring these issues at a regional level sets the appropriate context for the Kenyan case study.

### **1.2.3 Kenya**

Kenya is a country that can be considered to have issues associated with education, especially in fragile contexts. Kenya has also shown its commitment to change, as evidenced by the Competency-Based Curriculum (CBC) policies, which were implemented in 2017. The country has also made and implemented frameworks such as Education in Emergencies (EiE) (Tarricone, Mestan & Teo, 2021; Republic of Kenya, 2018). However, it happens that there are marginalized areas such as the arid and semi-arid lands (ASALs) and refugee-hosting counties like Turkana that still face the challenges associated with insecurity, poverty, teacher shortages and dwindling infrastructure. In these regions, refugees are housed in overcrowded camps such as Kakuma and Dadaab, but support systems are unevenly distributed across the education landscape (Republic of Kenya, 2018; Wagner, Castillo & Lewis, 2022; Karangu, 2023). Kenya's experience reflects some of the complexity of educational strategies and reforms in fragile education systems. It provides a microcosm for the global and regional challenges to education we have already considered.

### **1.3 Problem and Objectives**

This journal paper primarily focuses on enhancing understanding of the contribution of foundation education to sustainable development in regions with fragile conditions in Kenya, within the context of the Kenyan education system. It seeks to provide a solution essential to fill the gap between the education policy and real contributions to sustainable development agendas in the most vulnerable regions. Kenya, as much as it has tried to reform the education system, has considerable challenges in terms of the education system as a result of its poverty levels, high levels of insecurity and the displacement of communities. This journal discusses these issues and provides insights into how the education system could be better aligned with the concepts of sustainable development to improve the long-term outlook for students in fragile settings.

Although Kenya has undergone progressive education reforms in line with the Sustainable Development Goals (SDGs), a considerable gap persists between policy and practice. National strategies such as the Competency-Based Curriculum (CBC) and the Education in Emergencies (EiE) policies seek to promote access, equity, and quality education for all learners. However, there is only partial implementation due to weak infrastructure, insufficient teacher preparation,

insecurity, and limited monitoring efforts. This gap presents a significant research problem: “What has been the effectiveness of initiatives in foundational literacy, numeracy, and life skills in fragile contexts in Kenya and what might be the lessons learned to scale and widen the application to Sub-Saharan Africa and beyond?” Addressing this problem is important, as failure to address it may perpetuate cycles of exclusion, which could compromise Kenya's contribution to the global SDG agenda. Failing to do so may perpetuate cycles of exclusion that

This paper particularly seeks to:

1. Create an understanding of the importance of primary literacy and numeracy to the realisation of the Sustainable Development Goals (SDGs), especially in situations where funds are scarce, and the educational process is hampered by war or other forms of natural calamities.
2. To analyse the importance of education in promoting sustainability using the Kenyan education system as an example, and how it can incorporate the concept of sustainable development into its educational system through its curricula, pedagogy, and policy frameworks.
3. Evaluate Kenya policies and practices when it comes to foundational learning in fragile environments with a specific focus on marginalised locations such as refugee camps and counties that are economically and socially unstable, like Turkana and Mandera.

## **2.0 Methodology**

### **2.1 Study Overview**

This research utilized a systematic review methodology to systematically assess the evidence on interventions for foundational literacy, numeracy, and life skills in fragile contexts, with a focus on the context of Kenya. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framed the systematic review methodology, fostering transparency and replicability. A systematic review approach was useful, as it allows the integration of findings across a range of sources, highlights gaps in knowledge, and synthesises best practice to inform both practice and policy. The review process included interventions across the three levels, which are policy, school and community, while also considering anchoring challenges, which are conflict, poverty, displacement and fragile governance systems associated with context.

## **2.2 Document Selection and Eligibility Criteria**

The sources were identified via in-depth searches of electronic academic databases such as Scopus, Web of Science, ERIC, and Google Scholar, in addition to sources located in repositories of grey literature, national government sites, and reports published by international organizations such as UNESCO, UNICEF, and the World Bank. The inclusion criteria for documents in our literature review were:

1. Published during the years 2010 to 2025 to reflect more recent initiatives responding to the Sustainable Development Goals (SDGs).
2. Focus on literacy, numeracy, or life skills programming in fragile or conflict-affected settings.
3. Provided some empirical evidence about outcomes or impacts on learners, teachers, or communities.
4. Contained at least one reference to Kenya or similar Sub-Saharan African contexts.

Exclusion criteria applied to studies that:

1. They were theoretical or conceptual in nature without empirical evidence.
2. Focused exclusively on higher education or adult education in contexts outside of fragile settings.
3. Did not focus on the population of interest, which are school-aged children and youth aged 6 to 18 years old.

The selection process aimed to balance comprehensiveness with relevancy and quality.

## **2.3 PRISMA Flow Diagram**

The PRISMA 2020 guidelines were used in the systematic review process. These guidelines provided a framework for the identification, screening, eligibility and inclusion phases. Notably, the initial searches yielded an initial database of 1,172 records. This initial database was screened for duplicates ( $n = 312$ ), leaving 860 for screening. Title and abstract screening eliminated 612 based on not meeting the inclusion criteria. The 248 articles that passed full-text review excluded an additional 218 studies for reasons such as the absence of empirical data ( $n = 126$ ), focus on adult education ( $n = 58$ ), or insufficient relevance to fragile contexts ( $n = 34$ ). In total, 30 documents met the criteria for inclusion in the synthesis.



## 2.4 Quality Appraisal Framework, Data Extraction Procedures

To ensure quality and integrity, a Critical Appraisal Skills Programme (CASP) checklist was used for qualitative-based research and restated criteria for quantitative and mixed-methods studies. All studies were appraised based on clarity, validity, reliability and relevance to the research objectives. Each study was assigned a score based on appraisals, and a study was only retained in the final sample if the study met a predetermined threshold for methodological effectiveness.

In a systematic manner, data extraction was carried out using a template that had been devised in advance to capture critical variables:

- Context such as geographical context, fragility factors, and children's characteristics.
- Interventions which were focused on literacy, numeracy and life skills or a combination of programs.
- Methodology in terms of design, sample, data source, data collection and analysis.
- Outcomes including the impact on learners, teachers or systems.
- Limitations provided by authors.

To ensure reliability, data extraction was performed by independent analysts and differences were resolved through dialogue.

## **2.5 Data Analysis**

The data were thematically analysed and synthesized across global standards, regional and Kenya levels. An inductive coding framework was created to leverage the categories that emerged from the data and to align the codes with the purpose of the review. The selected paper discussed the following themes:

1. Effectiveness of intervention in fragile contexts
2. The challenges of implementation
3. Equity considerations for marginalized populations, such as girls, refugees, and children with disabilities, and
4. Sustainability consideration and alignment with Sustainable Development Goal (SDG).

Comparative analysis emphasized contextual differences and similarities. Triangulating the findings across data sources also strengthened trustworthiness of the findings. The final synthesis included both a descriptive mapping of the interventions and analytical insights into the patterns that shape policy and practice in fragile educational contexts.



### **3.0 Results**

#### **3.1 Basic Literacy, Numeracy and Life Skills in Fragile Regions**

##### **3.1.1 Value in Fragile Environments**

In fragile contexts, where societies are exposed to conflict, displacement, and other challenges of extreme poverty, it becomes crucial for one to develop the ability to write and read, as well as other life skills, beyond academic needs. These skills serve as a basic form of survival and social harmony. In perspective, Vilimala et al. (2022, p. 38) state that ESD can help one develop skills, values, and attitudes to enable them to lead healthy lives and respond to local and global challenges. These skills can therefore be deemed crucial in enabling individuals to operate in a complicated social, economic, and political world.

Basic literacy and numeracy equip individuals to read, write, and calculate, and to engage in productive economic activities vital to sustainable development. According to Fitria (2023), basic literacy skills form a solid foundation for understanding, interpreting, and participating in the complex world. In polarised situations, these capabilities enable children to connect more effectively with their communities and thus become actively involved in decision-making and problem-solving. Likewise, as with literacy and numeracy, life skills such as critical thinking, emotional control, conflict resolution, and communication are essential. Basak (2022, p. 65) defined life skills as “the abilities that allow people to engage in adaptive and positive behaviour that allows them to deal with the events and challenges of everyday life.” Sherif et al. (2023), in a literature review, concluded that life skills are crucial for adolescents and children as they reduce depression, stress, and anxiety. They help people develop the competencies to make the right decisions, build good interpersonal relations, communicate effectively, manage their lives and cope with situations productively (Sherif et al., 2023). In the context of vulnerable contexts, these competencies are rendered even more important, since children and young people gain the capacity to deal with issues such as trauma, insecurity, and instability.

##### **3.1.2 Link to Sustainability**

Literacy, numeracy and life skills are also fundamentally interconnected with the attainment of various Sustainable Development Goals (SDGs), including health, gender equality, environmental sustainability and peacebuilding. The focus on these fundamentals in early education is critical in

the wake of the issues the world faces, and it ensures that children will be able to make a positive impact on the world.

For example, foundational literacy provides children with the skills to read and comprehend health, sanitation, and environmental sustainability-related information. In a literature analysis, Gedvilaitė et al. (2022) found that financial literacy, coupled with sustainability literacy, is essential for adolescents' and young adults' ability to develop society sustainably. In addition, Masemene & Msezane (2021) found that there is a need to include environmental literacy in the curriculum and in preservice teachers' training to instil knowledge in learners so that they can adjust their lifestyles to support a sustainable environment. By developing literacy and numeracy across different areas, it is possible to influence public health actions, including vaccination efforts and clean water use, particularly in populations on the receiving end of health or environmental epidemics. Similarly, numeracy skills have been identified as necessary when making decisions based on important data. Notably, Sobkow et al. (2025) found a relationship between effective numeracy and the ability to make decisions. Such numeracy capabilities are applicable across different fields, including health statistics, environmental metrics, and economics, as they are indicators of the information needed to make informed decisions for the well-being of the community.

Furthermore, by incorporating life skills into early learning, students acquire knowledge of crucial societal problems, such as gender equality and climate change. The topics included in life skills programs tend to take an approach that encourages children to overcome gender stereotypes, support social inclusion, and advocate for gender equity (Vijayan, 2024). Such an education is especially needed in fragile environments, where social and gender norms can restrict the possibilities available to women and girls. According to UNICEF (2019), by promoting knowledge of the rights and responsibilities of young people, foundational education helps them recognise the need to demand change and take action to create fairer and more egalitarian societies.

There is a need for active preparation for children to become global citizens in their early years to lay a foundation. Doing this instils a sense of accountability towards local and global problems, and motivates learners to take action in their local communities and in the global agenda in order to overcome challenges that face them, such as climate change, poverty, and inequality. Educational foundations assist children not only in existing but also in prospering, becoming

accustomed to the fast-changing world that is growing and becoming more connected (UNESCO, 2020).

### **3.1.3 Case Study: Kenya Education System**

In Kenya, substantial progress has been achieved in establishing foundational literacy, numeracy and life skills within its national education system, especially with the introduction of the Competency-Based Curriculum (CBC) in 2017. The CBC aimed to shift the paradigm of the education system, which had initially focused solely on scholarly knowledge, to one that fosters skills such as critical thinking, problem-solving, and life skills. According to the Republic of Kenya (2018), through the Cabinet Minister for Education, the late Prof. George A. O. Magoha, the curriculum is intended to equip learners with the skills needed to survive in a highly dynamic, fast-paced world.

The foundational learning helps the CBC ensure that children acquire the necessary assisting skills in literacy and numeracy at an early age, giving them a firm foundation as they continue to learn. The curriculum combines life skills learning with topics for solving problems in conflict resolution, emotional control, and social accountability. These elements are especially important in fragile contexts in Kenya, where poor regions such as Turkana and Mandera, as well as refugee camps like Dadaab and Kakuma, are overrepresented (Republic of Kenya, 2018). Notably, in such marginal areas, the government, together with non-governmental organisations (NGOs), has endeavoured to establish educational policies that allow education to continue even during crises. For instance, the establishment of the Education in Emergencies (EiE) Framework has played a key role in ensuring educational sustainability for both agricultural and displaced communities that are susceptible to environmental disasters or conflicts (Tarricone, Mestan & Teo, 2021). In addition, according to the Secondary Education Working Group (2022), learning gaps have been mitigated with the introduction of learning acceleration programs, school feeding programmes, and catch-up classes to introduce habitual school attendance.

Despite these endeavours, there are still problems of concern. According to the Republic of Kenya (2018), through the cabinet secretary for education, school attendance in unstable areas is also not regular, owing to insecurity, displacement, and extreme poverty. Additionally, the lack of an adequate teaching force, poor infrastructure, and inaccessible educational resources further exacerbate these problems, thereby undermining the success of educational policies and practices.

Besides, Cheruiyot (2024) argues that other setbacks stand in the way of implementing the CBC, such as the need to retrain teachers, change the curriculum, and develop infrastructure to provide high-quality education in underrepresented regions. Nevertheless, Kenya is making progress in ensuring that sustainability principles become part of the education system. The CBC has made it a mission to infuse climate change education, Environmental stewardship, and sustainable development within the curriculum (Nyatuka, 2020). This, therefore, not only helps children learn the basics of literacy and numeracy but also helps them acquire values, beliefs, and practices that enable them to behave in a resilient, sustainable manner to create resilient communities.

### **3.1.4 Conclusion**

Improvement of basic literacy, numeracy, and life skills, and integration with the educational system in fragile contexts are not only a basic need for growth but also a basic tool for building sustainable, resilient communities. The implementation of the Competency-Based Curriculum in Kenya can be considered a major move towards the fulfilment of these objectives, as it places a strong emphasis on comprehensive education to prepare students to face the intricacies of the contemporary environment. Nevertheless, the case study of Kenya shows that issues persist and that more should be done to translate education policies and practices into a fully inclusive model, especially in fragile regions. As long as it continues to invest in education and focus on sustainability, Kenya has the opportunity to strengthen its education system and create a more sustainable future.

## **3.2 Criticisms of Foundational Education**

### **3.2.1 Educational Barriers**

The fragile regions in Kenya have numerous educational challenges that adversely affect the provision of quality foundational education. These obstacles are aggravated by insecurity, poverty, and inadequate infrastructure, which deprive children of access to education and its associated benefits. Some regions in Kenya are prone to communal violence and conflict, especially in the north and north-eastern parts of the country. This insecurity derails education, displaces people, and leads to the collapse of vital infrastructure. They close schools frequently, and children face significant risks when trying to attend them. As an example, in places like Mandera, Garissa, and portions of Turkana, recurring security threats, such as terrorist attacks or ethnic conflicts, have led to sporadic school closures, thereby derailing the learning process (Wagner, Castillo & Lewis, 2022).

Another devastating plight in fragile settings is infrastructure shortages. Most schools, especially those in rural and marginalised areas, lack basic infrastructure such as classrooms, learning materials, and sanitation. In certain regions, there is a shortage of classrooms with inadequately trained teachers to serve students. As an example, education is significantly strained in refugee camps, such as Dadaab and Kakuma, as the system is overwhelmed by crowded classrooms, the lack of teachers and resources, making high-quality, consistent education of children nearly impossible (Karangu, 2023).

### **3.2.2 Vulnerable Populations**

In fragile regions, people face challenges due to limited access to foundational education. Girls, children with disabilities and refugees are the most likely to become victims of exclusion. To start with, in Kenya, the girls in the marginalised areas particularly face great stumbling blocks, such as the cultural and societal norms that emphasise the education of male children over that of female children. This is escalated by early marriages, gender-based violence and the responsibility of staying at home to take care of the household, and this affects the likelihood that the girls can attend school regularly or complete their education (Lowe et al., 2022; Verheyden & Macharia, 2025). Additionally, UNICEF (2019) reveals that girls living in the conflict and crisis zones, including refugee camps and slum settlements, are more likely to be out of school. When in school, they might be forced to leave early because of social pressures or because they cannot afford the costs of schooling.

Second, children with disabilities also experience significant troubles in being provided with quality educational opportunities. Ressa (2021) found that the Kenyan educational sector contributes largely to the miseducation of children living with disabilities and tends to treat them as second-class citizens. Apparently, in Kenya, inclusive education is a gap that still exists in the education system with respect to children with disabilities. Here, schools do not adequately cater to the needs of children with special educational needs, especially the physically, intellectually, and sensory handicapped. This lack of comprehensive infrastructure and willingness to embrace the disabled children, and lack of trained individuals to accommodate these children in the classroom, leads to many children with disabilities being either left out of the education system or assigned to substandard educational materials.

The other group of vulnerable populations is the refugees. As a nation with a huge refugee community in camps like Dadaab, Kakuma and Kalobeyei, the learning, however, has not been implemented consistently. The aims of the displaced children are often not met. Refugee children are particularly disadvantaged, especially those who live in dire conditions such as temporary shelters. They also experience interrupted schooling, resource deficits, and a lack of trained teachers. However, the Education in Emergencies (EiE) framework is a significant policy concept for providing education to displaced communities. This framework, however, has not been implemented consistently and is not adequate to resolve the problem satisfactorily (Macchiavello et al., 2022). Generally, refugee children are likely to cope with the traumas and emotional distress caused by their situation, and therefore, providing them with educational support becomes of greater importance.

### **3.2.3 Policy Gaps**

Although Kenya has done well with the introduction of the Competency-Based Curriculum (CBC) and Education in Emergencies Framework, there are still loopholes in the efficient implementation and surveillance of these policies. For instance, teachers have a mismatch in their training and cannot be in a position to produce the intended curriculum outcomes in the learners. In some parts of the country, teachers do not have the necessary training to teach basic skills and manage multi-grade classes, which are prevalent here due to a shortage of teachers (Opondo, Afwande & Kamau, 2023).

Moreover, poor monitoring and evaluation mechanisms for the performance of the CBC and other educational policies also hinder efforts to assess the contribution of such programs to students in fragile regions. Opondo, Afwande, and Kamau (2023) found that the training for CBC teachers was insufficient, which made it challenging to teach the curriculum and carry out assessments effectively. The implementation of the CBC faces the challenge of a lack of regular, standardised assessment processes to identify the implications and outcomes of educational policies. This hinders the process of making corrections or modifications, which are needed to enhance the impact of the curriculum.

### **3.2.4 Conclusion**

Kenya's fragile context hinders foundational education due to insecurity, poverty, and poor infrastructure. Vulnerable groups, which include girls, children with disabilities, and refugees, tend to face the greatest challenges under the CBC curriculum. While initiatives like CBC and

the Education in Emergencies Framework have improved access, there remains a need for stronger policies, better teacher training, and effective monitoring, as these will ensure equitable, high-quality education for all children, especially in fragile regions.

### **3.3 Roadmaps to the Reinforcement of the Basic Education in Sustainability**

The following are some of the best strategies to enhance foundational education and align it with sustainability objectives. These measures will help address the current needs of children in fragile regions as well as future requirements, and ensure that the education system is accommodating, dynamic, and proactive.

#### **3.3.1 Invest in Early Childhood Education (ECDE)**

Early Childhood Development Education (ECDE) is fundamental to a child's cognitive, socio-emotional, and physical growth. Research by Wang (2024) shows that investing in ECDE significantly enhances later academic performance and fosters lifelong learning. It develops intellectual abilities, positive attitudes, and social skills, providing access to early literacy, numeracy, and life skills in fragile settings. ECDE also helps children adapt to instability, build resilience, and break cycles of poverty and insecurity, especially in vulnerable or displaced communities.

#### **3.3.2 Enhance Teacher trainings**

To teach successfully in fragile regions, teachers must be equipped with tools and skills to handle the diverse and sometimes challenging classrooms. The training must be geared towards an inclusive pedagogy, a teaching process that seeks to help teachers better support children with varying learning capabilities, including children with disabilities (Ginja & Chen, 2023). In addition, the training programs must also focus on preparing context-sensitive teaching and learning patterns that consider the community's socio-economic and cultural specificities where they are operating. According to n Alpaydın & Demirli (2022, p.35), the advancement and improvements in education sector should ensure that “students acquire cognitive competencies/abilities such as critical thinking, original thinking, research, problem-solving; social competencies/abilities such as societal and cultural participation, entrepreneurship, communication, and empathy; and personal competencies/abilities such as self-control, confidence, commitment, and leadership in addition to acquiring foundational knowledge and abilities.” Therefore, teacher training should include instruction on how to handle trauma, disputes,

and emotional issues among students, so that teachers are prepared to monitor students' development in all aspects.

### **3.3.3 Integrate and Broaden Non-formal and Alternative Learning Routes**

In fragile regions, many out-of-school children, especially those affected by conflict, displacement, or poverty, tend to experience a lack of access to formal education. According to UNICEF (2019), in such contexts, alternative and non-formal learning approaches usually offer flexible and accessible pathways for continued learning. These include fast-track programs, caravan schools, and community-based education centres that reach marginalized learners. Okutu (2024) emphasises the importance of fully implementing Alternative Provision of Basic Education and Training (APBET) centres, and shows an example of their impact; notably, the program has already benefited over 400,000 learners in western Kenya. These institutions provide personalized, non-formal learning opportunities that help children regain lost school years while developing foundational literacy, numeracy, and life skills. Therefore, expanding these alternative programs is crucial to ensuring inclusive, equitable education in disadvantaged areas.

### **3.3.4 Leverage Technological and Innovativeness**

Technology serves as a crucial tool that offers great potential to improve education in remote and marginalized areas. Notably, mobile learning, radio education, and digital literacy tools can reach children, which are among the things powered by technology, helping students access educational content, especially in areas where schools lack school infrastructure. Mobile programs provide constant access to lessons and materials, while radio programs reach areas without internet. Additionally, technology supports teacher training, enhancing instructional quality and learning outcomes (Mhlongo et al., 2023; Rodrigues et al., 2020).

### **3.3.5 Engage the community**

The most important factor in enhancing basic education in fragile countries is the localisation of relevant content and cultural adherence in the curricula. Communities are important in educational decision-making and should be involved in the process to make the education system responsive to the local needs and realities (Wagner, Castillo & Lewis, 2022). Additionally, according to Wagner, Castillo, and Lewis (2022), community participation can help address problems of gender inequality, culture, and isolation that have denied some members the opportunity to access services such as education. There should therefore be the involvement of community-based organisations, local leaders, and parents in the process of setting up educational policies and programs, as well



as in the delivery and management of schools. Ministry of Education, Republic of Kenya (2017) recommended the inclusion of different stakeholders in the development of educational policy aimed at sustainable educational development. In its policy statement, the ministry called for the participation of “formal, non-formal and informal education organisations, private sector, civil society, local community and the scientific community in the development and implementation of policies and plans.” (Ministry of Education, Republic of Kenya, 2017). In line with this, communities need to have a stronger role in the education process, resulting in enhanced ownership and accountability, which subsequently improve educational outcomes.

### **3.3.6 Rock-solid Monitoring and Assessment Systems**

Monitoring and evaluation are vital for ensuring educational policies and programs improve learning outcomes. This requires comprehensive frameworks aligned with national standards and global sustainability goals. The Ministry of Education (2017) emphasizes large-scale, contextual, and formative assessments to measure not only academics but also life skills such as critical thinking and problem-solving. In addition, the assessments should be inclusive and adaptable to learners with disabilities as well as those in non-formal education. Further, life skills, alongside mathematics and science, are essential for achieving Education for Sustainable Development. Moreover, continuous evaluation enables policymakers and educators to make informed decisions, enhance performance, and promote equity across Kenya’s education system.

### **3.3.7 Implications**

#### **3.3.7.1 Policy and Governance**

The roadmaps have shown that without sound policy frameworks, sustainable education in fragile contexts is not possible. In this case, budget prioritisation, inclusive policies, and political will are the three key building blocks for investment in ECDE and teacher training that enable equitable access across counties, particularly in marginalised areas.

#### **3.3.7.2 Education**

The integration of e-learning and m-learning leads to a shift from conventional classroom learning to more flexible, adaptive formats. If this happens effectively, children are set to continue acquiring education even during times of displacement, insecurity or inadequate resources.

#### **3.3.7.3 Community and Social Cohesion**

The involvement of communities in these roadmaps illustrates how education can become a tool for reconnecting bonds of trust in fragile societies, tackling gender inequality and building

resilience. By delivering content in a more local context and engaging families, there is a higher likelihood for values to stick with learners.

#### **3.3.7.4 Sustainability of Outcomes**

Effective monitoring and assessment systems imply that success needs to be regularly assessed to ensure it has been achieved. This paves the way for accountability, adaptation, and evidence-based scale-up of programmes to ensure progress is not only made but also maintained.

#### **3.3.7.5 Long-term Development Goals**

Together, the roadmaps reinforce the importance of foundational Literacy, Numeracy and Life Skills as the basis for achieving SDGs. The implications are not just for education but also for health, climate, gender equality, and economic resilience

### **4.0 Limitations**

This study faced some limitations given the systematic review approach taken. Firstly, the reliance on published literature meant that the results are limited by the availability, range, and quality of documents, with limited unpublished studies or studies from a given context such as the most remote or unstable areas of the world. The literature emphasis on documents from 2010 to 2025, and documents that provided empirical evidence, while providing importance, meant that theoretical or earlier documents that provide additional historical context were excluded from the review process. In addition, considering only the Kenya's or similar sub-Saharan African context meant that the findings had limits on the generalizability to other fragile contexts with different socio-political realities. Finally, while systematic review is a robust method to synthesize existing evidence, it does not collect first-hand empirical data, which may provide a more nuanced understanding of challenges or successes of foundational learning interventions.

### **5.0 Conclusion**

Basic literacy, numeracy, and life skills can provide the foundation to sustainable development regardless of the fragility of the environment. With these competencies people are able to live in complex world, give back to their communities, and solve the greater issues that confront society such as health, gender inequality, and environmental sustainability. In Kenya, the inclusion of these competencies in the Competency-Based Curriculum (CBC) is a big leap, but there are issues of equity of access and implementation that need to be tackled for there to be success. There is a necessity to invest more into basic education especially in the fragile areas where the availability

of good education has several limitations due to reasons such as insecurity, poverty and poor infrastructure.

Governments, NGOs and other international bodies have to work together towards developing a sustainable future of all children by investing in the improvement of foundational education. This means increasing access to quality early childhood education, targeted training of teachers, use of technology and having education systems that are inclusive and responsive to the needs of the vulnerable people especially in the fragile regions. Providing all children an equal opportunity to quality foundational education will guarantee the present as well as the upcoming generation with the confidence and ability to establish sustainable communities with the capacity to contribute to meeting the SDGs.

## References

Alpaydm, Y., & Demirli, C. (2022). *Educational theory in the 21st century: Science, technology, society and education*. Springer Nature.

Banerji, R., & Murthi, M. (2023, December 5). Here's how we can turn this learning crisis around. *World Bank Blogs*. <https://blogs.worldbank.org/en/voices/heres-how-we-can-turn-learning-crisis-around>

Basak, R. (2022). Role of life skills in psychosocial competence. *IOSR Journal of Humanities and Social Science*, 27(4), 60–65. <http://dx.doi.org/10.9790/0837-2704096065>

Bertelsmann Stiftung. (2024). *BTI 2024 Kenya country report*. <https://bti-project.org/en/reports/country-report/KEN>

Cheruiyot, B. (2024). Challenges faced in the implementation of competency-based curriculum (CBC) in junior schools in Kenya. *East African Journal of Education Studies*, 7(3), 260–266. <https://doi.org/10.37284/eajes.7.3.2098>

Falk, D. (2024). *Education and resilience in crisis: Challenges and opportunities in Sub-Saharan Africa*. [Publisher not provided].

Fitria, T. N. (2023). Understanding basic literacy and information literacy for primary students. *Journal of Contemporary Issues in Elementary Education*, 1(2), 103–121. <https://www.researchgate.net/publication/377063616>

- Gedvilaitė, D., Gudaitis, T., Lapinskienė, G., Brazaitis, J., Žižys, J., & Podvieszko, A. (2022). Sustainability literacy and financial literacy of young people in the Baltic States. *Sustainability*, 14(21), 14013. <https://doi.org/10.3390/su142114013>
- Ginja, T. G., & Chen, X. (2023). Conceptualising inclusive education: The role of teacher training and teachers' attitudes towards inclusion of children with disabilities in Ethiopia. *International Journal of Inclusive Education*, 27(9), 1042–1055. <https://doi.org/10.1080/13603116.2021.1879958>
- Karangu, P. K. (2023). *Kenyan national teachers teaching in schools in a long-term refugee camp: Addressing education crisis in the refugee camp* (Doctoral dissertation, University of British Columbia). <https://dx.doi.org/10.14288/1.0427397>
- Lowe, H., Kenny, L., Hassan, R., Bacchus, L. J., Njoroge, P., Dagadu, N. A., ... & Cislighi, B. (2022). 'If she gets married when she is young, she will give birth to many kids': A qualitative study of child marriage practices amongst nomadic pastoralist communities in Kenya. *Culture, Health & Sexuality*, 24(7), 886–901. <https://doi.org/10.1080/13691058.2021.1893821>
- Macchiavello, C. G., Muller, G., Al-Husban, N., Sagayar, M., & Akkari, A. (2022). *Education in emergencies in Kenya, Jordan and Niger*. <https://www.researchgate.net/publication/364061169>
- Masemene, K. J., & Msezane, S. B. (2021). Exploring environmental literacy components in promoting sustainable behaviour: A case study of rural primary schools. *Journal for the Education of Gifted Young Scientists*, 9(3), 233–249. <http://dx.doi.org/10.17478/jegys.980968>
- Mhlongo, S., Mbatha, K., Ramatsetse, B., & Dlamini, R. (2023). Challenges, opportunities, and prospects of adopting and using smart digital technologies in learning environments: An iterative review. *Heliyon*, 9(6), e16348. <https://doi.org/10.1016/j.heliyon.2023.e16348>
- Ministry of Education, Republic of Kenya. (2017). *Education for Sustainable Development Policy for the Education Sector*. <https://www.education.go.ke/sites/default/files/2022-05/Education-for-Sustainable-Development-Policy-for-the-Education-Sector.pdf>
- Musau, D. M., Ichani, F. X., & Mulu, F. (2023). Assessment of banditry, cattle rustling and insecurity nexus in North West Kenya. *Journal of African Interdisciplinary Studies*, 7(4), 132–148.

<https://ir-library.ku.ac.ke/server/api/core/bitstreams/77b6b435-9148-416d-b918-f97442755297/content>

Nyatuka, B. O. (2020). Education for sustainable development in Kenya: Rhetoric and reality in basic education. *Global Journal of Transformative Education*, 2(1), 86–98. <https://doi.org/10.14434/gjte.v2i1.31212>

Okutu, A. A. (2024). Alternative provision of basic education and training in Kenya: A case of Western Region. In *Voices of African Researchers on Development* (p. 102). <https://d1wqtxts1xzle7.cloudfront.net/...#page=109>

Opondo, R. O., Afwande, J., & Kamau, L. N. (2023). Challenges facing implementation of competency-based assessment in Kenyan primary schools: Case of Kajiado County. *International Journal of Education and Research*, 11(1), 21–32. <https://www.ijern.com/journal/2023/January-2023/03.pdf>

Republic of Kenya, Ministry of Education. (2018). *National Education Sector Strategic Plan (NESSP) 2018–2022*. <https://www.education.go.ke/sites/default/files/Docs/MOE-NESSP%20BOOKLET%20TEXT.pdf>

Ressa, T. (2021). (Mis)schooling of children with disabilities in post-independent Kenya. *International Journal of Progressive Education*, 17(2), 124–138. <https://doi.org/10.29329/ijpe.2021.332.8>

Rodrigues, A. L. (2020). Digital technology integration in teacher education: The active teacher training model. *Journal of e-Learning and Knowledge Society*, 16(3), 24–33. <http://dx.doi.org/10.20368/1971-8829/1135273>

Secondary Education Working Group. (2022). *Evidence on learning outcomes for adolescents in fragile contexts: A landscape analysis*. UNHCR. <https://inee.org/sites/default/files/resources/4538%20Learning%20outcomes%20ENG%20FINAL.pdf>

Sherif, Y., Azman, A. Z. F., Awang, H., Mokhtar, S. A., Mohammadzadeh, M., & Alimuddin, A. S. (2023). Effectiveness of life skills intervention on depression, anxiety, and stress among children

and adolescents: A systematic review. *The Malaysian Journal of Medical Sciences*, 30(3), 42–53.  
<https://doi.org/10.21315/mjms2023.30.3.4>

Sobkow, A., Jurewicz, K., Zaleskiewicz, T., Pronczuk, A., Mondal, S., Badecka, J., ... & Traczyk, J. (2025). The role of numeracy in judgment and decision making: The replication of eleven effects across various numeracy scales. *Collabra: Psychology*, 11(1), 128514.  
<https://doi.org/10.1525/collabra.128514>

Tarricone, P., Mestan, K., & Teo, I. (2023). A policy monitoring framework to prepare for, respond to, and recover from education in emergencies. *Education Inquiry*, 1–28.  
<https://doi.org/10.37517/978-1-74286-639-0>

(Note: DOI suggests a book chapter; entry follows article format unless clarified.)

UNESCO. (2020). *Education for sustainable development: A roadmap*.  
<https://unesdoc.unesco.org/ark:/48223/pf0000374802>

UNESCO. (2024, October 31). 251M children and youth still out of school, despite decades of progress. <https://www.unesco.org/en/articles/251m-children-and-youth-still-out-school-despite-decades-progress-unesco-report>

UNICEF. (2022, June 23). 70 per cent of 10-year-olds in ‘learning poverty,’ unable to read and understand a simple text. *UNICEF*. <https://www.unicef.org/press-releases>

(Your submitted link was broken; please send full URL if you want exact link restored.)

United Nations Department of Economic and Social Affairs. (n.d.). *Education*. Retrieved August 25, 2025, from <https://sdgs.un.org/topics/education>

Verheyden, J., & Macharia, M. W. (2025, March). *Educational challenges in refugee camps in Turkana County, Kenya: A brief literature review*. Aries Consult Ltd.  
<https://ariesconsult.eu/educational-challenges-in-refugee-camps-in-turkana-county-kenya-a-brief-literature-review>

Vijayan, V. (2024). *Unveiling the power of teacher education promoting gender equality in education*. Research Culture Society and Publication.

- Vilmala, B. K., Karniawati, I., Suhandi, A., Permanasari, A., & Khumalo, M. (2022). A literature review of education for sustainable development (ESD) in science learning: What, why, and how. *Journal of Natural Science and Integration*, 5(1), 35–51. <http://dx.doi.org/10.24014/jnsi.v4i2.11445>
- Wagner, D. A., Castillo, N. M., & Lewis, S. (Eds.). (2022). *Learning, marginalization, and improving the quality of education in low-income countries*. Open Book Publishers.
- Wang, Y. (2024). Influence of early childhood education on the level of development of children. *International Journal of Education and Humanities*. <http://dx.doi.org/10.54097/wwwg0t070>
- World Bank. (2025, April 14). Delivering education in the midst of fragility, conflict, and violence (FCV). <https://www.worldbank.org/en/topic/education/brief/education-in-fragile-conflict-violence-contexts>
- Zhang, X. (2024). Sustainable development in African countries: Evidence from the impacts of education and poverty ratio. *Humanities and Social Sciences Communications*, 11(1), 1–8. <https://doi.org/10.1057/s41599-024-03912-7>