Council for Exceptional Children | DISES Division of International Special Education & Services

Conference Proceedings

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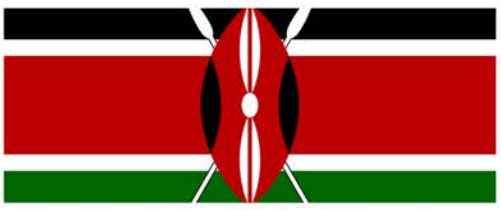

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DISES International Conference

July 1-4, 2025

"HARAMBEE: BUILDING BRIDGES TO SUPPORT INCLUSIVE EDUCATION AROUND THE WORLD"

Welcome From the Conference Chairs

Dear Fellow Educators,

Two years ago, Dr. Robai Werunga and I discussed the possibility of hosting our next Division of International Special Education and Services (DISES) conference in her home country, Kenya. After the DISES conference in India we flew over and connected with Dr. Flora Fedha, the Ministry of Education, and the Kenyan Institute for Special Education (KISE). Since that time, we have met regularly to dream of ways to provide learning and engagement to support youth with disabilities, their families/caregivers, educators, leaders, and policy makers across the globe.

Kenya is a special country that is rich in cultural diversity with an array of languages, food, customs, artistic expression deeply rooted in community values. Harambee, Swahili for "all pull together," embodies Kenya's dedication to working together towards the betterment of the community. This encourages youth to grow in self-respect, self-reliance, citizenship, positive communication, and problem-solving skills. Currently, the Kenyan Ministry of Education is focusing on capacity building on inclusive practices, increasing family involvement, and scaling up access to training, services, and resources to ensure youth with special needs grow into successful adults. Like much of the world, Kenya is also guiding educators towards intentional collaboration within their practice.

Our 2025 DISES Conference Proceedings exudes the essence of "Harambe" within the papers being presented. Our authors highlight ideas and practices related to inclusive education across Africa and the United States that benefit children with disabilities, educators, leaders, and families/caregivers. The themes presented in the proceedings have been successful in local communities and have the potential to make an impact beyond political and geographical borders. It is with this excitement that we share selected papers from our conference.

Rodiguez and Rop's begin the proceedings by highlighting the need for girls to not only have access to education, but preparation for educational advancement and leadership opportunities. Muguro Kimani furthers the discussion of educator professional development with guidance on designing contextually relevant, ongoing, and collaborative learning opportunities to assist teachers in navigating inclusive educational spaces. Hart's paper moves the discussion to a statistical examination of the difference between student math and English language arts outcomes when utilizing Universal Design for Learning (UDL) alone versus in combination with co-teaching. She explains how implementing UDL with co-teaching increases educators' self-efficacy. Along the line of understanding practices happening within schools, Njeri Njoroge completed a systematic review of the implications of Kenya's competency based curriculum (CBC) system of instruction. Findings suggest the need to examine capacity and preparedness of educators, identifying challenges in meeting diverse learner needs, allocating resources, and establishing clear school leadership roles when implementing CBC.

From the Conference Chairs

DISES believes in the importance of collaborating with communities, leaders, and those with diverse learning experiences. Specht and Parkhouse share examples of the power of community collaborations, especially in underserved, under-resourced communities. Lumumba-Umoja focused on the role of school leaders in implementing culturally responsive social emotional learning during times of crisis. To honor the experience of trauma-affected students; Kihura, Stewman, and Hollingsworth provide strengths-based interventions to increase inclusive support. Moreover, Merrill shares her personal narrative with dyslexia in an education system that often misses or misdiagnoses those in neurodivergent communities. She provides a free and privacy-preserving AI-based system for schools to screen and support youth with dyslexia. Furthermore, Okutoyi, Wanzare, Ayere, and Maina share another benefit of using AI in higher education. Their project used AI to provide access, equity, and inclusivity for students who speak Kenyan Sign Language–a promising opportunity for institutions across the globe.

Understanding that the success of inclusive education lies in teachers' attitudes, Kihura asked 200 educators in Kenya about their perspectives on teaching youth with disabilities. Her results indicated that special educators reported more positive attitudes than their general education peers, encouraging teacher preparation and local education agencies to address attitudes as well as inclusive educational practices. Yoho and Yoho remind readers of the proceedings about evidence-based strategies that support foster youth with disabilities. Finally, Okutoyi and colleagues end the proceedings with a paper on coping strategies for early childhood age learners with low vision.

All of these inclusive practices encourage readers to pull together in the learning and instruction of youth with disabilities across the globe. We thank our contributors to this conference proceeding which helps DISES meet our strategic goals of promoting the quest for knowledge to improved the well-being of youth with disabilities (Goal 1), fostering the dissemination of knowledge in international special needs education (Goal 2), strengthen collaborative partnerships in international spaces (Goal 3), and advocating for human rights of all children and youth with disabilities (Goal 4).

Rebekka Jez, Ed.D.

Conference Co-Chair

DISES Mission

Mission Statement

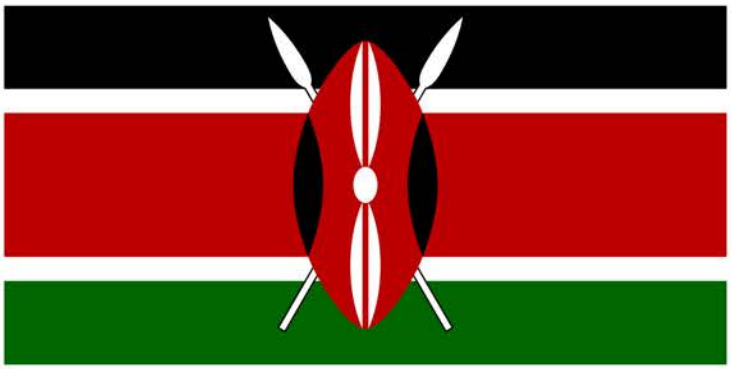
The Division of International Special Education and Services (DISES), a division of the Council for Exceptional Children, promotes knowledge exchange, collaboration, human rights and advocacy to those who provide services for individuals with disabilities.

To Learn More:

https://dises-cec.org/

Top 10 Reasons to Join DISES

1. **NETWORK** with members in several different countries and promote collegiality and international association.
2. **FOSTER** a broad understanding of the international experience in education and services for individuals with exceptional needs.
3. **PARTICIPATE** in professional learning with colleagues around the world at international and national conferences, Roundtables and other exciting events.
4. **ENGAGE** in international partnerships that join individuals from various societies and cultures in working toward common goals.
5. **CONTRIBUTE** to lively discussions to advance education and services for individuals with exceptional education needs throughout the world.
6. **COLLABORATE** with professionals passionate about promoting opportunities for inclusive education for individuals around the world.
7. **LEARN** the current research, practices and advances in the field in the Journal of International Special Needs Education.
8. **CONNECT** with colleagues, share ideas and learn about special projects members are engaged in to promote special education services internationally.
9. **ACCESS** resources and services from the international Council of Exceptional Children as a DISES member for leadership, advocacy and professional learning opportunities.
10. **JOIN** the dynamic DISES Team!!!



Every Girl is Important: A Force of Change in Kenya

Diane Rodriguez, Fordham University
Sr. Veronica J. Rop, The Catholic University of Eastern Africa

Abstract

This project focuses on the urgent need to foster connections, break down barriers, and create equitable opportunities for all learners—regardless of their disabilities. This theme calls for a collective commitment to inclusivity, equity, and access, advocating for systems and structures that enable all students to succeed in their learning journeys.

Introduction

In a world marked by diverse challenges, inclusive education serves as a critical catalyst for change, ensuring that every person, every girl has the chance to thrive. Central to this discussion is the role of girls with disabilities, who are often disproportionately affected by systemic obstacles such as gender inequality, socio-economic status, and geographical isolation. By addressing these barriers, we empower girls to not only shape their own futures but to also drive positive transformation in their communities and beyond. Through collaborative efforts and innovative solutions, we can build educational bridges that offer all learners, particularly girls with disabilities, the resources, support, and opportunities needed to unlock their potential. This theme calls for a collective commitment to inclusivity, equity, and access, advocating for systems and structures that enable all students to succeed in their learning journeys. Currently, over 1.2 million primary school-aged children worldwide are out of school (UNICEF, 2019). In Kenya, while the Free Primary Education (FPE) program has increased access to education for children in lower-income households, secondary costs—such as uniforms—remain a barrier to education. The Every Girl is Important community engagement initiative aims to build a self-sustaining model of girls' education that not only helps girls obtain a high school education but also equips them to participate more fully in the social political and economic life of their communities.

Every Girl is Important Overview

Every Girl Is Important, a nonprofit that aims to educate and empower young girls in Kenya who struggle to obtain a high school education in partnership with the Assumption Sisters of Eldoret (ASE) in collaboration with the Catholic Diocese of Eldoret, Kenya, specifically, Sister Veronica Rop, Ph.D. One of the biggest challenges for the girls with disabilities in Kenya is that [many]do not have access to high school ... they either have to go to work or get married at a young age. When women are educated, there are more leaders and more opportunities in those communities. Since the start of the new millennium, Kenya has made significant progress in achieving gender parity in primary and secondary school enrollment, with notable gains in access to education for girls across the country. However, despite these advancements, more than half of secondary school-age girls remain out of school, according to the latest data from the United Nations Educational, Scientific and Cultural Organization (UNESCO). The situation is even more concerning for girls with disabilities, who face compounded barriers—ranging from stigma and discrimination to a lack of accessible infrastructure and inclusive policies—resulting in extremely limited or virtually non-existent educational opportunities.

There are many young adolescent girls who do not have an opportunity to pursue high school education. These girls we seek to serve are born in poverty in villages surrounding Eldoret, Kenya, a town near the border with Uganda. Other girls are drawn from the marginalized communities still stiffed with practices that rob a girl-child human dignity, a value she derives her rights. Many of the girls who will attend the school live in villages a long distance from Eldoret, the site of the high school. This is the reason why the girls will live on school grounds.

The girls are willing to make valuable contributions to society and should have the opportunity to spend their youth as high school students. The Religious Women, ASE, and the girls' families cannot afford to build the school. The girls need your help; they need a school in which they can gain knowledge and dispositions needed to build a thriving community. These girls will receive an education delivered by professional educators that include the Religious Sisters. Every Girl is important vision is vision is to dismantle barriers and help girls achieve high school educations that can change their lives, communities, country, and the world. The mission is to build a self-sustaining girls' boarding high school that helps girls obtain a high school education and participate more fully in the social, political and economic life of their community including those with disabilities. In the rural parts of Kenya, financial circumstances and geographic inaccessibility of schools often force families to make difficult decisions about schooling for their children. Many times, young girls are kept at home and denied a chance to become strong, educated, empowered women.

Building A Boarding School for Kenyan Girls

For the past few years, it has been working to raise funds to build a boarding school for girls ages 11 to 17 in rural Eldoret. The organization has now reached nearly 75% of its original goal, and will commence construction once the total amount has been raised, according to Rodriguez who also spoke in a recent interview aired on TV network Telemundo. Every Girl is Important's core values are: (1) human dignity: promoting the respect and the worth of every girl; (2) empowering: helping girls get an education, pursue a career and break the cycle of poverty in their communities; (3) Personalistic: we focus on persons and how we can best serve them; (4) authentic: genuine desire to create educational opportunities; and (5) inclusive education for girls with disabilities.

Kenya Educational System

Kenya, officially the Republic of Kenya, has a population of 49.7 million (World Bank, 2019) in a territory of 580,367 square kilometers. Nairobi is the national capital (Ingham, Ntarangwi, & Ominde, 2019) with more than 4 million inhabitants. Kenya is ethnically diverse with approximately 40 major ethnic groups with many different languages. Swahili and English are the two legal, official languages of Kenya (World Atlas, 2019). Kenya, located in east Africa, is known for its wide array of wildlife and scenic landscapes (Ingham, Ntarangwi, & Ominde, 2019). Kenya's history dates back millions of years since it was in Kenya that some of the earliest fossils of humans were found. In the 19th century, European colonization began with the European exploration of the interior. The British Empire established the Kenya Colony in 1920 and after the Mau Mau revolution which started in 1952 led to its independence in 1963 (Ingham, Ntarangwi, & Ominde, 2019). According to the World Bank (2019), over the past decade Kenya has sustained economic growth, social development, and political gains due to major reforms. Poverty, inequality, and climate change as well as weak private sector investment and vulnerability of the economy are major challenges in Kenya (World Bank, 2019).

Kenya is transitioning into a new system of education namely the Competency-Based Curriculum (CBC). The Competency-Based Curriculum that was unveiled in 2017 comprises of 2-6-3-3-3 and replaces the old 8-4-4 system (Amutabi, M. N., 2019). Nonetheless, the old 8-4-4 system of education being based out is comprised of three levels: eight years of free compulsory primary education starting at age six, four years of free secondary education, and four years of higher education (Ingham, Ntarangwi, & Ominde, 2019). Passing a national exam is needed to enter into secondary education. Kenya introduced free primary education (FPE) in 2003 after the Kenyan Parliament enacted the Children Act (Ndegwa & Gutierrez-Colon, 2019). However, over 1.2 million children, primary school aged, do not attend school (UNICEF, 2019). Poorer households in Kenya benefited from increased access to primary education with the FPE program, but ancillary costs such as school uniforms still interfere with the education of primary school children (Glennerster, et al., 2011). Disappointing levels of quality education have been found by primary school children in recent reports due to poor resources (Glennerster, et al., 2011). The increasing disparity in quality education in Kenya is further developed by the rising number of private primary schools (Glennerster, et al., 2011). Glennerster, et al. (2011) found that programs that met their students' level of education by providing remedial education are effective.

Kenya's secondary school access remains low despite increased primary school access (Glennerster, et al., 2011). Only 50% of eligible students went to secondary school (Glennerster et al., 2011). Passing the national exam for entrance into secondary school by obtaining the Kenyan Certificate of Primary Education (KCPE) is recognized as a barrier to secondary school access by public school students (Glennerster et al., 2011). There is an overrepresentation of private primary school graduates to prestigious National Secondary schools (Glennerster, et al., 2011). Additionally, children in pastoral and nomadic communities have poor access to secondary schools due to distances students must travel (UNICEF, 2018). Moreover, 40 percent of girls living in Arid and Semi-Arid Lands are not attending school (UNICEF, 2018).

Beginning in 2013, the national government of Kenya became responsible for the majority of governance of Kenya's educational system through the National Education Board with limited power within the 47 counties making up regional County Education Boards (UNICEF, 2018). The county governments are responsible for pre-primary education and childcare facilities. The National Education Sector Plan (NESP) increased access to education in the country, yet despite this, there are still concerns regarding quality of education and the high number of children out of school especially in the north and east sections of Kenya (UNICEF, 2018). Political patronage and financial irregularities are seen to challenge Kenya's educational system in providing free, equitable education (UNICEF, 2018). Equitable distribution of teachers is a major concern since the number of students dictates only 52 percent of distribution of teachers, where other "non-formal" considerations constitute the remaining 48 percent creating situations where 10 teachers can serve anywhere from 100 to 1,000 students (UNICEF, 2018). Pre-school governance administered at the county level has resulted in significant improvements in food, facilities, and teachers while simultaneously, creating the possibility of inequality among regions with smaller tax bases (UNICEF, 2018).

According to Ogula (2010), the Government of Kenya education introduced one of their major reforms, The Free Primary Education (FPE) of 2003, which increased children enrollment in schools. Total government spending, 14 percent, in Kenya goes to education each year. Primary education at over 40 percent has the largest share with secondary education at around 32 percent coming in second (UNICEF, 2018). With increased educational levels comes increased spending per student (UNICEF, 2018). However, over 1 million children are out of school each year with the hardest to reach children with disabilities, students living in nomadic and pastoral communities, and urban informal settlements (UNICEF, 2018). Holdups to these children being educated include inadequate deployment of teachers, low skill levels of teachers, poor quality of learning environment, insufficient infrastructure, and long distance to school in some regions of the country (Shivonje, & Wasula, 2018; UNICEF, 2018). Students that particularly cannot access formal education include those affected by disasters, communities in arid and semi-arid lands, and those in poor communities such as urban informal settlements and rural poor regions. Children with disabilities, those made to perform child labor, orphans, adolescent mothers, those living with HIV and AIDS, and children who are discriminated against based on gender, culture, or religion also cannot access formal education. The arid and semi-arid areas and urban informal settlements show very low school enrollment and completion rates coupled with low retention rates of educators in these communities which decreased the quality of education. Mandera, Turkana, Garissa, and Wajir counties in the north and east of Kenya demonstrate poor educational development reflected by low enrollment rates, inequality of access by gender, and poor educational resources (UNICEF, 2018).

Other notable barriers to education include education of parents and poverty. The highest effect on increasing the probability of being out of school is the education of the head of household (UNICEF, 2018). There is a significant difference between those parents that have at least a primary education and those that do not in prediction whether children attend school (UNICEF, 2018). Poverty was seen as a major barrier to school attendance given the inability of student's caregivers' ability to cover costs such as uniforms, textbooks, meals, fees to hire teachers, and purchasing desks and chairs (UNICEF, 2018). Poverty is also a challenging barrier for children to attend school if they live too far from the educational facility (UNICEF, 2018). Children with only one parent, those with a caregiver's inability to afford school attendance, and the orphaned are at great risk of not being educated in Kenya (UNICEF, 2018).

Global Education Experience as a Vehicle for Transformative Learning

Effective global programs provide rich cultural experiences and foster inclusive learning environments that deepen pedagogical understanding and teaching efficacy. To support the development of inclusive and globally minded educators, students from Fordham University, accompanied by a faculty member, participated in an interdisciplinary educational immersion program in Kenya. This unique initiative emphasized intercultural learning, social justice, and inclusive education practices, making it an invaluable experience for all participants.

The program aimed to broaden students' global perspectives and cultivate leadership skills rooted in empathy, equity, and cultural humility. Through active engagement with local communities, particularly in collaboration with Every Girl is Important and the Assumption Sisters of Eldoret in collaboration with the Catholic Diocese of Eldoret, the program promoted educational inclusion and equity by addressing disparities in access to learning opportunities, especially for girls in under-resourced communities.

The interdisciplinary and intercultural immersion enabled students to:

(a) Empower girls through small-group academic mentorship and inclusive extracurricular activities designed to support their educational aspirations;

(b) Strengthen their teaching and counseling skills in a multilingual, multicultural, and inclusive setting;(c) Acquire pedagogical knowledge through hands-on service-learning and cultural exchange experiences in diverse environments;

(d) Develop cross-cultural competence and a commitment to educational equity through the pursuit of social justice;

(e) Engage in reflective writing, both individually and collaboratively, to process and articulate their learning experiences.

The integration of cultural, linguistic, and inclusive educational practices significantly contributed to the professional and personal growth of all participants. This immersion fostered deeper self-awareness, greater cultural sensitivity, and an inclusive mindset essential for leadership roles in a global society. Ultimately, the program underscored the importance of inclusion in educational settings and demonstrated how international experiences can shape future educators who are prepared to lead with compassion, equity, and a global outlook.

In regard to experience in rural Kenya, students were prepared spiritually and culturally as to embrace the oncoming journey. The educators spoke of cultural insights, cultural humility, how they were about to recognize biases and assumptions while building upon increased spiritual insights. This experiences and provided them with further understanding of how to interact with different cultures abroad, and within their professional contexts (Mbugua, Z. K., Kibet, Muthaa, & Nkonke, 2012).

We were able to observe the impact of the teachers, counselor, and psychologists in the classrooms, on the playground and in conversations with staff at the Kenyan schools. Participants were also able to observe and discuss how their colleagues were impacted by this transformative experience. Through interactions with the students, the teachers, the staff, the religious sisters, and with one another, researchers had an insightful experience that highlighted how this trip would forever impact their personal and professional lives. As a collective, the participants felt the welcoming spirits of each person they encountered while in Kenya. They were able to witness the dedication and passion of the teachers as well as the motivation and focus of the students.

Conclusion

This project is highly relevant and offers invaluable insights for those exploring the intersections of education and social welfare on a global scale. A key objective is to present a transformative project focused on inclusivity, providing educators and professionals—who are key agents of change—with practical strategies, real-world examples, and innovative solutions for fostering equitable education. By showcasing initiatives that bridge gaps and support diverse learners, this session aims to inspire and empower attendees to drive meaningful change in their own contexts, ensuring that education becomes a tool for empowerment, access, social justice, and dignity.

It is essential for professionals within the educational system to deeply understand and reflect the diverse identities, backgrounds, and lived experiences of their student populations. This includes a critical focus on educating and empowering girls, as doing so not only impacts how curriculum is delivered but also how communities can be positively transformed through inclusive and equitable practices.

As Igoa (2015, p. 114) insightfully states, “A sensitive understanding of one’s students is the key to whether the blocked energies of a youngster will unblock.” This underscores the necessity for educators to observe and engage with students in a holistic manner—recognizing their social, familial, cultural, and emotional contexts. A nuanced understanding of diversity, social justice, and equity—including the varied experiences across rural and urban areas, socioeconomic statuses, gender identities, and religious affiliations—enriches the educational environment and allows educators to tailor their instructional resources in a way that honors and uplifts all learners.

Advocating for girls’ educational rights is not just about providing access; it is about transforming mindsets and systems. Engaging other educators, community leaders, families, and policymakers in this advocacy creates a collective force for change. Educating girls is not a one-time effort, but a lifelong mission that bridges theory and practice, particularly in culturally and linguistically diverse communities. These immersive educational experiences, foster gratitude and deep respect for culture, language, and identity while emphasizing the global importance of educating and empowering girls.

We must ensure that every person, every girl—regardless of where she is born, the language she speaks, or the faith she practices—has the opportunity to learn, grow, and lead. When girls are given the resources, support, and encouragement to stay in school, they not only improve their own futures, but also uplift their families, their communities, and society as a whole. An educated girl can become a doctor, an engineer, a teacher, a leader—changing the trajectory of her community and inspiring others to follow.

Girls are born with a spark—an innate desire to contribute, to dream, to lead. It is our responsibility, as educators and advocates, to nurture that spark. We must provide safe, inclusive, and empowering spaces in which all girls are taught with confidence, respect, and purpose. We must mentor them, believe in them, and walk alongside them on their educational journey.

True empowerment comes from knowledge. When we educate girls, we give them the power to make informed choices, to challenge inequity, and to reshape the world in infinite ways. This is not only a moral imperative—it is a strategic necessity for sustainable global development. We must carry the voices of all girls—those who speak loudly and those who have yet to be heard.

This is a movement that requires a shared language of justice, equity, and hope. We need more alliances—across sectors, cultures, and continents—to ensure that this change is not temporary, but enduring. A world where every girl receives a quality education is a world where society as a whole flourishes. As the saying goes: “When we educate a woman, we transform a nation.” Let us commit to this transformation—together.

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Harambee in Professional Learning Communities for Inclusive Pedagogy: Building Bridges in an Inclusive School in South Africa

Wacango Muguro Kimani, University of Johannesburg

Abstract

In-service teacher learning for inclusive pedagogy in South Africa aims to address teachers' perceived lack of capacity to teach in inclusive classrooms. Research indicates that teachers often feel underprepared, and traditional professional development models—such as workshops and short courses—have proven insufficient in enabling sustained inclusive practices. This article reports on a study (Kimani, 2023) that explored an alternative approach to individual teachers' acquiring knowledge for a collaborative, long-term learning model, embedded in teachers' everyday realities.

Conducted over three years in a full-service school in Johannesburg, the research analysed teacher talk within Professional Learning Communities (PLCs) that focused on inclusive pedagogy, drawing on the Inclusive Pedagogical Approach in Action (IPAA) (Florian, 2014). In PLCs, which are grounded in practice, support sustained collaborative teacher learning and shift perceptions around inclusive pedagogy. Wenger's (1998) theory of learning as social practice provided analytical lens for understanding how teachers talk indicated teachers developing a learning community. Data were gathered from PLC discussions and individual interviews and analysed through a critical interpretivist lens.

Findings show that participation in PLCs enabled teachers to negotiate meaning and form a coherent community. This coherence empowered teachers to challenge assumptions about inclusion, share experiences, and deepen their professional understanding. Using the concept of Harambee—collective effort—and the metaphor of bridges, the study illustrates how PLCs can bridge critical gaps in teacher learning. These bridges represent collaborative connections that could enhance inclusive practice and contribute to systemic change. The study offers conceptual insight into how teacher talk mediates professional learning for inclusive pedagogy.

Keywords: South Africa, Inclusive pedagogy, Professional Learning Communities, Full-service school, Harambee.

Introduction

Inclusive education in South Africa, rooted in post-apartheid policy reforms such as Education White Paper 6 (DoE, 2001), aims to address historical inequities by fostering access, participation, and belonging for all learners. However, systemic challenges—including overcrowded classrooms, resource shortages, and persistent deficit oriented attitudes—hinder its implementation (Engelbrecht et al., 2016; Walton, 2016). Bridging the gap between inclusive education policy and classroom practice remains a significant challenge. While policy frameworks provide strategies for inclusive teaching, implementation remains challenging (Walton and Engelbrecht, 2022).

Inclusive education in South Africa requires a fundamental shift in teaching practices, professional identities, and school cultures. Central to advancing inclusive teaching is teacher professional development, which has increasingly emphasised collaborative models such as Professional Learning Communities (PLCs). PLCs, defined as sustained, job embedded spaces for collective inquiry and reflection (Brodie & Borko, 2016), align with the social justice ethos of inclusive education by prioritizing teacher agency, shared responsibility, and contextual responsiveness (Florian, 2014; Slee, 2011).

A PLC Project at City Primary School guided faculty from a university-led community engagement project established PLCs for inclusive pedagogy at a full-service primary school in Johannesburg. City Primary School is a pseudonym.

By situating PLCs within a full-service school model—a policy initiative to mainstream support for diverse learners—this study explores how collaborative teacher learning can disrupt deficit discourses and sustain inclusive practices. The Directorate of Inclusion and Special Schools (ISS) of the Gauteng Department of Education selected City Primary School as there were no special schools to serve as resource centres in their proximity. This article reviews the PLC project at City Primary School, a full-service school in South Africa, as a model of Harambee. Using the concept of Harambee—collective effort—and the metaphor of bridges, the article illustrates how PLCs could bridge critical gaps in teacher learning. These bridges represent collaborative connections that could enhance inclusive practice and contribute to systemic change. The study offers conceptual insight into how teacher talk mediates professional learning for inclusive pedagogy.

Teacher Professional Learning for Inclusion

Teacher professional learning is a critical factor in developing inclusive teaching practices (Waitoller & Artiles, 2013). Teachers need to respond to the diverse educational needs of learners and enhance teaching and learning for all (Florian & Linklater, 2010). In South Africa, the National and provincial departments of education, non-governmental organisations and universities have provided teacher professional learning for inclusion through workshops and short courses (Materechera, 2020; Walton, 2016; Lessing & De Witt, 2007). As these professional learning approaches are relatively simple to implement, the providers expect to equip many teachers for inclusive teaching in one offering. These approaches have paid attention to increasing teachers' skills and knowledge, including knowledge in special education (Materechera, 2020).

Studies on teacher professional learning for inclusion have showed that teachers were not taking up inclusive teaching (Walton et al., 2014). While teachers indicate the programmes are beneficial immediately following their participation (Kempen & Steyn, 2016; Walton et al., 2014; Lessing & De Witt, 2007), many also report that they lacked the competence to teach inclusively (Walton et al., 2014) and that they needed more skills to be able to teach learners with diverse needs (Materechera, 2020). It appeared that workshops and short courses were not making a long-term difference to teachers' classroom practices in South Africa (Walton et. al., 2014, Eloff & Kgwete, 2007). Elsewhere, Woodcock and Hardy (2017) had showed that knowledge alone – especially knowledge on special education – did not necessarily engender inclusive teaching that considers all learners in a classroom.

Research on professional learning has indicated that conventional professional learning approaches, such as workshops and short courses, are inadequate and fragmented (Walton et al, 2014; Borko, 2004). Teachers need extended periods of professional learning, especially in collaborative learning programmes, to understand and accept new concepts and practices (Walton, 2016; Ainscow & Miles, 2011). On the content of professional learning for inclusion, Florian and Walton (2018) have argued that one way that the teachers could change their misconceptions about inclusive teaching would be to learning in community, collaboratively engaging with inclusive pedagogy.

South Africa's Department of Education has recommended PLCs for professional learning in general (DBE, 2015) and has been proposed for inclusion (Walton, 2016). The inadequate change in teachers' inclusive practice (Ayaya et al, 2021) requires a different approach to professional learning for inclusive pedagogy in South Africa. Internationally, there is evidence that teachers have shifted their practices by fostering trust, dialogue, and experimentation in collaborative spaces (Wenger, 1998). In South Africa, PLCs offer an alternative to the fragmented workshop-based training, which has failed to address the complexities of inclusive classrooms (Walton et al., 2014). Florian's Inclusive Pedagogical Approach in Action (IPAA) framework, which emphasises difference as a natural aspect of learning, teacher capability, and collaborative problem solving, is recommended as the focus for PLCs and also the lens for analysing how PLCs reframe inclusive teaching as possible for mainstream teachers (Florian, 2014).

Professional Learning Communities for Inclusion

Various approaches to professional learning and collaboration in inclusive settings aim to improve teaching practices and learner achievement. To achieve these goals teachers have formed learning groups, also called communities of practice, learning communities, critical friends' groups and PLCS (Walton 2016). PLCs, which are occasionally called teacher learning communities (TLC) have provided teachers with opportunities to learn cooperatively and develop their pedagogical content knowledge (Zulu and Mukeredzi, 2021).

PLCs are defined as "groups of educators that collaborate regularly to share expertise and work collaboratively to improve teaching skills and the academic performance of students" (Kimani, 2023, p. 68). In inclusive education contexts, PLCs provide an essential platform for teachers to critically examine their pedagogical assumptions, share strategies, and engage in joint problem-solving to address learner diversity. Professional Learning Communities (PLCs) offer a structure where collaboration can be deliberately cultivated to support the development of inclusive pedagogy.

Collaboration is defined as two or more professionals working towards a common goal by sharing responsibility and contributing to professional expertise, and includes collaborative consultation, collaborative planning, co-teaching, coaching, and professional learning communities (Tancredi et al. 2023). Collaboration in the inclusive school setting occurs within and across professional boundaries (Tancredi et al. 2023; Walton et al. 2019),

ensuring a beneficial school experience for all learners. Through working collaboratively in "knotworking events" (Andrews 2022, 107), the teachers developed a sense of efficacy to teach learners with diverse needs. Andrews (2022) described 'knotworking' as a process of unravelling and connecting knowledge and activities in multidisciplinary teams and showed that teachers develop novel strategics and become pedagogically responsive to the learning needs of diverse learners.

PLCs are a collaborative learning approach where teachers can reflect on their classroom practice. Globally, PLCs are increasingly favoured for in-service teacher learning (Ling and Amzah 2022). PLCs relate to teachers' immediate realities as they are school-based and are long-term professional learning programmes (DBE 2015; Stoll 2011). As collaborative groups of educators, PLCs bring teachers to work together to improve teaching practices and student outcomes. The essence of PLCs lies in their collective focus on learning, shared responsibility, and reflective practice (Brodie 2013). The communities foster a culture of continuous improvement, where teachers can engage in dialogue, share experiences, and develop new strategies to address the diverse needs of their students.

The success of the PLCs in South Africa contrasts with the typical workshop structure where learning is not sustained. Research in South Africa has shown how PLCs promote continuous learning and fit the varied educational realities in the country (Brodie and Borko 2016). Recognising PLCs as important in strengthening teacher professionalism, the DBE issued guidelines for school-based and district-level PLCs (DBE 2015). PLCs are recommended to promote inclusive participation between teacher, provincial education officials, teacher organisations and subject-based professional teacher associations at their local level, and research has shown PLCs' value in improving "teacher and learner learning and morale" (DBE 2015, 4), and teacher practice and learner achievement. The PLCs Guidelines describe its activities as including discussion, critique and adaptation of the Curriculum and Assessment Policy Statements (CAPS) to a school's circumstances, encouraging the formation of PLCs to promote ownership in teacher learning, critical and systematic reflection, teacher professionalism, accountability and collective participation.

Research in Ireland demonstrated how PLCs enabled teachers to reflect on collaborative methods that support teachers to develop inclusive classroom practices (Brennan and King 2021). Similarly, in South Africa, PLCs were shown to influence teachers' professional identity and agency, and to help them improve their classroom practice (Chauraya and Brodie 2018). In collaboration with VVOB, the Flemish association for development in education, PLCs were established for teachers in several schools and for district education officials in the country (Peeters, 2023). While these PLCs were not always inclusion-focused, research showed their efficacy. Education officials noted collective responsibility and ownership among school leaders and teachers; and a "change in mind set" around accepting change, PLCs "play an important role in developing a common vision towards inclusive education" (Peeters 2023, 16, 19).

While PLCs are not a quick fix/silver bullet solution for successful TPD for inclusion, they can be effective with planning and support from school management. PLCs need support from school management ensuring their scheduling on the school timetable, and supported with focused facilitation, PLCs may not achieve their stated goals (Brodie 2013). PLCs promote a culture of continuous learning, mutual support, and shared accountability. They have provided a platform for teachers to share best practices, address challenges, and develop innovative strategies tailored to diverse learner needs. With the partnership of universities, as a "critical friend", in-service teachers' learning in PLCSs is supported with theoretical perspectives (Kimani 2023) and critical reflective questions for deeper thinking and challenging assumptions that may not be obvious to the insiders (Chauraya and Brodie 2018).

Harambee and Professional Learning Communities

Harambee is a Swahili term meaning "pulling together" and is often invoked as a rallying cry for collective action. Rooted in communal values of collective strength, mutual solidarity and communical responsibility, Harambee involves community interdependency. Harambee is a symbol and strategy of participatory development and social cohesion. In the educational context, it can represent the ethical and cultural foundation for collaboration for inclusive education (Were et al., 2024). Harambee is similar to Ubuntu – a Xhosa/Zulu concept, that espouses connection, and relatedness in community (Rotzinger et al., 2025). Other values, including collaboration, mutual respect are communicated from childhood through stories and songs. Adults will often express a common proverb, "a child belongs to the whole village" evoking the responsibilities of community.

Both PLCs and Harambee emphasise learning as a social and communal activity. In Wenger's framework, learning is situated and participatory, much like how Harambee calls for inclusive participation in collective endeavors. The communal ethic inherent in Harambee reinforces the relational and dialogic nature of PLCs. Guided by the values of the frameworks, individuals come together with a common goal. Harambee offers a cultural lens that challenges hierarchies and promotes equity in participation, resonating with PLCs for inclusion that value the voices of all members. PLCs built on Wenger's (1998) Communities of Practice provides a model for understanding social learning in school settings. When paired with Harambee, this learning model opens new possibilities for promoting professional learning communities for inclusion that are both theoretically and culturally rigorous.

PLCs in a Full-Service School

This study adopted a qualitative case study approach on a three-year PLC project implemented at City Primary School. The study was conducted at City Primary School (pseudonym), a full service school serving learners with diverse needs. Thirty six teachers from pre-school to Grade 4 participated in 11 PLC sessions over three years. Sessions were structured around topics such as cooperative learning, listening strategies, guided by Florian's IPAA principles (Florian, 2014).

Ethical clearance was obtained from the university ethics committee, and informed consent was secured from all participants. Data were collected through audio recordings of PLC all 11 sessions. Audio recordings of PLC discussions transcribed and anonymised. Semi structured interviews with 12 teachers and one group interview, exploring perceptions of inclusion, collaboration, and professional growth.

Thematic analysis (Clarke & Braun, 2013) was applied to transcripts guided by Wenger's (1998) theory of learning as social practice and Florian's IPAA. Codes were iteratively developed within a critical interpretivist paradigm. Critical interpretivism bridges an interpretivist focus on lived experiences with critical theory's emphasis on power and emancipation (Lincoln & Guba, 2013), aligning with inclusive education's social justice aims. The analysis examined how collaboration was developed, experienced, and sustained through the PLCs. The focus of coding and analysis was on instances of mutual engagement, co-construction of strategies, collective problem-solving, and expressions of shared responsibility.

Findings

At City Primary School, teachers engaged in structured PLC sessions focused on listening skills, identifying barriers to learning, and differentiation strategies. Through these collaborative engagements, teachers discussion demonstrated Wenger's (1998) coherent community. Wenger's (1998) coherent community entails three dimensions of community, namely: Mutual Engagement (the engagement in collectively negotiable actions); Shared repertoire (routines, activities, artifacts and stories developed); and Joint enterprise (the negotiated response to address a common situation). These dimensions guided the analysis of the PLC discussions at City Primary School. A community becomes coherent when it is unified, purpose-driven, and consistent in its practices and understandings. When members of a community work together to make sense of what they do and learn from each other, then that group is not just a collection of individuals—it becomes a unified and meaning-making community. According to Wenger, learning is a process of "actively participating in the social world" and a "negotiation of meaning". The teacher made sense of their experiences through discussion, reflection, and mutual engagement in the PLCs. The results indicate that the spirit of Harambee is evident in these dimensions. Metaphorically, the Harambe spirit created bridges in the three dimensions of community, emphasising learning is a social and collective effort.

Bridging through Mutual Engagement

Through their active participation and shared efforts, teachers developed a relational connection for all learners at City Primary School. Mutual Engagement can be expressed metaphorically as "Pulling the rope together". In a culturally grounded interpretation, just as in Harambee, where people come together to lift a burden or build something as one, mutual engagement is about everyone showing up, contributing, and being interconnected through action. PLCs enabled teachers to reposition themselves to possibly become inclusive teachers.

Excerpt 1:

T1: So inclusion, inclusion that is why we are keeping [Learner name] in our classes ... Because we want her to try and cope with the normalities of life. We don't want to exclude her ...You know, because already I can see she's already being assertive ... If we took her out and put her in a different environment I don't think she would be the same [Learner name] that she is now, she would have been ... intimidated.

T6: What I'm saying, you are straight on the point ... I said because we come from a different background. Look at Pistorius and [Learner name]. Pistorius managed to excel ... Because of the socio-economic background that was wealthy and supportive ... [Learner name] comes from City Primary; due to the constraints she cannot be on the same level as Oscar Pistorius. (Kimani, 2023, p. 162).

The comparison of one learner with para-Olympian Oscar Pistorius indicate that the learner had a disability. The collaboration was a catalyst for shifting the teachers' mindsets. The PLCs fostered dialogue that challenged deficit narratives about learners. One of the first outcomes of the PLC was the development of mutual engagement among teachers. Early sessions emphasised active listening exercises and open-ended discussions about inclusive teaching challenges. Teachers reported that these activities "allowed us to really hear each other" and fostered a sense of trust critical for genuine collaboration (Kimani, 2023, p. 218). Establishing a safe, non-judgmental environment was pivotal. Teachers became more willing to share difficulties, uncertainties, and successes, moving beyond a culture of individualism toward collective professional responsibility.

Bridging through a Shared Repertoire

The common language, tools, narratives, and routines that the teachers developed strengthened their community identity. They had a communal toolkit of meaning and practice, with their peculiar language, cultural artifacts, communal knowledge base of common practices and stories.

Excerpt 2:

T1: Ja, in small groups I think it's better because then it becomes personal. But when we are in a big group I can relax and not participate. But when we are in a small group we are able to participate, each one of us will be able to maybe say our views about whatever topic that we might have or whatever problems that we are encountering in the classrooms.

T2: Yes, I agree. We can, we can go back maybe being encouraged even though we know that we are sitting with some challenges wherever we are working. But meeting like this in small groups I believe it can help us to improve our daily work, to improve in our profession as well and also know how to tackle some of the issues that we have encountered within the day with our learners. (Kimani, 2023, p. 224).

A metaphorical expression, "as teachers listening to the same drumbeat", indicates that the shared repertoire of practices, language, and resources, the teachers made meaning with familiar artifacts. Therefore, over time, the teachers developed a shared repertoire of inclusive practices, that could support learners experiencing barriers as discussions were practical and related to the teachers' realities.

Bridging through Joint Enterprise

The joint enterprise was evident in the collective negotiation of goals and purpose, drawing parallels to Harambee's unifying call toward communal progress. The metaphorical expression that echoes Harambee: Walking one path with many feet, would indicate the teachers' goal was jointly defined and pursued. As a joint enterprise, the PLCs purpose was co-created by the group and not handed down, but owned and shaped by all. In the following excerpt from on PLC discussion the teachers identified that working in small groups, that is the PLC groups, was better than workshops because the groups were personal. In an interview with the following Grade Two teacher, highlights the joint enterprise fostered by PLC discussions.

Grade 2 Teacher: Inclusive pedagogy I think eh, it help me, it taught me a lot because I'm no more stereotyped saying "these learners are good in everything" that [one is] uh, underperforming. [Before] I'd always [say] "Oh, they can't do it." You know, grouping of learners. So now I'm just repeating – because it never can be good in this chapter. (Kimani, 2023, p. 158).

This co-construction of knowledge and strategies demonstrated that collaboration was not merely social—it was directly linked to the development of new pedagogical practices for inclusion. The PLC project explicitly framed inclusion as a collective endeavor and co-constructed a shared purpose to accommodate all learners. Joint planning exercises enabled teachers to collaboratively design lesson adaptations and problem-solve learner support challenges. The process reinforced the notion that inclusion required collective input, not isolated efforts.

Discussion

The findings from the PLCs at City Primary School reveal that professional learning communities, when guided by the Inclusive Pedagogical Approach in Action (IPAA) and analysed with a Harambee lens, can serve as critical mechanisms for bridging multiple gaps that inhibit inclusive education. These gaps, including theory and practice, individual and collective knowledge, policy and implementation, perception and transformation, isolation and collaboration, capacity, and teacher-student needs, highlight the multifaceted barriers teachers face in realising inclusive teaching. The PLCs functioned as spaces for dialogue where inclusive principles, successes and challenges could foster inclusion at the school.

In bridging the theory-practice gap, teachers demonstrated how the theoretical principles of inclusive education can be enacted within their own classroom. While traditional workshops often fail to contextualise theory, PLC discussions enabled teachers to negotiate meaning collectively (Wenger, 1998), thereby localising and operationalising the IPAA framework. These conversations empowered teachers to reinterpret inclusion in ways that responded to their peculiar contextual challenges such as overcrowded classrooms. The data also underscored a shift from individual to collective knowledge production. Teachers, previously isolated in their problem-solving, began to co-construct knowledge through collaborative exchanges. This communal orientation reflects the spirit of Harambee, as the collective effort amplified what had succeeded for some teachers that other teachers could also attempt to implement. Teachers reported feeling more confident in their practice after sharing with their peers, suggesting that trust and collegiality were key to professional transformation.

PLCs also emerged as a mechanism for bridging the well-documented gap between policy and practice (Walton and Engelbrecht, 2022). While South Africa's inclusive education policies are progressive, implementation often falters at the school level. The PLCs allowed teachers to interpret policy ideals for their particular context. This finding aligns with scholarship that emphasises the importance of teacher agency and bottom-up engagement in policy enactment (Kimani, 2021). Early discussions revealed that many educators held deficit-oriented views of learners experiencing barriers. However, sustained engagement with the IPAA in the PLCs prompted a reconsideration of these assumptions. Teachers began to articulate more capability-oriented perspectives. This cognitive shift is critical, as inclusive pedagogy is predicated not only on instructional strategies but also on the beliefs that underpin them (Florian and Walton, 2018). PLCs also bridged the isolation that teacher experienced in past professional development programmes. In contrast, the PLCs cultivated a coherent community that enabled sustained dialogue. This shift from episodic workshops to embedded, school-based collaboration in the PLCs offers contextually relevant learning.

In addressing the capacity gap, teachers expressed their feelings of inadequacy regarding their preparedness for inclusive education. However, participation in PLCs not only facilitated skill development but sustained, the iterative process of professional learning that mirrors the IPAA's emphasis on growth, placing deterministic views of teaching ability. Finally, the teacher-student needs gap was addressed through shared reflection on learner diversity. Teachers reported that the PLCs enabled them to reconsider student differences, allowing for a more nuanced understanding of learners' possibilities.

The PLCs served as both literal and metaphorical bridges—linking knowledge systems, transforming practice, and reconfiguring professional identities. Being considered through Harambee, the collective efforts of teachers reimagined inclusion not as a policy mandate but as a shared pedagogical commitment. While these findings underscore the potential of contextually grounded, peer-driven professional learning to effect meaningful and sustainable change in inclusive education practices within South African full-service schools, there is need to also consider what challenges limit their success.

Barriers to Effective PLCs for Inclusive Education

The success of PLCs at City Primary may offer a glimpse of what is possible in other contexts. However, adoption of the model requires a critical adoption that is context sensitive. Time constraints limit many schools for allocating time for professional learning (Kariuki & Guantai, 2020). Collaboration with an external partner provided teachers at City Primary School with theoretical knowledge with which the teachers could engage and critique. However, externally imposed innovations without teacher involvement could limit long-term effectiveness especially when a top-down implementation process by ministries or NGOs without local adaptation. In Zambia, educational programmes supported by donors collapsed post-funding due to disengagement (Meki Kombe & Herman, 2017). Such approaches contradict the participatory ethos of PLCs, which require teacher agency to address context-specific inclusion challenges. Without local buy-in, PLCs could struggle to sustain inclusive education reforms. Co-designing PLCs with local stakeholders would enhance the contextual relevance. Such an approach honours indigenous knowledge systems, and fosters culturally responsive inclusion (Phasha et al., 2017). In the spirit of Harambee PLCs can advance inclusive education in Africa by fostering teacher collaboration and adaptive expertise. Without intentional localization and sustained investment, PLCs risk becoming another superficial reform rather than a catalyst for equity.

Despite the alignment of Harambee and Ubuntu with inclusive education ideals, several challenges hinder their implementation in competitive school environments. Akabor and Phasha (2022) highlight that many South African schools prioritise individual achievements, such as top grades and awards, which can marginalise students who may not excel in traditional academic metrics but have other valuable skills and perspectives. The practice of publicly recognising only high-achieving students can create hierarchies and feelings of exclusion among other learners, undermining the inclusive principle that every student has worth and potential. Educators may unconsciously perpetuate exclusivity by favouring certain students or teaching methods that do not accommodate diverse learning needs, thereby conflicting with the inclusive values of harambee and Ubuntu. While educational policies may advocate for inclusivity, the actual practices within schools often reflect competitive and individualistic values, creating a gap between policy intentions and classroom realities.

Implications for Inclusive Education

The findings affirm that collaboration is foundational for inclusive pedagogy. The PLC structure provided more than a forum for discussion; it created a professional community wherein shared responsibility for learner diversity became embedded in everyday practice. Moreover, collaboration enhanced teachers' confidence and reduced the isolation often experienced when addressing complex learner needs individually. Through collective learning, teachers enacted a culture of support and adaptability—key pillars for the sustainability of inclusive education reforms. However, sustaining such collaboration requires consistent facilitation, institutional support, and recognition of collaborative work as a core element of professional practice rather than an "add-on" to individual teaching responsibilities.

Conclusion

This study highlights how Professional Learning Communities (PLCs) can be a viable model for teacher development for inclusion. By showcasing how teachers co-create knowledge and collaborate, and considered within a lens of Harambee it offers a framework that can be adapted to change perceptions about inclusion and bridge support systems for inclusive education. However, for PLCs to achieve their transformative potential, systemic barriers must be addressed. School leadership, policy frameworks, and resource allocations must prioritise sustained professional collaboration to facilitate teacher professional learning within the school that relates closely to teachers' realities.

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Improving Inclusionary Practices of Teachers with Co-teaching and Universal Design for Learning

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Abstract

This paper examines the current literature describing the inclusionary practices of co-teaching and Universal Design for Learning (UDL). The presentation will include current qualitative data, the limited quantitative student data, and the challenges to implementing these inclusionary practices. Furthermore, we will examine the self-efficacy of both general and special educators in implementing co-teaching and Universal Design for Learning (UDL). We will discuss the need for data collection methods to ensure that teaching practices, such as co-teaching and Universal Design for Learning (UDL), are implemented with fidelity and result in increased academic and social skills for all students. The challenges in collecting valid and reliable student data will also be explored. Lastly, based on the current research, the extant literature substantiates utilizing co-teaching and UDL to support teachers' implementation of inclusionary practices.

Keywords: inclusion, co-teaching, Universal Design for Learning (UDL), teacher self-efficacy, fidelity measures, student outcomes

Introduction

Researchers have explored the significant themes of inclusion, co-teaching, Universal Design for Learning (UDL), teacher self-efficacy, and measurement of student outcomes for several decades. Initial research on co-teaching originated in the 1990s, while research on UDL began in the early 2000s. In that time, co-teaching has been described extensively; however, strategies for effectively implementing co-teaching practices have yet to be examined to the same extent (Hackett et al., 2021). Moreover, UDL has also been analyzed in the research. Although some evidence supports its efficacy, there are barriers to its implementation. Teachers report challenges with independently implementing UDL in a classroom of diverse learners (Israel et al., 2022). This proceeding will delve into the history, benefits, and barriers of each framework, laying the foundation for considering the challenges associated with each framework. Moreover, the proceeding will examine how the benefits of each alternative framework support each other, resulting in increased outcomes for all students within the inclusive classroom.

The literature reviewed includes an examination of research predominantly from the past five years on inclusion, co-teaching, universal design for learning (UDL), measuring student outcomes, and teacher self-efficacy. Information was garnered through database searches as well as organization websites that provide information and research on co-teaching and UDL practices. Additionally, websites with current federal mandates and statistics were also accessed. A myriad of articles, books, and resources were read and reviewed. These are included in the literature review to provide a full scope of the current landscape of inclusionary education, co-teaching, and UDL practices.

Inclusion

Teacher training in inclusionary practices is essential to appropriately and effectively include diverse learners in the general education classroom. A literature review conducted by Tümkaya and Miller (2020) supports that successful training increases teachers' self-efficacy toward including students with special needs. Additionally, training both general and special educators about inclusion and the appropriate interventions to implement for successful inclusion is critical. In research conducted by Crispel and Kasperski (2021), teachers struggled to meet the needs of diverse learners before training in instructional methods and strategies specifically designed to support all students in an inclusive classroom. Without support, students in the general education classroom may not make the same academic or social gains as those in classrooms where teachers are trained to implement

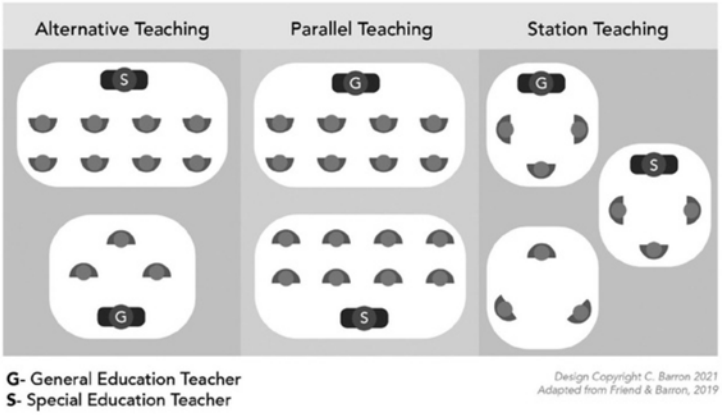
individual goals in a general education setting (Weiss et al., 2020). According to Weiss et al. (2020), specially designed instruction must be implemented for students with special needs to demonstrate growth in the general education classroom. Thus, including students with special needs involves increased training and planning to make meaningful changes in special education placements.

Defining Co-teaching

Co-teaching, team teaching, teaming, and collaborative teaching are some of the names given to the practice of two teachers delivering content to a classroom of students. Co-teaching is defined as common instruction provided by two professionals in a shared space to a population of diverse learners (Cook & Friend, 1995). Moreover, according to Lochner et al. (2019), truly effective co-teachers plan, teach, and evaluate student progress together. Two professionals sharing a space and a group of students allow for the unique collaboration of both professionals to better provide for the increased diversity within the general education classroom. Co-teaching requires teachers to collaborate in creating a structure that effectively utilizes each teacher's expertise to educate a diverse student population (Bauler & Kang, 2020). A co-teaching framework aims to increase inclusionary practices to accommodate a range of student skill levels in general education classrooms today.

Co-teaching offers a viable modality to include students with special needs in the general education classroom. It is the collaborative effort of special and general educators teaching the general education curriculum in a shared classroom of students of varying abilities, including students identified with special needs (King-Sears et al., 2021). The benefits for both students and staff in a co-taught classroom have been documented in the literature (King-Sears et al., 2021; Lehane & Senior, 2020). Benefits include increased acceptance of a variety of learners with different skills and abilities as well as social cohesion (Jortveit & Kovač, 2022), increased learning, cohesive instruction, collegial support, and increased engagement among students and staff (Casserly & Padden, 2018; Lochner et al., 2019; Vembye et al., 2023).

Figure 1
Models of Co-teaching



Co-Teaching Challenges in Implementation

There has been extensive research on co-teaching over the past twenty years. Although viewed as a promising practice to increase the inclusion of students with special needs, the literature has identified many barriers that inhibit the widespread use of this model. These barriers include a lack of administrative support, limited time to co-plan, teacher compatibility, a lack of training in the co-teaching model, and the rigidity of the general education curriculum (Montgomery & Akerson, 2019; Rabin, 2020; Somma, 2020; Tiernan et al., 2020). Research has primarily focused on the in-depth description of the barriers that hinder the successful use of co-teaching. Meanwhile, the literature on co-teaching components that support its successful implementation is limited (Hackett et al., 2021). The successful implementation of co-teaching requires understanding and mitigating the barriers that may arise.

Administrative support for co-teaching and inclusionary practices is crucial in implementing this teaching model. A supportive administration helps ensure teachers are afforded the co-planning time necessary for successful co-teaching (Bauler & Kang, 2020). Co-teaching and co-planning require teachers' time for efficacious co-teaching. Thus, co-teaching will not be implemented successfully without the appropriate time for co-teachers to plan. A lack of administrative support for the planning and collaborative time required for co-teaching is cited as a barrier to the implementation of co-teaching (Bauler & Kang, 2020). Furthermore, administrative support helps to foster a culture of inclusivity within a school (DeMatthews et al., 2020). The practice of co-teaching and genuine inclusivity necessitates adjustments to how schools teach, effectively utilize teachers' time, and perceive students with special needs.

Co-planning, co-assessing, and co-teaching require teachers to work together in a collaborative union, sharing space and ideas to foster effective collaboration. The compatibility of teachers to share space, students, teaching, and planning time requires that both professionals have the interpersonal skills needed to work collaboratively in a shared classroom. Although teachers may be assigned together, this does not account for the relationship that must be cultivated between two teachers who will collaborate daily (Hackett et al., 2021). Teachers have historically taught in isolation with little input from others, let alone having another adult in the classroom. This may create an unwelcome dynamic that results in the special educator being placed in an inferior role to the general educator (Hackett et al., 2021). Therefore, teacher parity must be reasoned when considering co-teaching.

A substantial challenge to implementing co-teaching and including students with special needs is the lack of professional training. Teachers are ill-prepared to work in inclusive settings (DeMatthews et al., 2020; Tümkaya & Miller, 2020). Furthermore, teachers often lack training in collaborative teaching models. This is evident in the lack of collaborative practices taught at the preservice level (Rabin, 2020). Both special and general educators receive training in their respective fields, but each receives very little training in the other domain (Kaczorowski & Kline, 2021). These factors inhibit the ability and desire to implement co-teaching models. Lack of teacher training can create significant barriers to initiating and successfully implementing co-teaching models. Working effectively and collaboratively with a diverse group of students in coordination with another professional may inhibit implementing co-teaching because very few educators receive co-teaching training (Kaczorowski & Kline, 2021; Montgomery & Akerson, 2019). Thus, the lack of training in co-teaching and inclusive practices may inhibit the ability and willingness to attempt collaborative teaching models. Moreover, when teachers do not receive appropriate training, co-teaching may result in students and staff merely sharing space while not truly changing instructional design to better meet the needs of a diverse group of learners.

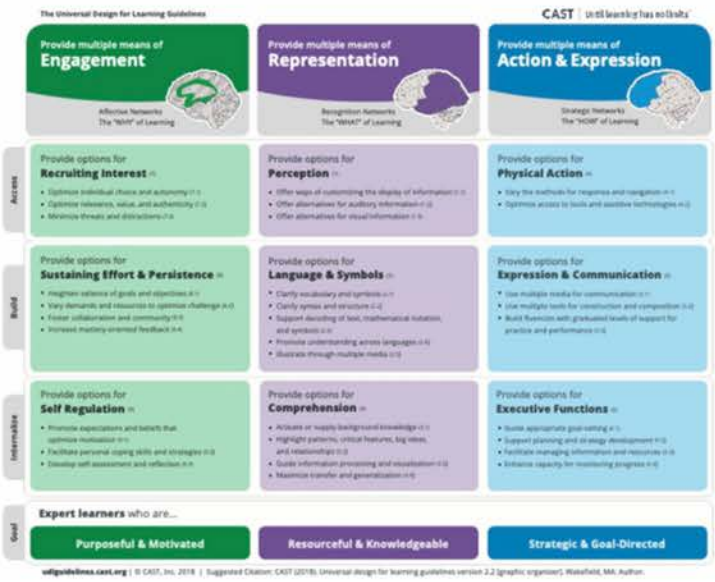
The rigidity of the general education curriculum continues to be a barrier to including students with special needs. According to Lubin and Fernal (2022), the general education curriculum is challenging to differentiate and diversify. By having the special educator in the general education classroom, the special educator can make the necessary modifications to the curriculum. In research conducted by Somma (2020), teachers reported difficulties with developing a curriculum that meets the needs of all learners. Implementing UDL may mitigate some of the barriers, particularly in curriculum modification, inherent in co-teaching alone. Conversely, co-teaching may help reduce some of the obstacles to UDL identified in the research.

Defining Universal Design for Learning

Universal Design for Learning (UDL) is an educational framework that supports accommodating learning diversity within the general education classroom. UDL has three components for learning: multiple means of engagement, representation, and action and expression (CAST, 2022). These three pillars of UDL guide educators in designing lesson plans for diverse learners. The pillars ensure that students are presented with materials that engage them, are represented in a manner that the student understands, and have opportunities to express their learning. The UDL framework presents pillars, guidelines, and checkpoints that prompt flexibility in lesson planning, lesson execution, and assessments to meet learner variability best (Craig et al., 2022). In this way, UDL focuses on student accessibility to learning through educational practices rather than on the strengths or limitations of the student (Lambert et al., 2021). It is by assessing how teaching will engage and be understood by the learner and allow the learner to express knowledge that UDL shifts to focus from barriers within the learner to barriers within the environment and curriculum.

Figure 2

Universal Design for Learning Pillars and Checkpoints (CAST, 2022).



UDL Challenges in Implementation

Despite being a highly regarded practice with a growing body of research to support it, implementing UDL practices has limitations. One of the challenges in the application of this framework by general educators is the difficulty of integrating UDL with curriculum content (Israel et al., 2022; Zhang et al., 2024). Lesson planning and ensuring that the lesson's content is embedded in teaching activities are a significant focus for teachers. UDL requires that teachers account for many other aspects besides teaching the content. In addition to the planning required to teach the curriculum content, the UDL checkpoints prompt teachers to consider engagement, accessibility, and the demonstration of knowledge. In research conducted by Israel et al. (2022), teachers with less experience in the curriculum struggled more to implement UDL principles in their teaching. This may be due to the added responsibility placed on the general education teacher to implement the general education curriculum while also making the UDL modifications necessary for the diverse learners in the class. Moreover, according to Boysen (2024), the focus on learner diversity rather than universality may create challenges for implementation. The emphasis on learning diversity may lead to cumbersome and time-consuming curriculum planning. Ultimately, UDL aims to increase access to the curriculum, resulting in improved learning and measurable outcomes; however, addressing the pillars and checkpoints may create an undue burden for a single teacher.

Implementing UDL with Co-teaching

Researchers continue to cite that placing students with special needs in the general education classroom is insufficient to improve outcomes for this population. Special educators and special education interventions are not consistently or effectively incorporated into the general education classroom (Weiss & Glaser, 2021). However, applying UDL in the co-teaching framework may decrease the independent barriers that each framework presents. King-Sears & Johnson's (2020) research revealed increased test scores for students in co-taught UDL classrooms. The continued exploration of these two frameworks used in tandem may provide a viable approach to improving the inclusion of all students in the general education classroom.

Co-teaching through the lens of UDL may enhance the practice of co-teaching by allowing teachers to work as a team. Using co-teaching with the UDL framework, general and special educators share a common language to support the curriculum and teaching. General and special educators often possess separate and distinct roles within the general education classroom. The special educator is typically responsible for managing and educating students with special needs. The general educator is the content expert responsible for general classroom instruction (Lindacher, 2020). These are essential factors to consider in supporting the combination of co-teaching and UDL. The two instructional methods may help limit each framework's barriers when implemented independently (Murawski & Ricci, 2019). Therefore, modifications to meet individualized needs are the responsibility of the special educators for students with special needs. However, based on the research on which the UDL framework is founded, no two learners are the same; thus, all learners require individualized education that meets each student's unique needs (Nelson & Basham, 2014). Viewing co-teaching through the lens of UDL enables both professionals to look at all students through the same lens, creating innovative and specialized programming that addresses the diverse ways each student learns and demonstrates their learning.

UDL provides a framework to mitigate barriers to co-planning and co-teaching, offering a structure that benefits all learners. Implementing the UDL framework in co-planning would provide practitioners with a schema to co-plan and implement the curriculum (Murawski & Ricci, 2019). Moreover, the training of general and special educators in UDL aids in their ability to co-plan and modify curriculum to meet the needs of all learners. The use of UDL by the general educator alone remains challenging (Israel et al., 2022). However, co-teaching through the lens of the UDL model suggests that teachers share a theoretical framework, such as UDL, and work as a team to plan and instruct all learners in an inclusive setting, resulting in improved outcomes for all learners. Research supporting the use of co-teaching and UDL in an ELA classroom has shown promising results. Research conducted by King-Sears and Johnson (2020) indicated that students in co-taught general education chemistry classes that utilized UDL demonstrated higher scores compared to students taught using UDL in self-contained settings. Therefore, it is theorized that this is an area worthy of further exploration as a model for teaching in increasingly more diverse classrooms.

Implementing UDL and Co-teaching with Fidelity

The lack of operationalization is a barrier to the successful implementation of the co-teaching and UDL models. Researchers continue to develop tools that accurately capture the factors influencing successful co-teaching and Universal Design for Learning (UDL). According to King-Sears et al. (2023), much of the co-teaching research failed to measure the fidelity of the co-teaching implementation. Similarly, measures of fidelity of the implementation of UDL are infrequent in the literature. A limitation of the UDL model is the difficulty of operationalizing the aspects of the UDL framework that result in its success (Basham et al., 2020; Zhang et al., 2024). Developed by Basham et al. (2020), the UDL Observation Measurement Tool (UDL-OMT) is a valid and reliable UDL fidelity measurement tool, while the Colorado Assessment of Co-teaching (CO-ACT), developed by Adams et al. (1993), is a valid and reliable scale utilized to measure the implementation fidelity of co-teaching.

Identifying UDL in practice may be challenging. The lack of specificity in identifying the uniqueness of UDL practices has prompted researchers to develop measures of fidelity that place both guidelines on the implementation of UDL and measure its efficacy (Basham et al., 2020). According to King-Sears et al. (2021), there is a need for an operational definition of UDL. Because UDL is so broad in scope, it may be ubiquitous and thus challenging to define and implement with fidelity. Basham et al. (2020) sought to operationally define UDL and determine if a certain level of implementation makes UDL unique and compelling. In research conducted by Basham et al. (2020), researchers developed and examined the use of the UDL-OMT. The UDL-OMT is a tool designed to measure the fidelity of implementing UDL in classrooms. The UDL-OMT shows promise in its ability to measure the implementation of UDL and thus allow for an operational definition of UDL for educators.

Although it may be easier to identify the use of co-teaching in classrooms, effective co-teaching models can be more challenging to recognize. There are several models that co-teachers can use when co-teaching. Alternative, parallel, and station teaching are three formats for co-teaching. The most common model between general and special education co-teachers is the one teach, one assist model (Iacono et al., 2021). One-teach, one-assist can be described as the general education teacher leading the instruction and the special educator assisting students. Although this is the most common, it has been identified as the most ineffective (Iacono et al., 2021). Unfortunately, this often becomes a situation where the special educator's role resembles that of a classroom aide more than that of a lead instructor. Relying solely on a one-teach, one-assist model may result when teachers do not have the opportunity to co-plan (Strogilos et al., 2023). Thus, co-planning and co-assessing become necessary components of the co-teaching model.

The CO-ACT (Adams, 1993) is a tool designed to identify effective implementation of co-teaching. The CO-ACT is considered a reliable scale designed to measure the teacher's perception and demonstration of the critical components of co-teaching (Lehane & Senior, 2020). The CO-ACT evaluates five domains critical to successful co-teaching: personal prerequisites, the professional relationship, classroom dynamics, contextual factors, and universal evidence. Although implementing both co-teaching and UDL with fidelity is a critical aspect of program planning, measuring student outcomes is equally important. Additionally, it may be important to consider how student outcomes will be systematically measured before, during, and after the teacher frameworks are implemented.

Measuring Student Outcomes

Measuring student outcomes to gauge program efficacy is critical to ensuring worthwhile educational practices. Unfortunately, there is limited quantitative data to support the efficacy of co-teaching as it relates to student outcomes (Barron & Friend, 2024; Lehane & Senior, 2020). Although research investigating student outcomes in classrooms where the UDL framework is applied has been positive (Craig et al., 2022; King-Sears & Johnson, 2020; Yu et al., 2021), it is still currently limited.

Standardized assessment scores inform schools and districts about the efficacy of program implementation and teaching methodologies. Schools have utilized co-teaching and UDL as instructional methods; however, there is limited standardized assessment data to support their efficacy (Craig et al., 2022; King-Sears et al., 2021; King-Sears et al., 2023; Murawski & Ricci, 2019). Standardized assessment data to support the use of co-teaching and UDL in conjunction is needed to facilitate the widespread application of these frameworks. Therefore, in developing and implementing inclusionary frameworks, it may be advantageous to create measures that will provide baseline data and continue to measure student progress during program implementation.

Self-Efficacy of Teachers Implementing Co-teaching and UDL

Self-efficacy is a theory developed by Albert Bandura (1977). It refers to a person's perception of their ability to affect and influence the environment, people, and events around them (Arias-Pastor et al., 2024). Self-efficacy may contribute to teachers' ability to implement both co-teaching and UDL frameworks with fidelity, thus theoretically increasing student outcomes and achievement. Albert Bandura (1977) theorized that an individual's degree of self-efficacy may predict their perception of the impact they have over external factors. Thus, a higher self-efficacy may lead a teacher to believe that the interventions used in the classroom have a direct and meaningful impact on students. Moreover, some theorists suggest that increased training and knowledge may positively correlate with teacher self-efficacy (Woodcock et al., 2022; Wray et al., 2022). According to Bandura, four factors influence self-efficacy: mastery, experience, social persuasion, and individual physiological and emotional factors (Korkmaz & Unsal, 2016). Research conducted by Arias-Pastor et al. (2024) revealed that teachers with higher self-efficacy were more likely to adopt evidence-based practices and interventions that enhanced student engagement and outcomes. Moreover, research has also shown a positive correlation between teacher self-efficacy and student outcomes (Burić & Kim, 2020; Lacks & Watson, 2018). Therefore, it may be advantageous to pursue methods that enhance teacher self-efficacy as a means to improve student outcomes.

Teachers who receive training in co-teaching and UDL may demonstrate higher self-efficacy in response to their training. According to research, teachers with co-teaching training demonstrate increased self-efficacy compared to teachers without co-teaching training (Colson et al., 2021; Sasson & Malkinson, 2021).

Moreover, research conducted by Sala-Bars et al. (2024) revealed that teachers' self-efficacy indicated their willingness to create inclusive classrooms and employ the UDL framework. There is limited research regarding both co-teaching and UDL and teacher self-efficacy. However, increased UDL and co-teacher training may contribute to increased teacher self-efficacy, which impacts the inclusionary practices of students with special needs.

Recent research regarding teaching methods, co-teaching, UDL, and teacher self-efficacy will be examined. New data from doctoral research will be presented. The current doctoral research will investigate whether, and to what extent, there is a statistically significant difference between teaching methods (UDL vs. co-teaching) in teacher self-efficacy among elementary school teachers (K-5) in the US. The barriers to the widespread implementation of co-teaching and UDL frameworks may begin with an understanding of increased teacher self-efficacy as a result of being trained in these models.

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Navigating Change: A Systematic Review of the Implications of Competency Based Curriculum on Special Needs Education in Kenya

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Abstract

Kenya shifted from the Content-Based 8-4-4 curriculum to the Competency Based Curriculum (CBC) in January 2019. CBC emphasizes learner outcomes, fosters essential competencies such as critical thinking and collaboration, and utilizes a learner-centred approach making it suitable for learners with special needs. However, curriculum implementation challenges can lead to undesirable impact on special needs education. This systematic review sought to establish the implications of the switch to CBC on special needs education in Kenya. A comprehensive search conducted via Google Scholar yielded 107 academic articles, of which only three primary studies met the predetermined inclusion criteria. This is an indication that research CBC implications on special need education is still at the infancy stage despite six years of CBC implementation. All the three articles utilized the mixed method approach, were grounded in different theories and were conducted in diverse geographical locations. However, all the studies focused on primary schools and thus there is limited understanding of CBC implication on special needs education in junior schools. Findings of the studies reveal four key themes: inadequate educators' preparedness, difficulties in addressing diverse learner needs, inadequate resource availability, and the crucial role of school leadership. Results indicate that special needs teachers often possess a moderate understanding of CBC, face resource deficiencies, and experience challenges in adapting instructional strategies effectively. Despite the promising framework of CBC, the current implementation challenges have hampered its potential to improve special needs education. Consequently, this article emphasizes the urgent need for enhanced teacher training programmes, increased accessibility to educational resources, and the empowerment of school leadership to enhance the implementation of CBC in a way that creates an inclusive educational landscape.

Keywords: Competency-Based Curriculum, special needs education, Kenya, systematic review, inclusive education.

Introduction

A competency-based curriculum (CBC) is a curriculum that emphasizes what learners are expected to do rather than mainly focusing on what they are expected to know (Kabita & Ji, 2017). It emphasizes on the development and application of values, personal traits, attitudes, knowledge and skills in real life contexts. It aims to inculcate core competencies like communication and collaboration, problem solving and critical thinking, creativity and imagination, learning to learn, citizenship, self-efficacy and digital literacy (Sifuna & Obonyo, 2019). It utilizes learner-centred pedagogical approaches like role play, case studies, projects, problem solving, active learning and study visits. These pedagogical approaches help to create learners who are holistic, creative, innovative, cooperative, and analytical within their communities and nations (Mpofu & Sefotho, 2023).

CBC was adopted in Kenya in January 2019 under the 2-6-3-3-3 system following a needs assessment done in 2016 and the desire to make learning more meaningful (Kabita & Ji, 2017). It was noted that 8-4-4 content-based curriculum had become too rigid offering little opportunities for aligning education with the needs, abilities, aptitude and interests of learners (Sifuna & Obonyo, 2019). The system served those who scored high grades in traditional subjects like Mathematics, English, Sciences, and Humanities. CBC sought to address these limitations and integrate contemporary issues like global citizenship, health education, life skills and value education, sustainable development, and community service (Matere, 2024).

At the core of the CBC is the need to nature the potential of every learner including learners with special needs. The CBC framework provides a structure for educating learners with special needs that begin with the assessment to determine whether a learner needs to be placed in a special school, special unit, regular school or home-based programme (Kabita & Ji, 2017).

Some learners with special needs like learning disabilities, mild cerebral palsy, visual and hearing impairment were expected to follow the regular curriculum with adaptations. Other cases like talented or gifted learners were to be provided with an enriched curriculum that ensures they are fully engaged and empowered (Kiambati et al., 2023). It was envisioned that the flexibility of the CBC pathway for every learner will enable learners with special needs to assume their rightful place in society. CBC also proposed the adaptation of evaluation methods to suit the needs of individual learners with special needs.

Although CBC is in concept expected to have positive implications on special needs education, implementation challenges can lead to undesirable outcomes. Mpofu and Sefotho (2023) found that the implementation of CBC in Zimbabwe did not have desired impact on learners with special needs because of negative attitude from teachers and community members towards learners with special needs, inadequate teacher preparation for CBC implementation, inadequate resources, and lack of collaboration from major stakeholders. These challenges hampered the provision of competency-based education (CBE) to learners with special needs. In Kenya, Sifuna and Obonyo (2019) observed that most primary schools did not have braille materials and lacked specialized training for different learning areas while the syllabus for special needs learners had been availed to schools. Despite such limitations, it is not clear how the implementation of CBC has impacted special education needs in Kenya. Available studies on this issue are obscure and fragmented. It is in this regard that this study sought to review empirical studies on the implication of CBC on special needs education in Kenya with the view of establishing the current status of research on this issue and synthesize evidence to present it on a single platform.

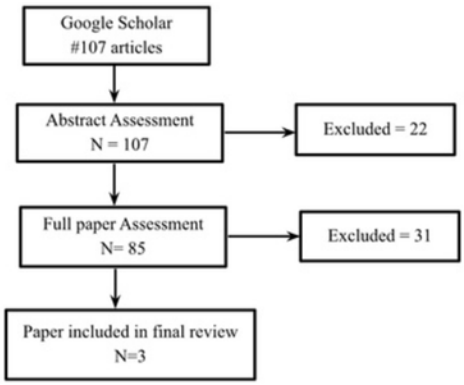
Methodology

A search was conducted on the Google Scholar academic search engine using the search string: "Competency based curriculum" OR "Competency based education" OR "special education" OR "special needs" AND "Kenya". The use of Goggle Scholar over other academic search engines was motivated by the global accessibility of this engine that allows the inclusion of studies from various countries including developing countries like Kenya (Achenbach et al., 2022). Amboka et al. (2024) noted that Google Scholar enhances the discoverability of African research articles. The search yielded 107 results that were appraised using the following inclusion criteria:

a. Article had to be documenting primary research
b. Article had to be published in English
c. Article had to be specifically addressing the impact on CBC on special needs education in Kenya

Only three articles met the inclusion criteria and were included in the final review. The remaining 104 articles were excluded because they were either not relevant to review topic, not primary research articles, duplicates of already selected articles, or not published in Kenya.

Figure 1
Article Appraisal Process



Data was extracted from the three articles using an Excel data extraction template. The template extracted information on theory used, research approach, research design, target population, method of data collection, method of data processing, and study findings.

Results

The literature search and appraisal process led to identification of three studies that meet the inclusion criteria. The low number of eligible articles suggests that research on implications of CBC on special needs education in Kenya as at its infant stage. Little research has been done to explore this relationship despite the implementation of CBC for over six years.

General Characteristics of the Studies

The general characteristics of three studies that met the inclusion criteria were analysed in terms of research approach, research design, theory, geographical location, and participants' categories, methods of data collections and methods of data analysis. Table 1 summarizes this information.

Table 1

General Characteristics of Reviewed Studies

Characteristic	Categories	Frequency	Percent
Research approach	Mixed-method	3	100.0
Research design	Convergent parallel mixed-method	2	66.7
	Convergent embedded mixed-method	1	33.3
Theories	Constructivism theory	1	33.3
	Competency-based education theory	1	33.3
	Theory of complexity and education	1	33.3
Geographical location	Nairobi County	1	33.3
	Kapsaret Sub-County, Uasin Gishu County	1	33.3
	Rarieda Sub-County, Siaya County	1	33.3
Education level	Primary school	3	100.0
Participants	Headteachers	2	67.7
	Teachers	3	100.0
	Non-teaching staff	1	33.3
	Learners	1	33.3
	Education officers	2	67.7
	Parents	1	33.3
Data collection methods	Questionnaires	3	100.0
	Interviews	2	67.7
	Observation	1	33.3
Data analysis methods	Descriptive statistics	3	100.0
	Thematic analysis	3	100.0
	Pearson chi-square test	1	33.3
	Pearson correlation	1	33.3

As Table 1 illustrates, all the three studies (100%) used the mixed method research approach that combine numerical data with rich experiential data. Mixed method is a popular research approach in education research involving complex topics. Combining numerical and experiential data enables researchers to capture a complete picture regarding the implementation of CBC and its impact on special needs education. Regarding research design, two studies representing 66.7% of all reviewed studies utilized convergent parallel mixed research design while one study (33.3%) utilized the embedded mixed-method design. Both designs entail collecting qualitative and quantitative data separately and integrating them at the interpretation stage. The only difference is that the convergent parallel mixed methods research design gives equal weight to both qualitative and quantitative methods while the embedded design give more weight to the quantitative methods and only embed qualitative methods to enrich the study (Creswell & Creswell, 2023). The dominance of the convergent parallel design suggests that researchers give equal importance to both approaches.

All three studies were anchored on a theory with the first study utilizing the constructivism theory, the second made use of the competency-based education theory, and the third employing the theory of complexity and education. This finding highlights the theoretical frameworks guiding the research on CBC implementation's effect on special needs education. The use diverse theoretical perspectives have broadened the discourse regarding how CBC has impacted special needs education in Kenya. It highlights the diversity of thoughts among the researchers in analysing this research issue. The studies were conducted in different parts of the country. The first was conducted in Nairobi County, the second in Kapsaret Sub-County in Uasin Gishu County and the third in Rarieda Sub-County in Siaya County. This showcase the contextual diversity of research on CBC influence on special needs education, which enhances the generalizability of the findings. However, all the three studies focused on primary schools limiting generalization of findings to other school levels like junior schools.

Table 1 further shows that the studies involved diverse participants with all three studies (100%) involving teachers and two studies (66.7%) involving headteachers and education officers. Non-teaching staff, learners, and parents were involved in at least one of the studies. This illustrates that the research incorporates the perspectives of multiple stakeholders allowing for comprehensive understanding of the impact of CBC on special needs education. Three studies made use of questionnaire to gather information, two (67.5%) used interviews and one (33.3%) used the observation method. All three studies made use of descriptive statistics and thematic technique to analyse data while the Pearson chi-square and Pearson correlation tests were used in one study each. The diversity of methods of data gathering and processing also signifies the rigor of research on CBC implications on special needs education in Kenya.

Synthesis of Findings

The findings of the three studies were scrutinized to shed light on how CBC has impacted the special needs education in Kenya. Table 2 presents a summary of the findings of the studies.

Table 2

Summary of Findings

Article	Objective	Key Findings
Andiema (2020)	To examine the capacity that special needs teachers in Kenyan primary schools have towards implementation of CBC in lower primary school	SNE teachers had moderate capacities related to comprehension of the CBC curriculum and preparedness in implementing its content. Major deficiencies were noted in relations to the teachers understanding of behaviour management of special needs learners in a regular classroom and training competencies on CBC in inclusive settings. In implementation, deficiencies were noted in the organization of relevant material resources in an inclusive classroom to meet CBC objectives and use of teaching methods that meet the needs of SNE learners. Enrolment of special need learners was low due to inability of the teachers to provide requisite support to these learners.
Anyango et al. (2024)	To examine the contribution of headteachers in primary special schools to the implementation of the CBC	In most schools, there is moderate level of teacher morale, effective teaching resource utilization, moderate communication and collaboration among teachers, moderate satisfaction with administration response to teachers' challenges, moderate satisfaction with teaching methods, and low satisfaction with how learners with special needs were adapting to the learning environment and the institution effort to meet the needs of diverse learners. There is a positive moderate correlation between contribution of headteachers in primary special schools and the implementation of CBC
Owino et al. (2020)	To examine the influence of adaptation of instructional methods on the implementation of CBC for early years learners with disabilities in primary schools in Nairobi County	There was low application of alternative instructional methods for teaching learners with disabilities in regular classes. Instructional methods were not adapted for learners with disabilities during the implementation of CBC for greater improvement in learning in regular classes. Adaptation of instructional methods was slightly higher in public than private schools. There was also low usage of assistive technologies like videos, computer instructions, radios, note takers, acoustic walls, and sound filled systems among others. Teacher with high instructional adaptation for learners with disabilities scores also had significantly higher scores in CBC implementation in regular classroom. This implies that adaptation of instructions for learners with disabilities enhances implementation of CBC in regular classrooms

The findings of the three studies reveal four interconnected themes regarding the impact of implementing CBC in Kenya on the special needs education. The following themes emerge from the synthesis of findings.

Capacity and Preparedness of Educators

The study by Andiema (2020) found that special needs teachers exhibited moderate levels of understanding of the CBC curriculum. Major deficiencies were noted in relations to the teachers understanding of behaviour management of special needs learners in a regular classroom. The teachers also had a moderate understanding of how best to implement the CBC curriculum However, there were deficiency in the organization of relevant material resources in an inclusive classroom to meet CBC objectives and use of teaching methods that meet the needs of SNE learners. Similar findings were recorded Owino et al. (2020) who observed that there was low application of alternative instructional methods for teaching learners with disabilities in regular classes as well as low usage of assistive technologies. This finding is worrying when considering that the study was conducted in the capital city as it suggests that schools in the rural and far flung areas may be worse off. Andiema (2020) also found a knowledge gap on effective implementation of CBC in inclusive settings. This knowledge gap hinders their ability to address the diverse needs of learners with special needs, resulting in inadequate instructional strategies and support. This theme underscores the critical need for professional development and training that address the unique challenge of special needs teachers.

Challenges in Meeting Diverse Learner Needs

Across all three studies, a consistent theme emerged regarding the difficulties in meeting the needs of diverse learners within the CBC framework. Low enrolment rates of special needs learners due to inadequate teacher support (Andiema, 2020) and low satisfaction with institutions' responses to diverse needs (Anyango et al., 2024) illustrate systemic challenges. Low levels of adaptation in instructional methods for teaching learners with disabilities in regular classrooms, as well as limited use of assistive technologies observed by Owino et al. (2020) are also an indication of the schools incapacity to meet the needs of diverse learners with special needs. This theme highlights the need for systemic change in how educational institutions approach inclusivity and support for special needs students. There is need to enhance resources, training, and policy to address deficits that limits the schools ability to meet the need of diverse learners.

Resource Availability and Utilization

The studies also revealed issues related to the availability and organization of teaching resources, particularly for inclusive classrooms (Andiema, 2020). Many teachers struggled to find and utilize appropriate materials essential for supporting diverse learners effectively. Additionally, Owino et al. (2020) emphasized the scarcity of assistive technologies, which are crucial for facilitating learning among students with disabilities. This lack of resources not only impedes effective instruction but also compromises the educational experiences of learners who require tailored support, ultimately affecting their academic success. A focus on improving access to and the effective utilization of educational resources is critical. Ensuring that schools are equipped with the necessary tools can facilitate better engagement and learning outcomes for all students.

Role of School Leadership

The study by Anyango et al. (2024) showed that school leaders have a major role to play in ensuring that the implementation of CBC delivers the intended outcomes to learners with special needs. The study found that school leadership has a major influence on teachers' morale, teachers' communication effectiveness, and collaboration among teachers. The study also found a moderate satisfaction levels with administrative responses to teachers' challenges reflect an area needing improvement. This indicates the importance of strong leadership in fostering an environment conducive to effective teaching and learning. The findings suggest that headteachers play a crucial role in resource allocation, teacher support, and addressing challenges faced by educators, which can influence the successful implementation of the curriculum. School leaders should focus on building a positive school culture, providing emotional and professional support, and promoting collaboration among teachers can foster better implementation of educational initiatives, including CBC.

Conclusion

The review has highlights that research on the impacts of CBC on special needs education remains in its infancy even after six years of CBC implementation. However, available studies provide a thorough snapshot regarding how CBC has impacted special education in the country. The diverse methodologies employed in these studies, particularly the prevalent mixed-method research approach, underscore the complexity of the issues at hand. The analysis reveals four major themes: the capacity and preparedness of educators, challenges in meeting diverse learner needs, resource availability and utilization, and the role of school leadership. A common thread is the moderate understanding of CBC among special needs teachers, combined with deficiencies in instructional strategies and resource organization. These findings emphasize a pressing need for targeted professional development to equip educators with the skills necessary for effective implementation. The systemic challenges of low enrolment rates and inadequate institutional responses to the needs of special learners highlight the urgent necessity for systemic change. Enhancing the availability and organization of teaching resources, particularly assistive technologies, is crucial for improving educational outcomes. Finally, the pivotal role of school leadership in fostering a supportive environment for both teachers and learners cannot be overstated. Effective leadership can significantly influence resource allocation and the morale of educators, ultimately ensuring that the CBC fulfills its promise of inclusivity and support for all learners. To address these multifaceted challenges, a collaborative effort among stakeholders is essential for creating an inclusive educational landscape in Kenya.

Recommendations

The study recommends the following:

a. Integrate Special Needs Education Components in Teach Professional Development and Training Programmes
The Ministry of Education (MOE), the Teacher Service Commission (TSC), Kenya Institute of Curriculum Development (KICD) and institutions involved in training teachers should develop and implement programmes aimed at equipping special needs education knowledge, skills and competencies among all teachers. These programs should emphasize behaviour management strategies, inclusive teaching methods, and the integration of assistive technologies. These programmes will help address knowledge gaps identified in the studies particularly regarding the lack of capacity and preparedness among teachers to teach learners with special needs. These programmes will foster confidence among teachers, enhance classroom practices, and ultimately improve learning outcomes for students with special needs.

b. Enhance access and utilization of resources
MOE and KICD should develop and distribute adequate resources for special needs education including teaching materials and assistive technologies. Leaders in the schools should also develop innovative strategies for aiding the acquisition of these resources. The school leaders should consider alternative strategies for mobilizing these resources. The school leaders should also formulate and implement strategies for motivating teachers to utilize special needs education resources once they are made available.

c. Strengthen the development of school leadership
The MOE should invest in leadership training programmes for school administrators that focus on educational inclusivity, stakeholder engagement and effective resource management. Empowering school leaders with the skills and knowledge to foster an inclusive environment will positively influence teacher morale and collaboration. Developing strong leadership can enhance the overall educational climate, making it more supportive of both educators and learners, which is essential for successful CBC implementation for learners with special needs.

d. Conduct more research on CBC implications on Special Needs Education
The review has established that research on CBC implication on special needs education is quite thin. Scholars in education sector should consider delving into this issue to provide a more accurate picture of how CBC has impacted special education in different parts of the country. Organizations involved in funding education research should consider prioritizing this research area. More researcher contribute to a deeper understanding of how the CBC affects special needs education, ultimately leading to improved educational strategies and outcomes for all learners.

Limitations of the Study

This review shed lights regarding the current state of research regarding the implication of CBC on special needs education in Kenya. It also synthesizes findings of available studies presenting them on single platform making it easy for policymakers and education practitioners to use. However, the review is not without limitation. First, the literature search was confined to the Google Scholar academic search engine and thus there is a possibility that some studies were left out because they were not discoverable to this search engines. Although Google Scholar is accessible and includes a broad range of literature, it does not always index every relevant academic database or journal (Achenbach et al., 2022). Important studies published in specialized databases or journals may have been overlooked. Second, this review was based on an online search of articles. It is probable that some studies could have been left out because they had not been published online. Third, the review inclusion criteria were quite specific requiring that articles only document primary research focusing on the impact of CBC on special needs education in Kenya. This focus might have excluded relevant literature that addresses related themes, theoretical discussions, or secondary analyses that could provide valuable insights into the implementation or implications of CBC on special needs education.

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Promoting Early Career Success: An Induction Program for New Special Education Teachers

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Abstract

In 2015, we set out to work with one neighborhood in Kenya in an attempt to create a more inclusive community for people with disabilities. It quickly became evident that lack of opportunity in primary school was a key contributor to lack of inclusion in the larger society: if students with disabilities were not being educated to the same degree as their peers, when educated at all, then they were never fully integrated into their communities as they grew up. We learned that there were others already in this community who were as passionate about inclusion as we were. These educators were determined to accept learners with disabilities into their programs so that all children in their communities could attend school. They had the passion for inclusion and wanted to be equipped with the skills and resources to implement it effectively. We were invited to partner with them to develop a solution. In 2016, we introduced our "train the trainer" model by providing in-person and virtual trainings for teachers interested in implementing inclusive practices. Over the last nine years, our model has been adapted and is being implemented across four East African communities. Each program is unique; however, they all share the same foundation that has produced an effective inclusive learning environment: a supportive community, willing teachers, and access to attainable training. This paper is intended to empower educators across the globe who want to teach inclusively, and to provide them with the tools to achieve it regardless of location.

Keywords: inclusive education; train the trainer; accessible resources, global, community

Inclusive education is increasingly recognized as a fundamental human right and crucial for equitable, quality learning for all. In 2006, the United Nations proposed the Convention on the Rights of Persons with Disabilities (CRPD). As part of Article 24 of the CRPD, members agreed to ensure an inclusive education system at all levels (United Nations, 2006a). Exceptional Connections International (ECI) works in two of the East African countries who have signed this agreement: Kenya, who signed in 2007, and Rwanda, who signed in 2008 (United Nations, 2006b). Through our work in each of our partner communities, however, we have found the implementation of inclusive practices to be limited. Barriers we have recognized include lack of educator training, inadequate access to teaching and learning materials, and persistent social stigma surrounding disability. As a result, learners with disabilities are disproportionately excluded from meaningful educational experiences and long-term opportunities. These findings are not just exclusive to East Africa. Overall, teachers around the world lack access to comprehensive training on inclusion, and even in countries where most teachers are trained and qualified, many of them still report a lack of training on inclusion or teaching of vulnerable groups (UNESCO, 2020). Through our work with our partner communities, we are addressing the barrier of insufficient educator training with the goal that improving access to quality training will result in well-equipped teachers, better access to resources, and a more accepting society for all people, no matter where they live in the world.

While our work has specifically focused on educators working in under-resourced communities in East Africa, we are confident it could be successfully replicated in other communities as well. This paper seeks to equip educators with foundational support for building and sustaining inclusive learning environments within their local communities. Additionally, it can be used by educators who are already engaging in inclusive practices and are looking for the sustenance that affirms and amplifies their current efforts. Drawing from survey data, lived experiences, and partnerships with inclusive schools in Kenya and Rwanda, our work examines a public school model of inclusion, highlights effective strategies, and identifies ongoing challenges. By centering the voices and perspectives of educators, it contributes to the broader movement toward inclusive, accessible, and attainable education for all.

Background

The mission of ECI has been, and always will be, this: To remain dedicated to raising awareness for individuals with disabilities through parent empowerment, education, and resource development across the globe, through sustainable efforts. In 2015, we set out to work with one school near Nairobi, Kenya in an attempt to create a more inclusive community for people with disabilities. By 2024, our work had spread to three other communities across Kenya and Rwanda through our school partnership program. We also know that our work has reached communities and educators beyond these neighborhoods over the years through our "train the trainer" model. Our work goes beyond a one-time learning seminar. We are deeply involved in the communities of our partner schools, and plan to be until our support is no longer needed. We have made a long-term commitment to these communities and to people with disabilities and their families across the globe to pave the way for inclusive practices in all corners of the world.

Initial work with our first partner school, along with subsequent work with our additional partners, prompted us to ask: how can we best support teachers in offering inclusive education in their respective communities? The 2020 Global Education and Monitoring (GEM) Report warns that education opportunities continue to be unequally distributed throughout the world. We have seen this firsthand throughout our years spent in East Africa. The lack of educator training for inclusive practices has resulted in learners with disabilities being denied equitable access to educational opportunities in their local schools, contributing to their long-term exclusion from society. Through collaboration with our partners and by following their lead, we have developed a model that continues to be successful within all of the communities where we are working. We have found that inclusive practices can be implemented effectively regardless of location, resources, or circumstance. Three of our partner schools were already implementing inclusive practices when we joined them, and we have had the privilege of supporting our other partner school from the ground up. Each program is at a different stage in the process; each has access to different resources, and each community type varies by region. What they all hold in common is the ability to offer high-quality inclusive education to the students they serve. We believe that all children, no matter their abilities or circumstances, deserve the right to quality education. Furthermore, we believe educators should be equipped with the skills and resources needed to effectively provide that education. Addressing these barriers is essential for ensuring that all students, regardless of ability, are afforded the right to quality, inclusive education and are given equal opportunities to be contributing members to their own communities as they grow up.

Our Objective

In spite of these identified barriers, we found that each community was made up of passionate local educators eager to make change. These individuals became the foundation of our plans and partners to our organization. Our objective became clear: provide the training, tools, and support these educators needed to successfully include all learners in their classrooms with emphasis on the specific, unique needs of each program. Our method is not simply a "one size fits all" approach. Our model can be followed for replication. However, it is crucial that individual community needs be taken into consideration for the best outcomes of each program. This paper outlines the background, development, implementation, and outcomes of our 'train the trainer' model for inclusive education being implemented by our partner schools in East Africa, and it offers insights and recommendations for replicating this success in other regions around the world.

Method

Participants

When we arrived in Kenya in 2015, we could not imagine that the depth of the needs for inclusion and disability awareness would expand ECI's efforts far beyond our first partner community. As the need became more apparent, and other educators expressed interest, we began adapting our model. Our "train the trainer" model, first implemented in 2016 in Kenya has now been adapted for all four of our partners across East Africa with Musanze, Rwanda becoming the fourth partner in 2024. Our partners can be identified as the principals, lead teachers, and/ or founders of each of the schools we work closely with. They are the individuals we primarily work with to carry out our program. Partner School One is located in Kibera, Kenya.

This school serves students ages 3 to 7, and out of their 71 students, 3 of them are identified with having a disability. Partner School Two is located in Kantafu, Kenya; they are currently enrolling students for a new program and serve 3 students with disabilities at this time. They accept students ages 16 and younger. Partner School Three is near Busia, Kenya. Student ages range from 2½ to 9 years and their student population has 7 students with disabilities out of 33 total. Finally, Partner School Four is located near Musanze, Rwanda and educates 39 students, two of which have been identified as having a disability. They serve students ages 3 to 6. It is important to note that all of our partner schools opened as inclusive learning centers when they started their programs and were engaging in inclusive practices when we began working with them.

Train the Trainer Model

To meet the need for sustainable inclusive education, we developed our "train the trainer" model. Rather than relying on one-time workshops, this approach focuses on building local capacity so that knowledge and skills can be passed down through teachers, parents, and community members. Over the last nine years, this model has been designed and adapted to empower local educators within our partners' communities. ECI's team is made up of professional volunteers who donate their time and skills to ensure under-resourced communities do not get left behind. Our team includes educators, behavior specialists, advocates, occupational therapists, speech therapists, and parents, among others who have dedicated their time to providing training in our partners' communities. Our model began with our team working directly with interested participants in the community of Partner School One, Kibera, by conducting annual in-person workshops to build foundational knowledge. Workshops were open to the public and made available to parents, teachers, and other professionals who wanted to increase their knowledge around inclusive practices. These trainings included information on different kinds of disabilities, disability stigmas, increasing community awareness, behavioral management, physical and occupational therapeutic techniques, speech and language supports, classroom accommodations, teaching strategies, and developing resources. Participants were also given opportunities to share experiences, reflect on personal biases, and co-create strategies tailored to their own contexts. These workshops ranged from 70-100 participants, all from various regions, backgrounds, and professions.

As our partnerships have expanded, our model has evolved to meet the needs of these communities on a more individualized scale. Today our "train the trainer" model consists of the following: Two annual in-person workshops for each of our partner schools and their local communities, focusing on both foundational skills and practical applications with topic areas unique to their needs; monthly, live online training sessions for continued development and community building among educators across the globe who may or may not be directly part of our partner's communities; and quarterly supplemental meetings with our four East African partners to discuss student and school progress, challenges, and collaborative solutions. All of our trainings and meetings are conducted with the objective that educators feel equipped to provide high-quality inclusive education in each of their diverse settings. Furthermore, our expectation is that the educators who learn from us will share the knowledge and skills they have obtained with teachers, parents, and other community members in the locations they serve. On a small scale, we train educators, but the bigger picture is for those educators to continue to spread their knowledge in an effort to ensure inclusion becomes standard and achievable for all.

Procedure

We do not believe in inviting ourselves into communities to tell them what to do in regard to serving people with disabilities. Thus, our methods are primarily based on our experience working within communities, first-hand observations, and interviews we have conducted with educators, parents, and community members. Additionally, we had each of our partners complete a survey identifying the impact of their inclusive programs. Our model is adapted based on the unique needs of each of our partner communities and partner feedback. We rely heavily on our partners and their community members to keep us informed of relevant training topics, family and student needs, and what will work best for each of their programs. This ensures that we are always working alongside our community partners to help them identify their needs and work together to find a solution.

We are aware of certain limitations that surround the work we are doing. While we know the impact our model is having on each of our partner schools and their communities, we do not have solid data or information on how our trainings impact the teachers, parents, and community members who attend our public workshops. Nor do we know the impact our trainings have for those who participate in our monthly online training sessions, unless they are directly connected to one of our partner schools. We are limited in knowing if those individuals implement strategies they have learned, how or if they continue to serve students with disabilities, and any long-term outcomes of the services they are providing.

Results

Among our partner schools, those in Kibera, Busia, and Musanze continue to operate as inclusive learning centers as of April 2025, with two of these inclusive programs being in existence since 2011 and 2015 respectively, and one that opened in early 2024.

School Two, Kantafu, switched from offering inclusive education since 2019 to operating as a special school beginning January 2025. This school reported various reasons for making the switch from an inclusive learning setting to a specialized school, with one of the main reasons being the stigma in the community around typical students learning alongside students with disabilities. Each of our partner schools continue to expand their programs to accommodate learners with disabilities, and they all offer outreach to their community members and families on disability awareness and the importance of an inclusive society. To date, each of our partner schools continues to participate in twice-yearly in-person trainings with our team; they all attend our monthly online trainings and join us for our quarterly meetings throughout the year.

Survey responses from our partner schools provided insight into the sustainability and perceived impact of inclusive education initiatives. Respondents emphasized that the decision to become inclusive stemmed from a desire to meet the needs of underserved students and uphold the belief that all children deserve access to education. One partner explained, "We believe that everyone deserves an education" while another stated the goal was "to serve individuals with special needs in the Kibera community who had no access to special needs services." One of our partners also shared that in addition to being able to offer educational opportunities for individuals with disabilities, they also wanted to "enhance and encourage inclusion in families, schools, and churches" within their local community. Additionally, respondents highlighted the following key supports for effectively maintaining their inclusive programs: Training and ongoing development for themselves and their teachers; the support and involvement of their local community, school parents, and willing teachers; and collaboration with partner organizations.

In addition to these results, several unanticipated yet meaningful outcomes emerged: Long-term relationships have been established with our partner communities, leading to shared responsibility and trust; our partnerships grew from one community in Kenya to our additional partnerships across East Africa; families and professionals have connected across the globe, resulting in unprecedented support systems; and access to inclusive education resources has extended beyond our direct partners. These outcomes reflect a ripple effect: by investing in a few committed educators, entire communities are gradually shifting toward more inclusive values and practices.

Discussion

Although the present project did not utilize a formal experimental design, the qualitative data from survey responses reveals promising trends. Community-based, relationship-driven approaches appear to play a central role in the long-term success of inclusive programs. Rather than relying on externally imposed models, our program emphasizes local relevance, collaborative approaches, and lived experiences. One of the key lessons we have learned was to involve families and stakeholders in the community early in the process, which helped reduce stigma and encouraged more understanding for the need to support students with disabilities. A central theme that emerged from our partners' survey responses was the importance of well rounded, compassionate support systems. One educator described their greatest source of support for their students as "a teacher who understands their needs and can help them in advancing their skills" and "a conducive classroom environment that enhances good teaching and learning." This reinforces the idea that effective inclusion is not only about infrastructure, but about relationships and mindsets. Each of our partners has ambitions for their students that extend beyond their time in their classrooms. One of our partner's stated that their hope for their learners is "that they may be functional members of the community, accepted and integrated within institutions and other social circles." Other respondents collectively shared aspirations that their students succeed as they grew up, which included advancing to higher grades and other schools, attending vocational training, and becoming as independent as possible enjoying the same respect that typical students receive.

All of our partners are encouraging of other educators who hope to adapt an inclusive learning model into their school programs and offered motivation to those who are already engaging. One respondent advised, "Always start small and use any locally available resources... understand the learners, their parents, and families, and the challenges they are facing. Be their friend." Another respondent shared that their motivation came from the passion and dedication they felt for this population and encouraged a compassionate approach for managing an inclusive program. We felt one of our partners summed it up especially well. She encouraged fellow educators to "have passion, get knowledge in the field, serve with love, collaborate with others and keep evolving." All of our partners, in each of their own corners of East Africa, agreed: any educator can provide high-quality inclusive education if they start out small, rely on their communities, hold onto their determination, and cultivate opportunities for continuous learning.

Despite these positive outcomes, persistent challenges remain. Limited access to technology restricts participation in virtual training programs. Some teachers and families report encountering stigma or resistance from peers and community members. Nonetheless, the commitment of educators appears to mitigate these barriers. The consensus among respondents is clear: when teachers are empowered, and when inclusion is rooted in local relationships, sustainable change is possible. Education is something that cannot be taken; therefore, that's what we embrace. We have seen that when the community is committed, and educators are given tools, encouragement, and the education they need, inclusion can be achieved.

Conclusion

Based on both experience and survey data, this model suggests that successful inclusive education relies on three key components: community support, willing educators, and accessible and sustainable training. Inclusion is most effective when embraced by the broader community including families, local leaders, and schools. Respondents consistently expressed hope that learners with disabilities would be accepted and integrated within social and educational teachers serve as the foundation of successful programs and are a crucial component to positive outcomes. Their dedication enables them to adapt, advocate, and support their students with compassion. Finally, professional development that is practical, locally adaptable, and continuous is essential, especially in under-resourced areas. All educators deserve access to attainable and sustainable training.

As Helen Clark notes "Inclusion in education is a process, and not only a desired end point" (UNESCO, 2020, p.v). These findings suggest that inclusive education is not a fixed destination but an evolving practice. When rooted in genuine relationships and local expertise, inclusive models not only succeed, they flourish. As one survey respondent affirmed, "It is the right decision that you may take; their progress is something you might be proud of. Please do not hesitate." Our experience shows that inclusive education is achievable—regardless of location—when rooted in authentic relationships and a shared commitment to every learner. Our hope is that this work continues to inspire educators globally and contributes to a more inclusive world.

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School Leaders' Role in Implementing Culturally Responsive Social Emotional Learning During Times of Crisis

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Abstract

This paper explores the experiences of school leaders in implementing culturally responsive social emotional learning (CRSEL) during the COVID-19 pandemic and beyond. A phenomenological approach was employed, interviewing nine school leaders in Washington, DC, to understand their practices and beliefs regarding CRSEL. Four emergent themes highlight the essential role of school leaders: community, cultural awareness, empathy, and student voice. These findings emphasize the critical role of school leadership in fostering culturally affirming educational environments that address systemic inequities and support marginalized students.

Keywords: culturally responsive social emotional learning, CRSEL, school leadership, COVID-19, phenomenology, equity

Introduction

Social emotional learning (SEL) is widely recognized as essential for promoting students' academic and social success (CASEL, 2020). However, traditional SEL frameworks often neglect the lived experiences and cultural identities of historically marginalized students (Simmons, 2019). To address this, culturally responsive social emotional learning (CRSEL) centers students' identities and fosters inclusive, equitable practices (Hamilton et al., 2020). This is particularly vital during crises, such as the COVID-19 pandemic, which has exacerbated existing inequities and intensified student struggles.

Purpose and Research Questions

This study aimed to understand how school leaders in Washington, DC, implement CRSEL and address students' struggles during times of crisis. It sought to answer:

1. How do school leaders understand and implement CRSEL within their schools?
2. How does their lived experience, training, and self-efficacy shape this implementation?
3. How does CRSEL inform their approaches to student struggles during a crisis?

Methodology

A phenomenological qualitative research design guided this study. According to Creswell and Poth (2018), phenomenology aims to understand the lived experiences of individuals, focusing on the essence of those experiences as perceived by participants. This approach was chosen because CRSEL is a relatively new and evolving practice, and there is limited research on its implementation during crises.

Participants and Data Collection

Nine school leaders (five principals and four assistant principals) from five public schools in Washington, DC, participated in the study. Two one-on-one semi-structured interviews were conducted with each participant, totaling 18 interviews. Open-ended questions were designed to explore their beliefs, practices, and experiences with CRSEL. Interviews were conducted via Zoom and transcribed for analysis. Participants' confidentiality was maintained with the use of pseudonyms.

Data Analysis

Data were analyzed using a phenomenological approach to identify significant statements and develop themes. This method involved "horizontalization," giving equal value to all statements, and clustering them into meaningful themes (Creswell & Poth, 2018). This process allowed for a rich, nuanced understanding of participants' experiences with CRSEL implementation.

Findings

Four major themes emerged from the data:

1. Community

Building and nurturing a sense of community was central to leaders' CRSEL efforts. The Collaborator shared: "I think you have to have that connection with your staff and meeting them where they're at before you can move them forward in a deep way".
The Inspirer added:
"When people feel connected to their school and they feel more connected to themselves via culturally responsive practices, then they feel more connected to the school and that increases attendance".

2. Cultural Awareness

Participants emphasized that CRSEL must be grounded in cultural awareness. The Empathizer noted: "If you don't deal with cultural awareness first, the rest (SEL)...becomes difficult... it's important that we prioritize the cultural awareness piece".
Similarly, the Constructor explained:
"Meeting kids where they're at, I think it's making sure you're honoring where they're coming from, showing interest in who they are and their life experiences and making sure you're honoring their culture and even the microculture".

3. Empathy and Informed Practice

Empathy was described as foundational for effective CRSEL implementation. The Collaborator stated: "Forging connections with students and to do that you have to meet them where they're at and I think the culturally responsive approach is the best way that I know how to do that". The Queen of Sheba added: "I think that I would make sure everybody is good with the brain research about why this is good...I think I would start with making sure we have a general level of understanding about the fact that this is related to kids' brains and how they learn".

4. Student Voice

Leaders consistently highlighted the importance of centering student voice in CRSEL. The Experientialist shared: "Having a voice for everyone is the biggest thing that I want to have for this year...trying to have a voice for all students and make sure that everyone is represented". The Constructor echoed this sentiment: "We have to start bringing this work to our students, empowering them and helping them develop not just an understanding of it, but a voice for engaging in and opinion on these things is the key piece".

Additional Findings

Leaders also described significant challenges, including the need to:

- Shift adult mindsets: Many staff members initially viewed CRSEL as "extra" work, not essential.
- Combat resistance: Some leaders faced resistance from staff who questioned why CRSEL was needed.
- Balance competing demands: Academic recovery and CRSEL were sometimes seen as competing rather than complementary.

Despite these challenges, leaders were unified in their belief that CRSEL is essential for supporting students' holistic well-being and academic success.

Discussion and Implications

This study underscores that effective CRSEL implementation requires more than isolated activities—it demands a holistic, culturally affirming approach led by school leaders. Leaders must create environments where cultural identities are recognized and celebrated, students' voices are amplified, and staff members are supported in growing their understanding and practice of CRSEL. Professional development emerged as a critical need, as many leaders expressed a desire for ongoing training and support. For example, one leader noted that: "We need more training and we need to understand how to integrate it into everything we do, not just treat it as an add-on" (Emergent theme response). The findings also highlight the power of CRSEL to promote not only student well-being but also community cohesion and academic engagement. As one leader shared: When students feel safe and seen, they're more willing to take risks and participate in learning" (Emergent theme response).

Conclusion

CRSEL is a transformative framework for addressing the needs of marginalized students and challenging systemic inequities. School leaders play a pivotal role in this work by fostering inclusive communities, prioritizing cultural awareness, leading with empathy, and amplifying student voice. Ongoing professional development and district-level support are essential to sustain this work and ensure equitable, culturally affirming practices for all students.

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Strength-Based Interventions: Inclusive Support for Trauma-Affected Students

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Abstract

Helping students heal from trauma is one focal point in educational research and literature. Children affected by trauma experience difficulty developing cognitive and executive functioning skills and regulating behaviors. When a child has positive interactions with their environment, they generally learn the world is a good place and they are valued and loved. This creates a sense of safety and a positive view of self and sets the foundation for success. When a child experiences negative interactions with their environment, they learn the world is not safe and they may develop a negative sense of self that can impede the development of cognitive and executive functioning skills. It is paramount for educators to help students address developmental deficits linked to trauma and support them in developing the ability to recognize their strengths. When educators use trauma-inclusive teaching practices, students develop the skills to be more successful. Effective support must employ trauma-sensitive, strength-based intervention techniques to build skills aligned with the student's strengths. Brunzell and colleagues advocated for the implementation of the Trauma-Informed Positive Education (TIPE) approach, which emphasizes the development and reinforcement of children's strengths. This paper will delve into trauma-related behavior and explore how to create a trauma-responsive classroom. Seeking to build bridges by providing strategies to assist educators in supporting students affected by trauma.

Keywords: Trauma, Trauma-informed teaching, Inclusive classroom, Intervention

Introduction and Background

Historically, children with disabilities have been segregated within the educational system, limiting their access to inclusive learning environments. Inclusive education is essential for ensuring equal rights and opportunities for all students, including those with disabilities (Hunt, 2020; Mihai, 2017). Trauma can occur at any age, with approximately 70% of the world's population experiencing a traumatic life event (Benjet et al., 2016, Kessler et al., 2017). Studies show that children with disabilities are more affected by trauma and further isolated from successful participation in the educational setting. This emphasizes the need for educators to be prepared to support children with disabilities who have experienced trauma (Chudzik et al., 2023).

Trauma is a multifaceted, global issue that impacts student success across all areas of education (Avery et al., 2022). While commonly associated with negative events, trauma is better understood as both the experience and the individual's response to that experience (Wright, 2017). According to the American Psychological Association (2019), trauma occurs when an individual experiences, witnesses, or is confronted with an event involving actual or threatened death or serious injury, leading to intense fear, helplessness, or horror (Elhai et al., 2005). Understanding trauma as both event and response is essential for effective, trauma-informed educational practices. Trauma is categorized as either acute or complex. Acute trauma results from a single, time-limited event, such as a natural disaster or car accident (NCTSN, 2006; Terr, 2003). Complex trauma involves repeated, prolonged exposure to developmentally adverse experiences—often interpersonal and rooted in early caregiving relationships, including abuse, neglect, and domestic violence (Sorrels, 2015). It also encompasses cultural, historical, and intergenerational trauma, such as the lasting effects of racism, colonization, and systemic oppression (Heart, 2003). Whether acute or chronic, trauma can profoundly affect children's cognitive, emotional, physical, and academic functioning (SAMHSA, 2014).

Trauma Symptoms Among Students

Students respond to trauma in varied ways; an event that is distressing for one child may have little impact on another (Fritz, 2017). Recognizing trauma symptoms and making timely referrals are critical steps educators can take to support recovery (Bell et al., 2013).

Trauma can affect multiple domains: physical, behavioral, emotional, and cognitive. Physical symptoms may include headaches, sleep disturbances, and hypervigilance (Jaycox, 2006; NCTSN, 2017). Behaviorally, trauma may present as regression, reenactment in play, withdrawal, risk-taking, or attention-seeking behaviors (Lieberman et al., 2011). Emotional effects often involve mood regulation difficulties, irritability, anxiety, and low self-esteem (Milot et al., 2010). Cognitive impacts, though harder to detect, include attention deficits, dissociation, flashbacks, and altered worldviews (NCTSN, 2017). Awareness of these signs enable educators to respond with trauma-informed strategies and connect students to appropriate supports.

Trauma-Informed Positive Education (TIPE) Approach

The approach used in this article will focus on helping students develop their strengths and develop the ability to identify positive stimuli. Strategies explored in this article will be based on the trauma-informed positive education (TIPE) approach, focusing on enhancing the child's strengths. Brunzell, Stokes, & Waters (2016) defined TIPE as an educational conceptual model designed to support students who have experienced trauma. The six assumptions of the TIPE model include:

- Providing developmentally appropriate high expectations for students.
- Providing opportunities to develop positive resources and outlooks.
- The classroom may be the most appropriate place for intervention.
- Well-being should be taught.
- Students must be ready for instruction in positive interventions.
- Building upon positive learning experiences.

Children affected by trauma often have limited exposure to positive interactions. Negative experiences such as loss, abuse, or unmet needs can lead to a sense of insecurity and diminished self-worth, impairing trust and the ability to form healthy relationships. Trauma-Informed Positive Education (TIPE) emphasizes the importance of providing consistent positive interactions, which, like negative ones, accumulate over time. Repeated positive experiences create an upward spiral of growth, fostering resilience and supporting the development of skills essential for success and well-being. In addition to the assumptions made for TIPE, three domains define the different aspects associated with the model: Repairing Regulatory Abilities, Repairing Disrupted Attachment, and Increasing Psychological Resources, (Brunzell et al., 2016).

Domain One: Repairing regulatory abilities. Trauma can impair a student's communication and self-regulation, often resulting in difficulty identifying and expressing emotions, both positive and negative. This deficit may lead to inappropriate responses to emotional triggers and challenges in social interactions. Effective strategies involve explicit instruction in regulation skills, coupled with repeated practice opportunities within the classroom. Key approaches include teaching students to identify emotions and behaviors, providing structured chances to regulate, using restorative consequences instead of punishment, modeling appropriate behaviors (voice, tone, and body language), and maintaining consistent routines (Burdick & Corr, 2024; Brunzell et al., 2016; Wright, 2017).

Area 1: Provide instruction to the student in identifying their emotions. This may include using emotion charts, emotion cards, and role-play scenarios, which tend to elicit strong emotions (Wright, 2017). When providing instruction focused on identifying strong emotions, the physical symptoms must also be addressed. For example, when learning about anger, what are the physical signs? Does the child start to bounce, clench their jaw, or clench their hands? When learning about excitement, does the child start to bounce, increase the rate of talking, smile? Part of the instruction must include acknowledging some physical symptoms may be felt with different emotions, even when the emotions are opposite (happy/sad; angry/excited). The overlapping of physical sensations must be addressed, and instruction must provide strategies to identify overlapping sensations and what isolated sensations are specific to each emotion.

Activities to identify emotions:

- Assist the child to complete a Venn Diagram or matrix illustrating where sensations overlap and where they are specific to an emotion.
- Play games where the child exhibits the physical sensations and then identifies the emotion they might be feeling.
- Play a game with cards. Create a deck of cards with the physical sensations listed (these can be individual sensations or groups of sensations). One person draws a card and acts out the physical sensations, the other person identifies the emotion being portrayed.
- Mindfulness activities are explicit activities that can help students move from emotional (limbic) centers to their thinking (cortex) centers. These activities address the physical sensations of the body as they relate to emotions (Brunzell et al., 2016). Mindfulness exercises such as body scans, structured breathing, and focused listening can help children regulate emotions and increase present-moment awareness. Body scans guide children to notice physical sensations in different parts of their body, fostering a mind body connection.

Structured breathing—such as inhaling, holding, and exhaling to a count of three—promote calm by increasing oxygen intake and shifting focus from emotional reactivity to cognitive control. Listening to ambient sounds with eyes closed can help ground children in the present, aiding in the separation of past trauma from current experience.

No matter what the activity is, it is important to create a safe environment to talk about and experience emotions. The message must reinforce that emotions are not inherently good or bad. They serve a purpose to help us engage with our environment. It is what we do when we feel strong emotions that must be managed. Once a child can identify their emotions and has the vocabulary to communicate their emotions, they can use this foundational knowledge to begin learning regulating strategies.

Area 2: Opportunity to regulate in the classroom. When children are sent out of the classroom, it provides immediate relief for the teacher and the other students in the room. But, at what cost? Removing the student who is distracting may harm the learning environment through unintended consequences. Removing a student may send a message that compliance and conformity are the norms, and divergence will not be tolerated. This type of environment may create great workers, but diminishes individuality and creativity. The children receive the message that the child who was sent away is bad and not worthy of being in the classroom. It demonstrates that the teacher does not care about the child, and the class is better off without them. Both the "good" students in the class and the exiled student may develop this understanding. Before a student is sent out of the learning environment, they must have an opportunity to regulate their emotions and behaviors.

Activities to provide opportunities to regulate:

- When a child is experiencing heightened emotions, provide space for them to gain control. This might look like allowing them to put their head on the desk, move to a preferred seat away from their peers, or provide a divider at their request.
- Teach the child to use a break card to indicate they need time to gain control. When the break card is in play, the teacher should not push the child to work. A timer can be used if appropriate. When the timer expires, the teacher will check on the child to determine if more time is needed or if the child is ready to resume their task.
- Provide a place in the room for the child to go when overwhelmed. This place could be a chair next to a wall/corner, or a place away from other students. This place should not be used as a punishment. The function of this space is for the benefit of the child who is dysregulated, and while the educator can prompt its use, the child is the one who determines whether to use it (Wright, 2017).

The general difficulty with providing opportunities to regulate stems from the perception that active learning must be sacrificed to provide the time to regulate. However, how much learning was occurring when the student was dysregulated? Learning regulation is like learning anything else (academics, social skills, daily living skills). Students exhibit different ability levels and levels of skill development. Children who have been impacted by trauma will have regulation skills developed to survive their trauma. These skills may not be the same regulatory skills needed in a safe environment. Educators must meet the child where their skills are and provide opportunities for them to further develop regulation skills appropriate to safe settings. How to use the safe spaces, break cards, and timing must be explicitly taught. When these opportunities are presented, they must be presented at the level at which the child is currently operating. Some educators may interpret providing opportunities to regulate emotions and behavior in the classroom as appeasement and a license for the child to act without boundaries or limits. However, it may be the child does not have the ability to consistently self-regulate. Explicit instruction and multiple opportunities to practice in the classroom support the development of self-regulation skills. In addition to providing instruction on self-regulation in the classroom, it is important to explicitly teach that behavior has consequences.

Area 3: Consequences in place of punishment. Accountability and accepting consequences for inappropriate behavior instead of punishing that behavior are more conducive to learning self-regulation techniques. When a child is punished (sent home, negative phone call home, admonished for misbehavior), appropriate behavior is not taught. When a child takes responsibility for their behavior, they begin to recognize their behavior affects others, and they can take steps to change their behavior to influence the consequences they earn.

Activities for consequences in place of punishment:

- Children do not always recognize that their behaviors affect others. Provide the opportunity to acknowledge inappropriate behavior and plan how to enact appropriate behavior in the future. An example of this activity is to provide a "Think-Sheet" for the student to complete. Statements should be used to identify where the child failed to meet expectations, how the behavior affected others and themselves, an appropriate way to meet expectations, and how the appropriate behavior will affect others and themselves. This should be done with the direct support of a trusted adult. This type of activity should be reflective (not about finding blame). It is

paramount to target behavior as the issue, not the child.

- Provide the opportunity for the child to "fix" damage caused by their behavior. For example, if the child throws materials on the floor, they should be prompted to pick up the materials. This should not be done as a punishment but as a way to restore the environment. Timing for this type of activity is important. When the behavior is occurring, the child will be unable to comply with this activity. Instead, this activity should be employed after the episode has concluded and the child has been successful in regaining control of their behavior. Then the educator provides the opportunity for the student to fix their environment (pick up the items).
- Provide opportunities for natural consequences. These are as varied as the behaviors exhibited. This type of activity can be small in nature and scope and still have a great effect. An example of this might be a student who breaks their pencil or rips up their paper when upset or frustrated. Then the natural consequences could be that the student uses the broken pencil and the ripped paper (the paper may need to be taped together depending on the damage) to complete the assignment. A new pencil could be provided the next day if appropriate. Again, this should not be presented as punishment but as a consequence for the behavior/action.

It is important to note for educators and students that consequences are not specific to "negative" behavior. All behavior has the potential for consequences. For example, if a child meets the expectations of the classroom, the consequences are most likely "good" grades and opportunities to engage in positive activities. If a child does not meet the expectations of the classroom, the consequences are most likely "bad" grades and removal from positive activities. Good grades, bad grades, engagement in positive activities, and removal from positive activities are all consequences. Both educators and students need to identify that consequences are not inherently only for "bad" behavior. With all of the above activities, there must be collaboration with the student to ensure they connect the behavior to the consequence. There must be explicit instructions on how to achieve preferred consequences. It may seem intuitive to the educator and many students how to earn positive consequences. However, children impacted by trauma may lack background experiences that link positive behavior to positive consequences.

Area 4: Model appropriate behavior (voice level, tone, body position). Children learn through observation and experiences with their environments. When a child is impacted by trauma, they may have limited exposure to positive interactions with the people in the environment. This leads to underdeveloped skills in using appropriate behavior to get their needs met. Modeling appropriate behaviors and communication in the educational setting can assist the child in developing the desired skills. Modeling provides concrete examples that a child can begin to mimic and internalize.

Activities for modeling appropriate behavior.

- Modeling Voice Level and Tone – When children are overstimulated, the volume of their communication generally increases. This can present as high volume, screaming, or yelling. High volume is a trademark for a tantrum. The educator may unconsciously match the volume and intensity of the child. An individual may raise their voice to be heard with the intent to break through the barrier of sound. However, matching the volume and intensity is often counterproductive. The child will often match or exceed the voice of authority. This can be a defensive mechanism to stave off negative effects, thoughts, or emotions. Instead of matching the child's intensity and volume, reduce the volume and intensity of communication. This encourages the child to reduce their volume to be able to interact with the trusted adult. Using phrases such as, "The way I am speaking to you is the way I need you to speak to me so we can figure this out." When these types of phrases are used at a controlled volume under the child's intensity, they encourage the child to mimic the speaker. Once the child attempts to match the voice level of the trusted adult, communication to problem-solve can begin.
- Role-play ways to communicate needs, frustrations, and concerns. Provide instruction in verbal and nonverbal communication (voice, tone, body position). Providing scenarios with an identified desired outcome and a barrier to overcome can be effective in providing practice communicating to solve social problems. After the role-play, debrief the choices made to solve their problem and brainstorm strengths and weaknesses in the solution. It is important to acknowledge all solutions could be used to solve the problem (even if they are inappropriate). The trusted adult may have to guide the student to find alternative solutions and to accept why some solutions are better than others. In addition, discuss communication choices and provide alternative ways to communicate when needed or to strengthen communication skills. Incorporating consequences in the debrief will also strengthen the effectiveness of the activity.
- Provide opportunities for the child to observe various ways to communicate needs and emotions. Using videos with both positive and negative examples of communication can be an effective instructional strategy. Discuss with the child the choices made in the videos. To extend on this activity, problem-solve the communication actions seen in the video.

Area 5: Consistent Routines. The need for consistent routines cannot be overstated. Children in general thrive when there are routines in place. Routines help us navigate multiple settings and activity expectations. A routine can minimize the anxiety of trying to figure out expectations by helping us know what comes next. This can increase the sense of safety. To ensure effective routines, punishment should not be tied to errors in following routines. Instead, natural consequences occur when routines are followed or not followed. Teaching routines is key to their success in supporting students who are impacted by trauma.

Activities to create consistent routines.

- Discuss and teach the routine. This goes beyond simply providing instruction in the routine. Have the students discuss the rationale for the routine in both small group and whole-class discussions. Small group discussion helps peers learn communication skills and may introduce them to views different from their own. Rehearse routines regularly throughout the year. To extend this activity, students can create an affirmation or poster to illustrate the routines (Wright, 2017).
- Start each day with a highly structured routine. During this time, the educator observes the student to determine if changes in routine and activities need to occur. During this routine, the educator may have a discussion prompt such as, “Describe one thing that went well yesterday.” Or, “What is one word you would use to describe how you are feeling today?” Using prompts allows the student to self-reflect and assist with the development of vocabulary linked to emotions (Brunzell et al., 2015).
- Preparing Trauma-Affected Students for Routine Changes and Emergency Drills. Changes in routine or the introduction of new individuals can trigger anxiety in children impacted by trauma. Previewing upcoming changes (assemblies or guest visitors) and reviewing expectations can help reduce anxiety.
- Emergency drills require explicit instruction beforehand, including information about loud noises, flashing lights, and expected behaviors like sitting quietly in designated areas. Visual cues, such as a red “X,” placed on the daily schedule can signal drill times without verbal announcement. It is imperative to balance preparation and realism for an actual emergency. Drills should not be announced beforehand. Following drills, once the student is regulated (this may take an extended period of time), debriefing and positive reinforcement are essential. Discussing improvements and practicing responses through role-play supports mastery and confidence.

Effective behavioral interventions require repetition and consistency. Initially, students may struggle to imitate modeled behaviors and may exhibit increased behavioral escalation. Trusted adults must remain calm and consistent while modeling appropriate responses. As students become more familiar with positive support and successfully communicate their needs/emotions, the intervention’s impact strengthens. One final note, educators must maintain a nonjudgmental attitude and recognize that different environments may demand different skills. The skills a child developed to survive their trauma are not bad. The skills learned may be appropriate for the setting where the trauma occurred but not transferable to the classroom. This can prevent confusion and promote adaptive behavior across settings.

Domain Two: Repairing disrupted attachment. Trauma can impair a child’s capacity to form and sustain healthy relationships, often resulting in mistrust, conflict avoidance, and defensive behaviors. In some cases, inappropriate behavior may serve as a means of seeking connection or expressing unmet needs. These challenges often stem from limited exposure to relationships grounded in respect and trust. Trauma-informed educators can support relational development by providing explicit instruction, consistent opportunities to practice social skills, and fostering a classroom climate rooted in empathy, warmth, and critical reflection (Brunzell et al., 2015). This domain emphasizes three areas of support: building strong and appropriate relationships, enhancing problem-solving skills, and cultivating the ability to plan for the future.

Area 1: Building strong relationships. “Nobody cares how much you know until they how much you care” is a saying attributed to the 26th president of the United States, Theodore Roosevelt (TR Center, n.d.). President Roosevelt used the saying to emphasize the importance of forming relationships with students based on warmth, acceptance, empathy, and respect. As educators, this may seem like a common skill. Educator training emphasizes the importance of not taking behavior personally, however, this can be difficult when there is a classroom full of children to teach, limited resources, and the educator is on the receiving end of disrespectful behavior. However, when supporting children with behavioral challenges, it is critical to separate the feelings about the behavior from the child. Children who have been impacted by trauma may need extensive and explicit instruction in building relationships and managing behavior.

Activities to build relationship skills.

- Model conflict resolution and self-regulation techniques. When a child exhibits aggressive behavior, educators must remain calm and validate the child's emotions. Using "I see" statements and offering two concrete, action-based choices can help disrupt emotional escalation and restore self-control. For example: "I can see you're frustrated. My goal is your success—here are two options to help you." Abstract directives like "calm down" should be avoided. Once both the educator and the child are regulated, relationship repair is essential. Reflective conversations about the incident help students build self-awareness and reinforce trust without assigning blame. During the debrief, the educator must demonstrate empathy and acceptance of the child (Brunzell et al., 2015).
- Plan events with students. Children affected by trauma may have limited experience feeling that their opinions matter. Involving them in planning school or family-oriented events such as parent nights, class celebrations, or academic activities can foster a sense of belonging. Providing these opportunities affirms their voice, builds confidence, and reinforces their value within the learning community.
- Educators must be intentional in avoiding blaming language, especially when working with students impacted by trauma. Reframing responses with empathy promotes a culture of grace and acceptance. For example, replacing "You just read that word" with "It can be frustrating when remembering is hard" shifts the focus from blame to understanding. Similarly, saying "I need to collaborate with my team" instead of "Nothing I do works" emphasizes problem-solving over frustration. This shift in language helps educators view students not as problems, but as individuals facing challenges who need support. (Souers & Hall, 2019).

Area 2: Problem-solving emerges in early childhood through exploration and interaction with the environment. Trial-and-error learning supports cognitive growth, with both success and failure enhancing critical thinking. Without such opportunities, children may face developmental delays. Educators play a key role by creating safe, supportive spaces where children can take risks, make mistakes, and learn through experience.

Activities to develop problem-solving and critical thinking skills.

- Provide structured opportunities for children to play, have fun, and continued support through social interactions (Wright, 2017). Providing structured social tasks allow for explicit instruction on interacting with peers and adults. Structured activities provide the support a child may need to learn appropriate social skills and conflict resolution skills in a safe environment. Structured activities might include playing board games or holding a conversation during a shared meal.
- Role play entering and maintaining play (Wright, 2017). Role plays may address how to invite others to join a social activity or play, or how to respond to acceptance or rejection. Role play allows for discussion on social techniques used to resolve conflicts and interacting with others. Children impacted by trauma may need additional support to identify how social norms are dependent on setting and audience.
- Create opportunities to learn creatively with peers (Kern & Wehmeyer, 2021, pp. 473-493). Creative learning has an element of uncertainty embedded in the activity due to the open-ended nature of the task. Creative learning could be a project where there are multiple solutions and processes to reach a successful conclusion. An example might be to plan out a garden within a given amount of space to achieve a given goal (beauty or subsistence). This activity could be individual or with peers. Creative learning allows for risk taking and honors multiple solutions and views to solving a problem. It allows the child impacted by trauma to develop their problem-solving skills in a supported environment.

Area 3: Ability to plan for the future. Trauma can narrow a child's focus to immediate survival, impairing their capacity to envision the future or set goals. In trauma-informed classrooms, educators play a critical role in restoring this capacity by explicitly teaching goal-setting skills and fostering future-oriented thinking. Structured support helps students shift from survival-based behaviors to purposeful planning and long-term growth.

Activities to develop the ability to envision the future and set goals.

- Provide real-world context to content area learning. When a child knows the "why" of learning, they are more likely to engage with the learning instead of passively sitting through the content. The "why" can address the coherence (how the information is connected), the purpose (how the concepts are going to be used), or the significance (the value or direct impact) of the information. Coherence, purpose, and significance contribute to learning about the meaning of content in relation to the meaning of our lives (Kern & Wehmeyer, 2021, pp. 551-580).
- Provide opportunities to plan for the successful completion of tasks and assignments. Activities could include using a planner or agenda to plan out complex tasks such as multi-step projects, studying for assessments, and scheduling leisure activities to balance with academic responsibilities.

When a child is engaged with the planning stages, education moves from something done to them to something they have some control over.

- Foster a growth mindset. Explicitly teach positive verbiage to students when planning for success. For example, teach the power of "yet". When a skill has not been mastered, teach the student to add the word "yet" to their planning. This supports the need for goals and resilience when learning new skills. It moves the perception of ability from something that is fixed in stone to something that is flexible and can be developed (Brunzell et al., 2016). Another way to foster the growth mindset is to track progress in a visual format. This could be graphing progress of reading sight words. When a child graphs their progress, the focus of learning moves from mastery to recognizing and celebrating progress.

Establishing relationships with children affected by trauma requires patience, empathy, and consistent care. Protective behaviors developed in response to trauma often serve to distance others, but these barriers do not reduce the child's worth. Educators must persist in offering relationship-building opportunities that instill hope and foster trust. Relationship skills should be explicitly taught, modeled, and reinforced to support long-term social-emotional growth.

Domain Three: Increasing Psychological Resources, building positive emotions. When a person is exposed to an experience, there is an emotional response called a somatic marker which helps a person make faster decisions based on the emotional response from a repeated experience (Damasio, 1996). Children who are impacted by trauma may have limited exposure to positive experiences, which means there are fewer somatic markers associated with the positive experience. This may make it difficult for them to recognize or place value on positive events. Therefore, educators must provide increased opportunities to build somatic markers associated with positive experiences. This will include explicit instruction in recognizing positive situations. Developing well-being encompasses five sub-categories. These are: positive emotion, positive engagement, positive relationships, positive meaning, and positive accomplishment (PERMA) (Brunzell et al., 2016). The following activities can focus on supporting children to develop somatic markers for any of the sub-categories of PERMA.

Activities to build somatic markers based on positive emotions and experiences.

- Positive self-talk is a form of self-communication. Teaching children to use positive self-talk fosters resilience in the face of success and failure. By verbalizing affirming statements, such as viewing mistakes as learning opportunities, children begin to reframe challenges constructively. Initial instruction should focus on external expression of positive language, gradually supporting the internalization of these statements as the skill develops.
- The child searches for "awesome" items in their environment. This activity is designed to provide opportunities for the child to make positive connections with their environment. The child will share their "awesome" item and describe why they feel the item falls into the awesome category (Revelle, 2023). Items could be from various settings. The important focus is on the child choosing the item and supporting why it was chosen. The worth of the item should not be limited by the educator. By accepting the item (rock, leaf, pencil, etc.), the educator is sending the message that what the child values is valuable.
- Provide time for positive journaling or discussions. During this time, the child is guided to identify positive events and successes from the day or setting. These can be written down or discussion with the trusted adult. There are multiple variations to this type of activity. The important aspect is to help the child develop the ability to identify and celebrate success (small and large) and positive events (Souers, K., & Hall, P., 2019).
- The educator provides process-specific praise. Mastery of a skill is not required for this type of praise. Instead, the process and effort are the focus of the positive praise. This sends the message that hard work and effort are valued, not just mastery. When effort is the goal, the anxiety caused by productive struggle can potentially be reduced.

Teaching children to identify and savor positive experiences requires consistency and multiple opportunities to develop skills to recognize success and the importance of effort. These activities must be tied to the strengths and worth of the student. Children may take time to develop these skills. The educator must be prepared to reteach this concept regularly to overcome the experiences linked to trauma.

Summary

Trauma manifests in infinite ways, with the same event affecting people differently. Support must be rooted in positive educational approaches. Children must be explicitly taught how to repair regulatory abilities (self-regulate), repair disrupted attachment (form appropriate relationships), and increase psychological resources (identify positive situations and strengths). Educators must explicitly teach these skills to minimize the effects of trauma. The strategies presented are not meant as an exhaustive list of interventions. Rather, they are a starting point to create a trauma-informed setting.

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Empowering Neurodivergent Communities: Personal Journey, Advocacy, and the Future of AI in Special Education

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Abstract

This paper provides a personal narrative about the author's experience as a person with dyslexia in an educational system that missed her diagnosis. The author then introduces a free and privacy-preserving AI-based system to help teachers identify and help students who may exhibit signs of dyslexia within Moodle-based learning environments. Leveraging open-source language models and a dataset curated from real student writing, both from neurotypical students and those diagnosed with dyslexia, the author introduces a system under development that allows schools to deploy a fine-tuned AI to support early screening, flag writing patterns of concern, and initiate supportive interventions. This is through new Moodle plug-ins that will allow teachers to provide dyslexic students automated modifications that accommodate their needs. All tools are free for schools to use, designed for compliance with WCAG 2.1 AA, FERPA and GDPR standards, and maintain local control over student data.

Keywords: AI, Neurodiversity, Special Education, Dyslexia, Moodle

Part 1: Personal Narrative

This is not your typical conference paper. My name is Mary Elizabeth Merrill, and I was told for most of my childhood that I was dumb, lazy, and stupid. These words, spoken by the adults who were supposed to guide me, cut deep. They are words that still reverberate in my mind, even as I sit here today, a straight-A student, a member of four academic honor societies, and the founder of a nonprofit dedicated to children who learn like me. I was born with severe dyslexia, dyscalculia, and dysgraphia. But I didn't know that when I was a child growing up in Seattle. No one did. Or if they suspected, they didn't say. They didn't test. They didn't help.

My twin brother and older sisters were popular and successful. They were honors students, cheerleaders, and student government leaders. My family was a UW Husky family through and through, my great-grandfather designed and built the first science hall on the University of Washington campus. My parents met when they worked at the UW bookstore. For four generations, my family wore purple and gold with pride. Except me. I struggled to read. I couldn't spell. Numbers moved on the page. I avoided eye contact with teachers. I kept my head down. My senior year, I was placed in special education alongside students with severe cognitive disabilities, not because I belonged there, but because no one knew what else to do with me. The pain of being

discarded like that, of being compared to my high-achieving siblings and found worthless, was soul crushing. I barely graduated from high school. I was rejected by my mother and the school system. I found a place at a local culinary and floral design school, and it was there, at long last, that someone looked closer. They noticed. They named what no one else had: dyslexia. Suddenly, it all made sense. I wasn't stupid. I just learned differently. That moment changed the trajectory of my life.

Twenty seven years later, after raising a family and building a life, I dared to revisit the place that once seemed like a world I could never belong to: the University of Washington. I applied to the College of Education, with an emphasis in special education. I wrote about the decades of pain, the triumph of finally being seen, and my dream of making sure no other child is left behind the way I was. They accepted me. I am now thriving at UW, not in spite of my neurodiversity, but because of it. And I have committed my life to helping children like me navigate an educational system that still fails too many.

I want to advocate for the next generation because I know what it's like when no one did for me.
Today, I am proud to introduce a new initiative from Einstein Advocates, in partnership with Quansight, a leader in open-source AI. Together, we are building an open-source, AI-enhanced plugin for Moodle, a free learning management system used by educators around the world. This plugin will bring together the best of natural language processing, text-to-speech, speech-to-text, and adaptive UI design to support dyslexic learners in a way that has never been done before. These tools will be available to everyone in the world for free. No catch. No hidden fees. Please use them. They are for you and every kid out there who needs them. More than this, we're building an AI that will study how students interact and use Moodle, to detect and predict learning disabilities as students use Moodle, so that no one is left behind, starting with dyslexia. In this way, teachers will have a passive way to monitor, gain insight, and intervene to help students who others don't notice. Students like me. This is not just a technical project. It is a deeply personal one. We are working to ensure that every student, regardless of how their brain works, has the chance to learn, to grow, and to believe in their own intelligence. Because no child should ever be told they are stupid. Not one more.

Part II: AI-Powered Dyslexia Support in Moodle: Open-Source Tools for Early Detection and Inclusive Learning

Dyslexia is one of the most common learning differences, affecting an estimated 5–10% of the population globally (Shaywitz & Shaywitz, 2020). It is a neurobiological condition that interferes with accurate and/or fluent word recognition and is typically associated with poor spelling and decoding abilities. These difficulties usually stem from a deficit in the phonological component of language and often appear unexpectedly in relation to other cognitive capacities (Snowling, 2013). Despite the widespread nature of dyslexia, early identification remains inconsistent, hindered by a combination of factors including limited teacher training, insufficient screening tools, and a persistent social stigma associated with learning disabilities.

Students may go undiagnosed for years, and even once identified, they often continue to struggle in digital learning environments designed primarily for neurotypical students. Tools like conventional spell-checkers and rigid text formatting systems are not optimized for dyslexic learners, further widening the academic gap (Wery & Diliberto, 2017). Thus, there is a critical need for technological solutions that are not only effective and accessible but also preserve privacy and work within existing educational infrastructure.

This paper introduces a novel intervention to address this gap: a free, open-source plugin for Moodle, the world's most widely used learning management system (Moodle.org, n.d.). The plugin provides teachers with AI-powered analysis of student reading and writing, flagging patterns that may indicate dyslexia. The analysis is conducted using fine-tuned large language models (LLMs) such as Phi-3 (Microsoft, 2024) and Mistral, trained on a dataset that includes anonymized reading and writing samples from both diagnosed and neurotypical students.

Crucially, the system is built on open-source technologies and is fully deployable on school-owned infrastructure. This ensures not only compliance with regulations like FERPA and GDPR but also full institutional control over student data. Once a student is flagged for potential dyslexia, a secondary plugin delivers a set of assistive tools designed specifically to support their learning experience. These include a dynamic reading bar (British Dyslexia Association, 2018), an AI-based text simplifier and text-to-speech reader, and a voice-to-text essay writing assistant based on Whisper (Radford et al., 2022). Together, these tools offer a comprehensive and ethical way to both identify and support dyslexic students in digital classrooms.

Related Work

Historically, the identification of dyslexia has relied on phonological assessments, standardized reading tests, and, more recently, eye-tracking technologies (Alkhurayyif & Sait, 2024). These methods, while effective in controlled settings, often require specialized equipment, high compute or trained personnel, making them inaccessible in many school environments. In recent years, researchers have turned to natural language processing (NLP) and machine learning to detect dyslexia through the analysis of student reading and writing. Studies by Daş, Elmas, and Bucak (2024) demonstrated that syntactic and lexical patterns in spoken and written language could be predictive indicators of dyslexia identifiable by AI. These approaches utilize features such as sentence complexity, spelling errors, and phonetic patterns to train classifiers capable of flagging potential cases.

Other innovative approaches include DysLexML, a screening tool developed by Asvestopoulou et al. (2019), and a gamified online test created by Rello et al. (2019) that uses behavioral data to predict dyslexia risk. However, both systems require dedicated applications, high compute power, or internet access, which may not be universally available. Our approach differs significantly. It operates passively within the school's existing LMS, analyzing assignments students are already submitting and listening as they read out loud. Furthermore, it leverages only open-source technologies, ensuring transparency and avoiding reliance on commercial providers. This not only improves accessibility but also supports privacy by enabling local deployment.

System Design

Architecture Overview

The system comprises four core components:

- *Dyslexia Detection Plugin:* This Moodle plugin uses a fine-tuned LLM (e.g., Phi-3) hosted on school infrastructure to analyze submitted writing for linguistic features associated with dyslexia. Drawing from methodologies established in DysLexML (Asvestopoulou et al., 2019) and other lexical feature-based classifiers (Alkhurayyif and Wahab, 2024), the plugin evaluates elements such as word frequency, error density, syntactic complexity, and phoneme-to-grapheme consistency.
- *Reading Bar / Focus Tool:* Inspired by recommendations from the British Dyslexia Association (2018), this tool overlays a horizontal reading guide across the Moodle interface, helping students maintain line-by-line focus while reading. It is customizable in terms of color, opacity, and thickness.
- *Font and Spacing Toggle:* Research on font design has shown mixed results regarding its impact on reading fluency for dyslexic students. While some studies found no measurable benefit (Galliussi, et al 2020), others have suggested that fonts like OpenDyslexic, Lexend, and EasyReading can improve readability for some learners (Rello & Baeza-Yates, 2013; De Leeuw, 2010). Our plugin allows students to toggle these fonts and customize spacing settings to suit individual needs.
- *Text-to-Speech (TTS) and Speech-to-Text (STT) Tools:* A locally hosted TTS system (e.g., Coqui TTS) allows content to be read aloud to students. A Whisper-based STT module (Radford et al., 2022) allows students to dictate their assignments. These tools reduce decoding demands and enable auditory input and output without sending data to external servers.

All four tools are designed to be seamlessly integrated into Moodle and run entirely on local infrastructure, providing maximum control and compliance with educational data privacy standards.

Use Case Workflow

Dyslexia Detection Plugin

- Student submits an assignment or forum post.
- The plugin intercepts the text and preprocesses it (e.g., tokenization, removal of non-textual elements). The processed text is passed to the local Phi-3 or Mistral API.
- AI analyzes:
  - Spelling and grammar anomalies
  - Sentence structure and syntax complexity
  - Use of phoneme-grapheme mappings
  - Frequency of high-error or low-frequency words
- The system returns a dyslexia likelihood score and a brief explanation of key markers found.
- This information is shown only to the educator for review and possible referral

Reading Bar / Focus Tool

- Accessible from the student profile's accessibility menu.
- When toggled on:
  - A translucent, horizontal bar overlays text across the Moodle page.
  - The bar follows scrolling or keyboard navigation.
  - Adjustable parameters include: bar height and opacity, color contrast and brightness, auto-centering with text blocks
- Useful for: improving focus for students with attention or visual tracking difficulties, and reducing page clutter

Font and Spacing Toggle

- Found in accessibility settings within user preferences.

- Options include:
  - Font selection: OpenDyslexic, Lexend, EasyReading
  - Background color and contrast adjustments
  - Line height and character spacing settings
- Features:
  - Instant application across all Moodle content
  - Session-persistent settings saved per student profile
  - Optional teacher override for exams or standardized materials

Text-to-Speech (TTS)

- "Listen" buttons appear next to major text blocks (lessons, quizzes, assignments).
- Upon activation:
  - Text is converted to audio locally using Coqui TTS
  - Audio playback includes:
    *Play/Pause
    *Speed adjustment
    *Word-by-word highlight syncing
- Supports auditory learning and reduces visual decoding effort

Speech-to-Text (STT)

- Students begin an assignment or discussion post
- Activate microphone icon to begin recording
- Whisper-based STT transcribes speech in real time
- Features:
  - Text preview with editable content
  - Manual punctuation toggle
  - Safe word filtering and profanity check
  - Local-only processing for privacy

Model Training and Data Collaboration

The fine-tuning of the detection model is part of a broader research collaboration involving Einstein Advocates and Quansight. While this paper outlines the tool's architecture and use, a forthcoming study will provide detailed insight into the training dataset, model performance, and evaluation methodology.
That study will describe a synthetic dataset containing approximately 10,000 anonymized writing and audio samples from students in grades 3–9, balanced between students with formal dyslexia diagnoses and their neurotypical peers. The data is generated with strict ethical controls to avoid identifying information and to standardize formatting and length. Fine-tuning was performed using Hugging Face's Trainer API and executed on GPU clusters provided by OpenTeams, in partnership with Quansight.

Preliminary internal benchmarks aim for:

- 85% overall classification accuracy
- 90% recall (true positive rate)
- 80% precision (positive predictive value)

Flagged students must still be assessed through evaluation by licensed professionals.

Ethical Considerations

This system is explicitly not a diagnostic tool. It is designed to aid educators by surfacing potential indicators embedded in normal coursework, without requiring additional testing or attention from the student. By offering consistent flagging criteria and local data processing, it attempts to identify at-risk students early without additional effort. All plugins are WCAG 2.1 AA, FERPA- and GDPR-compliant by design. No student data leaves the school network. Administrators retain full control over logging, audit trails, and user permissions (U.S. Department of Education, 2021; European Commission, 2020). The system aims to empower teachers, not replace them, by providing an additional lens through which to consider student needs. Ethical deployment includes transparency with parents and consent frameworks to govern use.

Pilot and Future Work

The first pilot program will launch during the 2025–26 academic year in a select group of U.S. public schools. Schools will be selected to represent a diversity of geographic and socioeconomic contexts. Initial evaluations will measure educator satisfaction, referral rates, and student engagement metrics.

Future roadmap items include:

- Multilingual detection capability, building on prior work in multilingual dyslexia screening (Rello & Baeza-Yates, 2016);
- Real-time writing feedback for students to enhance metacognition and reduce writing anxiety;
- Additional detection modules for dysgraphia and ADHD traits;
- Enhanced accessibility features for visually impaired or neurodiverse students.

We invite collaboration from AI ethicists, special education researchers, and school leaders to co-develop these tools further.

Conclusion

Dyslexia remains under-diagnosed in many school systems, despite the availability of clues embedded in routine student writing. By equipping educators with ethical, open-source AI tools embedded directly in Moodle, this system brings early warning capabilities to the point of instruction. Just as importantly, it offers targeted support tools to empower dyslexic students to perform at their best, not by forcing them to conform to neurotypical norms, but by adapting the environment to their strengths. With a focus on transparency, privacy, and inclusion, this system represents a step forward in using AI not merely for automation, but for compassion.

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Enhancing Inclusive Education in Higher Education in Kenya. Bridging Communication Barrier among Deaf Learners using Artificial Intelligence for Kenyan Sign Language (AI4KSL)

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Abstract

In Kenya, approximately 1 million people are deaf, facing limited access to education due to the scarcity of trained sign language interpreters. Inclusive education in Kenya faces significant challenges, particularly for deaf learners who encounter communication barriers due to the scarcity of qualified Kenyan Sign Language (KSL) interpreters. In addressing this challenge, AI4KSL project aimed at the development and implementation of Artificial Intelligence for Kenyan Sign Language (AI4KSL), an innovative solution aimed at interpreting spoken English into KSL in real time using virtual signing avatars. The AI4KSL project, led by Maseno University, sought to enhance educational access and participation for deaf learners in Kenyan higher education institutions. This technology aims to bridge the communication gap between deaf and hearing learners across gender, enhancing inclusion and educational outcomes. The study adopted a mixed method approach and was guided by design thinking theory by the Hasso-Plattner Institute of Design at Stanford D School (2010). The project involved creating a comprehensive dataset comprising over 14,000 English sentences with corresponding KSL glosses and about 20,000 signed words of KSL videos collected from 600 learners, 16 teachers and 6 non-teaching staff from 1 boys, 1 girls, 3 co-educational schools and 1 technical and vocational training institution using stratified sampling technique. Notably, the dataset revealed gender variations in terms of fluency and non-manual signals among signers across age groups. Female learners articulated more fluent signs compared to male learners. Further, non-manual signals such as facial expressions were more evident among female signers as compared to male ones. The AI4KSL avatar incorporates both male and female gender representations to avoid bias and to provide mentorship for the male learners. By leveraging on Artificial Intelligence, the AI4KSL technology supports Sustainable Development Goals 4 on enhancing quality and inclusive education in higher educational institutions in kenya. Thus, promoting accessibility, equality, equity and inclusive education. It has significant potential for global scalability in enhancing accessibility and promoting inclusive education.

Keywords: Artificial Intelligence, Kenyan Sign Language, assistive technology, inclusion

Background

The deaf population globally is a linguistic minority due to their reliance on sign language, which is used by a small fraction of the population. According to the World Federation of the Deaf (WFD, 2013), there are 72 million deaf people worldwide, with over 80% living in developing countries. In Kenya, the 2019 census estimated a population of 50 million, including approximately 1 million deaf individuals, based on a 2008 survey on persons with disabilities. This positions the deaf as a minority both linguistically and culturally compared to the hearing majority (Jefwa, 2014).

According to Jefwa (2014), a significant challenge for the deaf community arises from the fact that 98% of deaf children are born into families with hearing parents who typically do not use sign language. This creates a linguistic barrier from early childhood, limiting access to communication, education, and information. Consequently, deaf individuals face exclusion from quality education and daily activities. Addressing these challenges requires technological solutions and increased awareness to bridge linguistic gaps and promote equity for the deaf community.

Prajwal et al. (2019) posit that there has been significant advances in research for recognizing sign languages; however, technological solutions that leverage them to provide intelligent learning environments do not exist. Papastratis et al. (2021) underscore that Artificial Intelligence (AI) technologies can play an important role in breaking down the communication barriers of deaf or hearing-impaired people with other communities,

contributing significantly to their social inclusion. Artificial Intelligence is thus defined as machines that respond to stimulation consistent with traditional responses from humans, given the human capacity for contemplation, judgement, and intention Neil et al. (2021).

According to Neil et al. (2021) AI has come to the fore due to the exponential growth in computing capacity, the development of more sophisticated algorithms, and burgeoning data in an 'information society'. Artificial Intelligence therefore provides the promise of developing human-like capabilities in software more effectively, efficiently and at a lower cost (Abardazzou, 2017). Neil et al. (2021) further note that currently, no Sub-Saharan African (SSA) country is listed in the top ten countries expected to benefit most from AI and other emerging technologies that are predicted to usher in the Fourth Industrial Revolution (4IR). Despite this, AI's unprecedented advancements are set to impact all countries, regardless of geography. Neil et al. (2021) reiterates that its impact in Africa will perhaps, be most interesting, as several SSA countries are still coming to terms with issues surrounding the first three industrial revolutions. Research on how Kenya can leverage AI to bridge the existing language barrier between the hearing and deaf communities is important.

Major Artificial Intelligence readiness indices show that Sub-Saharan Africa (SSA) remains one of the lowest-scoring regions on average with respect to government AI readiness. Despite this low score, Mauritius (45th in the world), South Africa (59th), Seychelles (68th), Kenya (71st), and Rwanda (87th) are Africa's top five countries in the 2020 global Government AI Readiness Index (Sey, 2020). In 2011, Kenya was the first African country and 22nd internationally to launch an Open Data initiative, making over 160 government datasets freely available through a publicly accessible online portal (Open Government Partnership, 2011). This means that application development in Kenya is high. Therefore, there is great potential for invention and application of AI technologies. This project focused on bridging the language barrier experienced by the deaf community using technology. Further, the project expands Kenya's dataset with spoken English and recorded Kenyan Sign Language videos that form a basis for future research in assistive technology for deaf learners.

The deaf are deprived of basic human rights from the hearing community due to language barrier and therefore assistive technologies may bridge the gap. Hilde and Colin (2009) note that lack of recognition of sign language, lack of bilingual education, limited availability of sign language interpreting services and widespread lack of awareness and knowledge about the situation of deaf people deprive them of access to large sections of society. It is more common for sign language speakers to be in a segregated minority in their places of education, work and leisure (Butler, Skelton & Valentine, 2001). Hochgesang (2015) in her research titled 'The Case of Kenyan Sign Language' notes that a deaf person in Kenya is generally thought to be unintelligent, to have no language, and to be unable to contribute to the society at large. In fact, access to language can be extremely limited for deaf children born to a hearing family. Unless certain adaptations are made to their environment, these children will often not be able to acquire the mainstream spoken language at a level necessary for customary interaction in the local context. Hochgesang (2015) found out that with no language, these children enter school late anywhere from the age of 7 to 19. Academic learning is of course, adversely affected by such delayed acquisition of language. Some children are kept at home and never go to school. In classrooms where the teachers do not sign, it stands to reason that learning, for deaf Kenyan children, is limited. Their literacy skills appear to seldom progress past the word level or basic sentences. Hochgesang (2015) indicates that lack of effective education, which results in low levels of literacy, often translates to inadequate living conditions. In her conclusion, Hochgesang (2015) observes that deaf Kenyans are at higher risk for unemployment, poverty, and disease.

English is the language of instruction for most schools in Kenya which has its own grammar that deaf learners may not understand. Deaf learners use spatial sequential processing mode whereas hearing learners use auditory sequential processing mode (Adoyo, 2004). According to the Gachathi (1976) report, Kenyan Constitution (2010) and Kenyan Sign Language Bill (2021), the deaf are supposed to be taught in Kenyan Sign Language, which is their mother tongue and written English as medium of instruction. Kenyan constitution (2010) further lays the foundation for education for learners with disability. Enshrining the right to education for all, it introduces the concept of reasonable accommodation and recognizes the right to access educational institutions and facilities for persons with disabilities that are integrated into the society. United Nations aims at achieving the goals of 2030 vision on Sustainable Development Goal 4 that aims to ensure inclusive and equitable quality education and promotion of lifelong learning opportunities for all. As well as Sustainable Development Goal 5, that aims to achieve gender equality ad empower all women ad girls. Due to language barriers among deaf learners these goals might not be achieved due to the high level of exclusion in day to day school activities leading to class repetition, reduced grade transition and high dropout rate among the deaf learners. To bridge this gap the use of assistive Artificial Intelligence technology is of importance.

There has been an attempt to document videos on sign language. According to Bragg et al. (2019), sign language videos can make information more accessible to those who prefer sign language representation through videos or animations. However, pre-recorded videos face some problems for instance production costs are high, later modification of the content is not possible and signers cannot remain anonymous (Kipp et al., 2011). That is why animated avatars are the most common way to present generated sign language (Elliott et al., 2008). Computer avatars can be adapted to suit the use case and audience also, animations can be dynamically adjusted which allows

real-time use cases (Kipp et al., 2011). This necessitated the need for development of a prototype assistive AI technology that converts spoken English to Kenyan Sign Language at real time to break the existing language barrier between deaf and hearing learners during classroom interactions in integrated setups hence promoting inclusion and lifelong learning. This project thus developed and tested an assistive Artificial Intelligence application that translate spoken and written English text to real time Kenya Sign Language to bridge the language barrier among the deaf learners in their day to day activities. The AI4KSL technology is aimed to ensure full inclusion of deaf learners in the community by ensuring they access information and participate in day-to-day school and community activities.

Statement of the Problem

Deaf learners in Kenyan higher education institutions face significant communication barriers due to the lack of qualified KSL interpreters. This exclusion leads to diminished academic performance, social isolation, and limited participation in campus activities, thereby hindering their overall educational experience.

Objectives

1. To develop a comprehensive dataset of spoken English and corresponding KSL signs through collaboration with deaf educators and learners.
2. To design and implement an AI-based translation system capable of converting spoken English into KSL using virtual signing avatars.
3. To evaluate the effectiveness of the AI4KSL system in real-world educational settings, assessing its impact on communication, learning outcomes, and social inclusion.

Theoretical Framework

This study is grounded in the Social Model of Disability, which posits that disability arises from the interaction between individuals and societal barriers, rather than from the individual's impairments alone (Oliver, 1996). By focusing on removing communication barriers through technological innovation, the AI4KSL project aligns with this model, aiming to create an inclusive educational environment that accommodates the needs of deaf learners.

Methodology

A mixed-methods research design was employed, incorporating both qualitative and quantitative approaches. Data collection involved:

Elicitation Tasks: Engaging 48 deaf educators and 584 deaf learners in tasks to record KSL signs corresponding to spoken English sentences.
Dataset Development: Compiling approximately 14,000 English sentences and 20,000 KSL video recordings, which were then transcribed into the HamNoSys notation system for AI processing.
AI System Development: Creating an AI model that interpretes spoken English into KSL, utilizing the collected dataset for training.
Pilot Testing: Implementing the AI4KSL system in selected education institutions to assess its functionality and effectiveness in real educational contexts.

Data Collection

Data was collected through video recordings of signed English words from the Kenyan Sign Language (KSL) dictionary approved by the Kenya Institute of Curriculum Development (KICD). The KSL video dataset was systematically collected to capture the diversity across various subjects in the Kenyan curriculum. Researchers visited multiple schools for the deaf, ensuring representation across different grade levels, age and gender. The respondents were between ages 10-29 years old. The study involved 1 boys, 1 girls, 3 co-educational schools and 1 technical and vocational training institution using stratified sampling technique. A total of 632 participants, 48 deaf educators and 584 deaf learners who were willing to participate and had a good command of KSL. Females were more willing than male to participate hence they formed the majority. The students from boarding schools came from across the Kenyan regions, therefore represented different parts of the country.

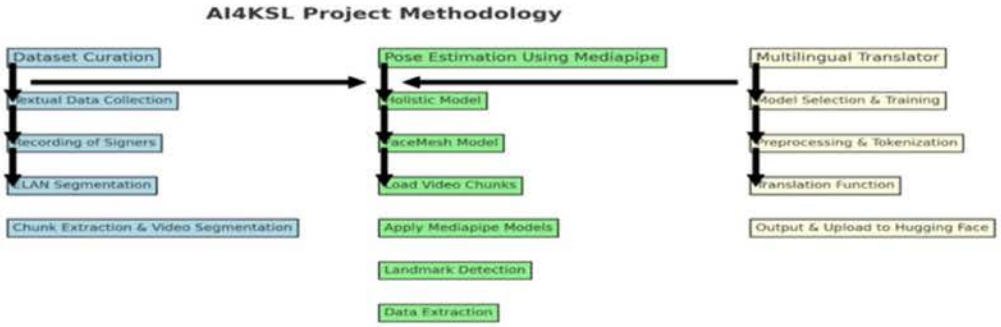
During this phase, videos were recorded using a front-facing camera to document various KSL signs. To ensure a comprehensive representation of sign variability, at least three signers were recorded for each sentence. This approach allowed for a better understanding of how different individuals express the same signs, reflecting the diversity inherent in KSL. Over 14,000 English sentences with corresponding KSL glosses and about 20,000 signed words of KSL were video recorded.

Following the video recording phase, cleaning and pre-processing stage was implemented. All recorded videos were reviewed and split using the Shortcut video editor to ensure that each video represented a single word or sentence. This was crucial for maintaining the clarity and usability of the dataset. In the next pre-processing step, the ELAN tool was employed to segment the videos. Researchers marked the start and end of each sign, ensuring accurate representation of the signing actions. Additionally, linguistic tiers were defined within the ELAN tool, establishing three specific tiers: English Sentence, Gloss and Finger Spelling. The inclusion of a fingerspelling tier

was essential to distinguish sections that involved fingerspelling from other signs, enhancing the dataset's linguistic richness. By combining these structured data collection and pre-processing methods, the project aimed to create a robust dataset that accurately captures the nuances of KSL, ultimately contributing to research and educational resources in the field of sign language studies (Wanzare, Okutoyi, Kang'ahi & Ayere (2023).

The recorded video-clips were analysed and transcribed into five articulatory parameters consisting of handshape, palm orientation, movement, location, and expression/non-manual signals. Data Curation was followed by Pose Estimation using Mediapipe and finally, the development of Multilingual Translator. This process is well represented by Ayere et al (2024) and summarized in Figure 1:

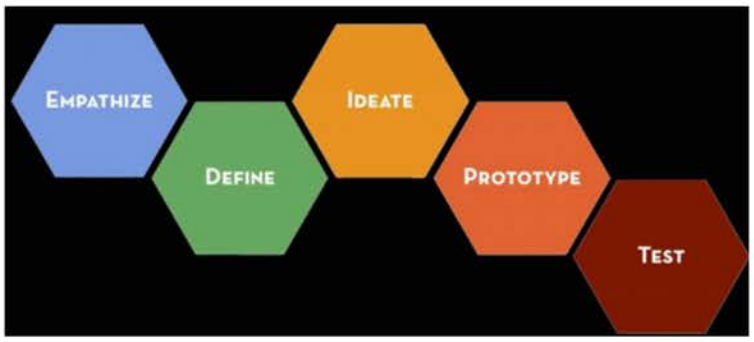
Figure 1
AI4KSL Project Methodology



Theoretical Framework

This project borrowed from the design thinking approach proposed by the Hasso-Plattner Institute of Design at Stanford D School (2010) in developing the assistive AI technology for deaf learners. Design thinking is a five-step process, where each step focuses on a specific goal. Each of the steps is independent of the next step but is borne out of the previous step. The steps include empathy, definition, ideation, prototyping, and testing as shown in Figure 2.

Figure 2
Design Thinking Process (Hasso-Plattner Institute of Design at Stanford D School (2010)



According to the Design Thinking Model, to empathize is to fully understand the experience of the user for whom you are designing. This can be done through observation, interaction, and immersing yourself in their experiences. Through empathy, this project through interaction with the deaf, gathered data on spoken English as well as glossed words and sentences and recorded their videos signed in KSL.

The second step is defining which of these aspects entail developing a deep understanding of your users and the design space and, based on that understanding, to come up with an actionable problem statement, which is your point of view. The point of view should be a guiding statement that focuses on specific users as well as insights and needs that were uncovered during the empathy mode. At this stage the data collected guided the development of a dataset comprising over 14,000 English sentences with corresponding KSL glosses and about 20,000 signed words of KSL videos.

The third and fourth steps involve ideation and prototyping; ideation is to explore a wide variety of possible solutions through generating a large quantity of diverse possible solutions, allowing you to step beyond the obvious and explore a range of ideas. Prototyping entails transformation of ideas into a physical form so that you can experience and interact with them and, in the process, learn and develop more empathy. After video recording phase, cleaning and pre-processing stage was implemented. All recorded videos were reviewed and split using the Shortcut video editor that led to the development of a prototype AI avatar.

Finally, testing which entails trying out high-resolution products and using observations and feedback to refine prototypes, learn more about the user, and refine your original point of view. The assistive AI4KSL technology was

further tested for teaching and learning of deaf learners with a view of evaluating its operationalization and refining it for further recommendation as innovative pedagogy for deaf teaching and learning.

Inclusive education considerations in higher education using AI4KSL Findings

Females were more proactive and willing to participate in the study than male. Female students had fluent signs compared to male students. This may affect their participation in teaching and learning hence influencing academic achievement across subjects. Female teachers were equally more proactive than male ones. More female teachers participated in the research willingly compared to male teachers. Most male and female teachers were fluent. There is need of deaf male mentors to support the boy child to be empowered in KSL to improve their participation and engagement in future. Qian (2015) observes that in the context of language learning, gender remains as a feasible aspect of language learning and how it is affected by it, either due to reasons such as natural biological differences between males and females or even societal or cultural norms.

Non-manual signals such as facial expressions were more evident among female signers as compared to male ones. However, there were no major word sign variations across gender. Further, young male participants aged 7-13 mostly in primary schools were less fluent compared to young females of the same age group. In mixed gendered schools, more male participants were encouraged to participate in the research. The AI avatar embraced both male and female figures to bridge the gap of non-pro activeness of male participants as well as to avoid gender bias. Figure 3 and 4 are representations of the male and female avatar:

Figure 3: Male avatar output

Figure 4: Female avatar output

Inclusive Education Considerations in Higher Education Using AI4KSL in Kenya

AI4KSL (Artificial Intelligence for Kenyan Sign Language) is a transformative initiative aimed at addressing communication barriers for deaf learners in Kenyan higher education. To ensure that its integration supports inclusive education, several critical considerations were/will addressed:

1. **Accessibility and Equity**

- Universal access- AI4KSL should be available across all universities and colleges, especially public institutions with limited resources.
- Digital Divide: Provision must be made for institutions and students in under-resourced areas where internet access, computers, or smartphones are limited (UNESCO, 2020).

2. **Curriculum Integration**

- Mainstreaming Use: AI4KSL should not be a stand alone tool but integrated into course delivery, lecture halls, tutorials, and examinations.
- Content Alignment: Sign language translations must match curriculum-specific vocabulary and local dialects of KSL.

3. **User-Centered Design**

- Participatory Development: Deaf learners and educators were directly involved in the development, testing, and refinement of AI4KSL tools (Ayere et al., 2024).
- Customization: The system should allow adaptation for different learning styles, speeds, and content domains.

4. **Training and Capacity Building**

- Lecturer Training: Instructors need training to use AI4KSL effectively and incorporate it into their pedagogical practices.
- Technical Support: Ongoing IT support is necessary to ensure the reliability of the AI system and troubleshoot issues in real time.

5. **Ethical and Cultural Sensitivity**

- Respect for Deaf Culture: AI avatars and translations must reflect the cultural nuances of Kenyan Deaf communities.
- Data Privacy: Consent and ethical data collection practices should be upheld, especially when involving video recordings of signers.

6. **Monitoring and Evaluation**

- Feedback Loops: Establish mechanisms for continuous feedback from students and lecturers to improve AI4KSL's performance.

- Impact Assessment: Regularly measure learning outcomes, communication improvement, and social inclusion metrics.

7. **Policy and institutional support**

- National Policies: Government support and legal frameworks are needed to formalize the use of AI4KSL in education.
- Institutional Adoption: Universities must adopt inclusive ICT policies to support innovation like AI4KSL.

In summary, AI4KSL presents a powerful tool for advancing inclusive education by reducing communicInclusive Education Considerations in Higher Education Using AI4KSL in kenya. AI4KSL presents a powerful tool for advancing inclusive education by reducing communication barriers for deaf students. However, its success depends on deliberate planning, ethical deployment, training, accessibility, and strong policy support. When these considerations are addressed, AI4KSL can help realize Kenya's commitment to inclusive, quality education for all under Sustainable Development Goal 4.

Conclusion and Implications

The AI4KSL project not only addresses a critical gap in educational accessibility for deaf learners in Kenya but also sets a precedent for the use of AI-driven assistive technologies to foster inclusion, equity, equality and lifelong learning opportunities for marginalized populations. The project not only advances technological solutions but also contributes valuable resources for future research in sign language and assistive technology. The AI4KSL project demonstrates the feasibility and effectiveness of using artificial intelligence to bridge communication gaps between deaf learners and the broader educational community. By providing real-time interpretation of spoken English into KSL, the system promotes inclusivity, improves learning outcomes, and supports the social integration of deaf students in higher education institutions.

Recommendations

- Policy Integration: there is need to incorporate AI4KSL technology into national education policies to standardize its use across higher education institutions.
- Capacity Building: there is need for provision of training for educators and administrators on the implementation and utilization of AI4KSL systems.
- Scalability: Expand the AI4KSL project to include additional languages and dialects, ensuring broader accessibility for diverse deaf communities.
- Sustainability: Establish partnerships with governmental and non-governmental organizations to secure funding and support for the long-term maintenance and development of AI4KSL technology.

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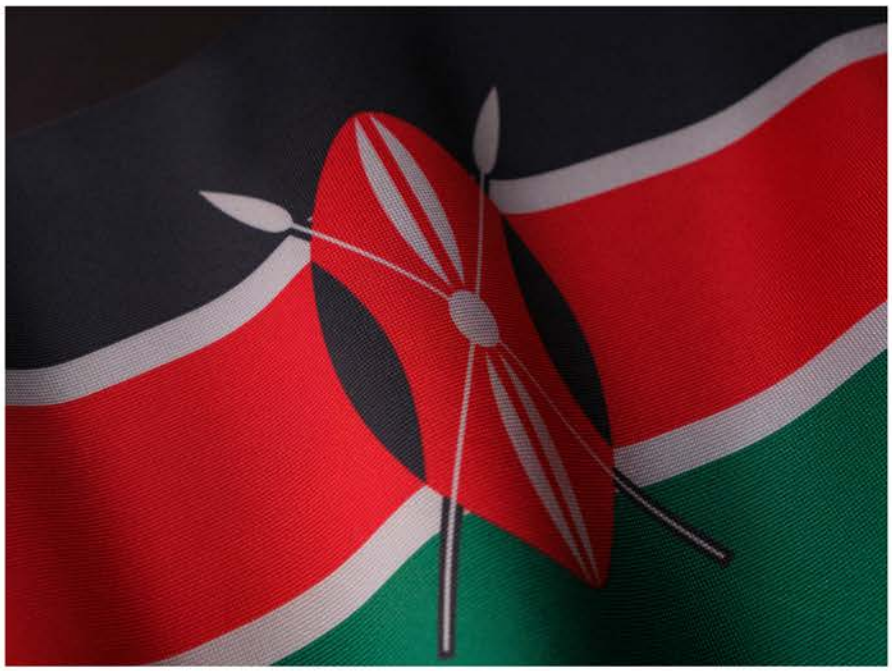

Teachers' Attitudes Towards Inclusive Education: Embu County, Kenya

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Abstract

Inclusive education has become a global trend in the provision of services for students with disabilities. In Kenya and other developing nations, international initiatives from UNESCO and other nongovernmental organizations have contributed to the consensus that allchildren have a right to a free and appropriate education and that all students with disabilities should be educated in inclusive settings. Thus, the Kenyan government has issued policy Statements to guide the implementation of inclusive education. This study surveyed primary teachers from Embu County, examining factors affecting teachers' attitudes toward including students with disabilities in the general education classroom. The Inclusion Attitude Scale for High School Teachers (ISHST) and the demographic survey questionnaires were distributed to 129 in-service general education teachers and 71 special education teachers at Embu County, Kenya. Two hundred questionnaires were included in the analysis, resulting in a response rate of 100 %. Results of the study indicated that, overall, special education teachers reported more positive attitudes than general education teachers toward students with disabilities. It is beneficial to understand teachers' attitudes because those positive attitudes play a role in the success of the implementation of inclusive environments.

Keywords: teacher attitude, integration, mainstream, inclusive education

Background of Study

Out of the 93 million children globally, approximately 5% have moderate to severe disabilities (WHO, 2011). Of the 58 million out-of-school children worldwide, nearly one-third are children with disabilities (UNESCO, 2015). This issue is particularly acute in Sub-Saharan Africa, where 6% of children are identified as having moderate to severe disabilities, and 66% (2.9 million) of individuals with disabilities live in rural areas with limited access to inclusive education (Global Disability Rights, 2019). Inclusive education emphasizes wholeness and the teacher's capacity to manage diversity within the classroom (Phasha, Mahlo, & Dei, 2017). However, negative teacher attitudes continue to hinder its effective implementation (Glizzard, 2011). As inclusive education is typically implemented in general education settings, the attitudes of general education teachers are pivotal (Kern, 2006; UNESCO, 1994). Studies consistently identify teacher attitudes as critical to the success of inclusion efforts, especially as teachers navigate increasingly diverse student populations (Avramidis, Bayliss, & Burden, 2000; Paterson & Graham, 2000). In developing contexts, children with disabilities frequently lack access to basic education (Croft, 2010), with rural areas facing additional barriers due to inadequate infrastructure and limited professional support (Charema, 2010). While some countries—such as the U.S., Canada, Botswana, Zambia, Uganda, Nigeria, Ghana, and Tanzania—have made strides toward inclusive policies (Srivastava, De Boer, & Pijl, 2015; Okyere, Aldersey, & Lysaght, 2019), challenges persist. In Kenya, inclusive classrooms are typically led by either a general or special education teacher, with limited or no collaborative models in practice (Kihura,2020).

In this presentation, the following research questions were developed to elicit primary teachers' attitudes in Embu County public schools: (a) Do teachers' demographic characteristics such as age, academic education level, class characteristics (class size & grade level), gender, and teaching experience affect their attitudes towards including students with disabilities in the general education classroom? (b) Do general education and special education teachers in Embu County differ in their attitudes towards including students with disabilities in the general education classroom? (c) Does the number of special education courses taken by a teacher and the amount of in-service training in inclusive education affect teachers' attitudes towards including students with disabilities in the general education classroom? (d) Does the student's incidence disability affect teachers' attitudes towards including students with disabilities in the general education classroom? (e) Does a student type of disability affect teachers' attitudes towards including that student in the general education classroom?

Purpose of the Study

The purpose of the study was to examine factors that affect primary teachers' attitudes towards including students with disabilities in the general education classroom in Embu County, Kenya. The Inclusion Attitude Scale for High School Teachers (ISHST; Ernst & Rogers, 2009) and the demographic survey questionnaires were distributed to two hundred primary teachers in Embu County.

Methodology

Sample. The selected schools for this study were primary public schools from the five sub-counties, grade one to grade eight general education teachers and special education teachers. Schools in Embu County comprise: schools in the rural area, private and public primary schools (Ministry of Education & UNESCO, 2005). The schools selected to participate in this study were public primary schools that practiced inclusive education. The researcher assumed the average number of teachers per school was 15 teachers in total. In Embu County, as also seen all over rural areas in Kenya, motorcycle transportation, commonly known as Boda boda, are how people are transported from one place to another due to poor infrastructure (Luchidio, Kahuthia & Gatebe, 2013). The researcher chose the location of the study because an inclusive education project was piloted in Embu County in 2005, after which inclusive education was implemented (Nyagah 2009) and in 2003, primary education was made free to all students, a policy that increased attendance in schools in Kenya by almost 40 percent within four years, from 5.9 million in 2003 to 8.2 million in 2007.

Theoretical Framework. The ISHST scale was created using Eagly and Chaiken's (1993) theory of attitude and identified 11 categories, including (a) inclusion's general impact on the teacher, (b) inclusion's impact on academics and learning opportunities, (c) inclusion's impact on curriculum, (d) inclusion's impact on student behaviors, (e) inclusion's impact on safety, (f) inclusion's impact on social and emotional development of students, (g) philosophy about which students should be included, (h) teacher preparation time, (i) teacher self-efficacy, (j) teacher training, and (k) teaching methods.

Participants. The participants and the sampling frame were Embu County public primary school teachers (1st through 6th grades and 7th through 8th grades) employed by either the TSC or the school board of governors in Embu West, Embu North, Embu East, Mbeere South, or Mbeere North. The participants ranged from 20 to 65 years of age. All the teacher participants were informed of their rights as determined by the Institutional Review Board (IRB) before responding to the survey.

Instrument. The Inclusion Attitude Scale for High School Teachers (ISHST) and the demographic survey questionnaires were distributed to 129 in-service general education teachers and 71 special education teachers. All the primary teachers participating in this study were expected to complete the two surveys. The demographic questionnaire developed for this study provided information regarding a teacher's background: school district, age, gender, experience in current school, total teaching experience, school size, highest level of degree earned, primary subject taught, experience with students with disabilities, special education courses taken, in-service training on inclusion, inclusive education experience, teacher category (special education vs. general education), grade level taught, presence of child with special needs in teacher's home, availability of additional staff members, and availability of teacher support services.

The ISHST instrument (Ernst & Rogers, 2009) was selected because the tool was created to measure teacher attitudes, although the survey was developed to measure high school teachers' attitudes. The survey measures teachers' attitudes on the following factor subscales (a) cognitive beliefs about inclusion (CBI), (b) affective responses to inclusion (ARI), and (c) behavioral responses to inclusion (BRI). Each ISHST item was rated on a scale of 7 (strongly disagree), 6 (moderately disagree), 5 (mildly disagree), 4 (neither agree nor disagree), 3 (mildly agree), 2 (moderately agree), 1 (strongly agree) with their levels of agreement or disagreement about their comfort, preparedness, ability, and responsibilities related to teaching in inclusive classrooms, the skills of students with disabilities, and the effects and benefits of inclusive classrooms (Ernst & Rogers, 2009). The ISHST survey was used in this study to predict whether there were any relationships between the specific teachers' demographic characteristics, class characteristics, and disability type, and primary teachers' attitudes in Embu County toward including students with disabilities in the classroom. The possible connections included predictions of relationships between attitudes and the following variables: age, gender, academic education, grade level, teaching experience, teacher training and student incidence disability (i.e., high incidence and low incidence) and disability type as measured by cognitive beliefs about inclusion, affective responses to inclusion, and behavioral reactions to inclusion (Ernst & Rogers, 2009).

Results

Description of the Sample. Means by subgroup results are presented in Table 1.

Table 1

Means by Subgroup Results (ISHST; Ernst & Rogers, 2009)

		CB		ARI		BRI	
Number of Subscale Items		12		8		8	
Variable /Value	N	Mean	SD	Mean	SD	Mean	SD
Gender							
Male	56	5.63	1.04	5.19	1.38	6.19	0.90
Female	144	5.44	1.04	5.07	1.24	6.18	0.78
Age (years)							
(≤ 30)	13	5.61	1.06	5.36	1.35	6.30	0.78
(31-40)	24	5.37	1.10	5.02	1.36	6.04	0.87
(41-50)	86	5.58	1.10	5.10	1.31	6.22	0.83
(≥51)	77	5.41	0.95	5.10	1.21	6.15	0.80
Teaching Experience (years)							
(≤ 10)	52	5.63	0.88	5.03	1.24	6.14	0.76
(11-20)	46	5.36	1.12	5.08	1.41	6.14	0.87
(≥21)	102	5.49	1.08	5.16	1.24	6.22	0.82
Academic Qualification							
		CB		ARI		BRI	
Number of Subscale Items		12		8		8	
Variable /Value	N	Mean	SD	Mean	SD	Mean	SD
P1, Diploma, or Other	134	5.52	1.03	5.12	1.21	6.18	0.78
Bachelor	59	5.47	1.01	5.05	1.42	6.19	0.90
Masters	7	5.24	1.48	5.41	1.31	6.02	0.79
Grade Level							
Lower Primary (1-3)	45	5.47	0.90	4.98	1.24	6.18	0.68
Upper Primary (4-8)	155	5.50	1.08	5.14	1.29	6.18	0.85
Classroom Size							
Small (≤ 20)	9	5.81	1.20	4.90	1.52	6.24	0.97
Medium (21-30)	67	5.46	1.04	5.06	1.35	6.24	0.70
Large (≥31)	124	5.49	1.03	5.15	1.22	6.14	0.87
Teacher Type							
General Education and Other	129	5.46	1.04	4.81	1.36	6.05	0.87
Special Education	71	5.55	1.04	5.65	0.90	6.41	0.66
Special Education Courses							
None (0)	47	5.44	1.06	4.41	1.59	6.10	0.78
Very little (1-2)	55	5.61	0.95	5.05	1.19	6.04	0.90
Moderate (3-4)	52	5.45	1.08	5.16	1.05	6.10	0.84
Extensive (≥5)	46	5.47	1.10	5.83	0.78	6.50	0.65
Number of Subscale Items		12		8		8	
Variable /Value	N	Mean	SD	Mean	SD	Mean	SD
In-service Training (days taken in inclusive education training)							
None (0)	40	5.50	1.06	4.50	1.55	6.18	0.85
Very little (1)	44	5.24	0.95	4.69	1.26	5.91	0.87
Moderate (2-3)	58	5.56	1.15	5.28	1.15	6.10	0.92
Extensive (≥4)	58	5.63	0.97	5.67	0.89	6.47	0.51
Low Incidence Disabilities (LID)							
(0)	138	5.39	1.05	4.99	1.34	6.12	0.86
(1 student)	32	5.56	1.04	5.23	1.13	6.20	0.78
(≥2 students)	30	5.92	0.91	5.50	1.05	6.40	0.62
High Incidence Disabilities (HID)							
(0)	7	5.46	1.10	5.35	1.10	6.20	1.12
(1-3 students)	127	5.58	0.98	5.16	1.28	6.20	0.76
(≥4 students)	66	5.34	1.14	4.98	1.29	6.14	0.90
Students with intellectual disability							
No	90	5.63	1.06	5.26	1.26	6.20	0.81
Yes	110	5.38	1.01	4.98	1.28	6.16	0.82
Students with learning disability							

Table 1

Means by Subgroup Results (ISHST; Ernst & Rogers, 2009)

		CB		ARI		BRI	
Number of Subscale Items		12		8		8	
Variable /Value	N	Mean	SD	Mean	SD	Mean	SD
No	89	5.48	0.98	4.99	1.33	6.17	0.71
Yes	111	5.51	1.09	5.20	1.23	6.18	0.90
Students with visual impairment							
No	111	5.33	1.06	4.97	1.29	6.03	0.90
Yes	89	5.70	0.98	5.28	1.24	6.36	0.66

Note: $N = 200$
Cognitive Beliefs about Inclusion (CBI)
Affective Responses to Inclusion (ARI)
Behavioral Responses to Inclusion (BRI

Summary of the ISHST Measurement Instrument

Table 2

Reliability Statistics of the ISHST Subscales

ISHST subscales	Cronbach's Alpha (α)	Number of Items
Factor1 - CBI	.814	12
Factor 2 - ARI	.776	8
Factor 3 - BRI	.786	8

The factors are cognitive beliefs about inclusion (CBI), affective responses to inclusion (ARI), and behavioral responses to inclusion (BRI). This indicates that the internal consistency of the three subscales of ISHST yielded excellent overall reliability, applying the rules of thumb provided by George and Mallery (2010).

Results and Findings On Research Questions

Research Question 1

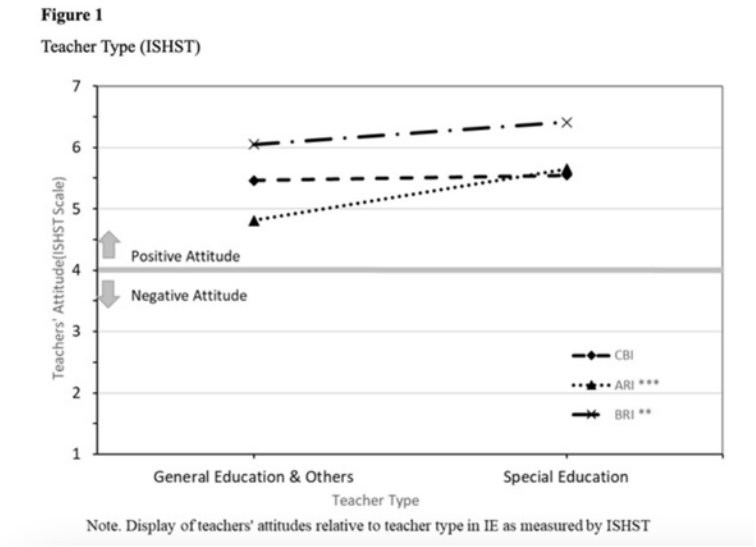
Do teachers' demographic characteristics, such as academic qualification, age, gender and teaching experience, and class characteristics such as grade level (upper vs. lower) and class size affect teachers' attitudes towards including students with disabilities in the general education classroom? With one notable exception, demographic and class characteristics were not related to teacher's attitudes about inclusive education as measured by the subscales of ISHST

Research Question 2 (a)

Do general education and special education teachers in Embu County differ in their attitudes towards including students with disabilities in the general education classroom? The variable of teacher type was related to teacher's attitudes about inclusive education as measured by two of the two subscales of the ISHST, as displayed in the Table below. There were significant effects found between teacher type for two of the three subscales of the ISHST instrument: affective response to inclusion and behavioral response to inclusion. Special education teachers were more positive about affective response to inclusion (e.g., individual's emotions, moods, and feelings) than general education teachers. Similarly, special education teachers were more positive about behavioral response to inclusion (e.g., individual's actions that people practice when they feel various emotions) than general education teachers, as displayed in Figure 1. However, teacher type did not uniquely explain a significant amount of variance in the full model containing the demographic, class characteristics, teachers' training, and incidence disability.

Figure 1

Teacher Type (ISHST)

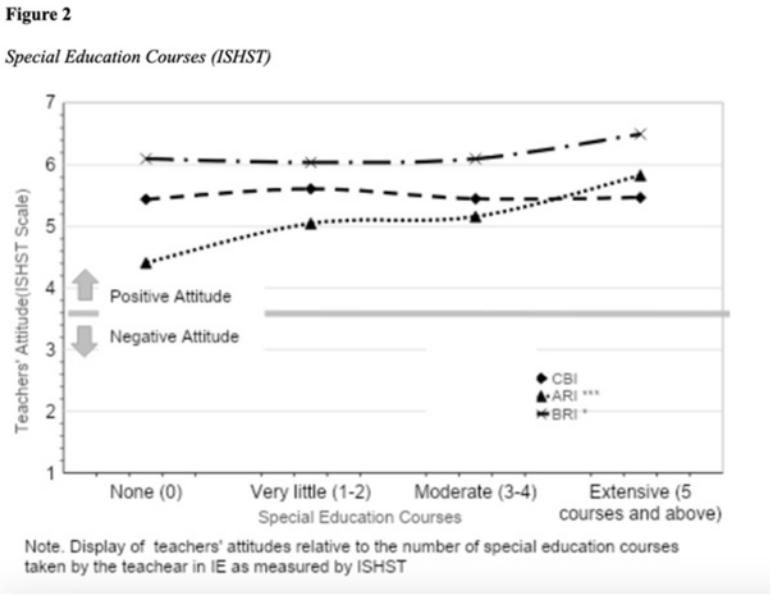


Research Question 2 (b)

Does the number of special education courses taken by a teacher and the amount of in-service training received on inclusive education affect a teachers' attitudes towards including students with disabilities in the general education classroom?

Figure 2

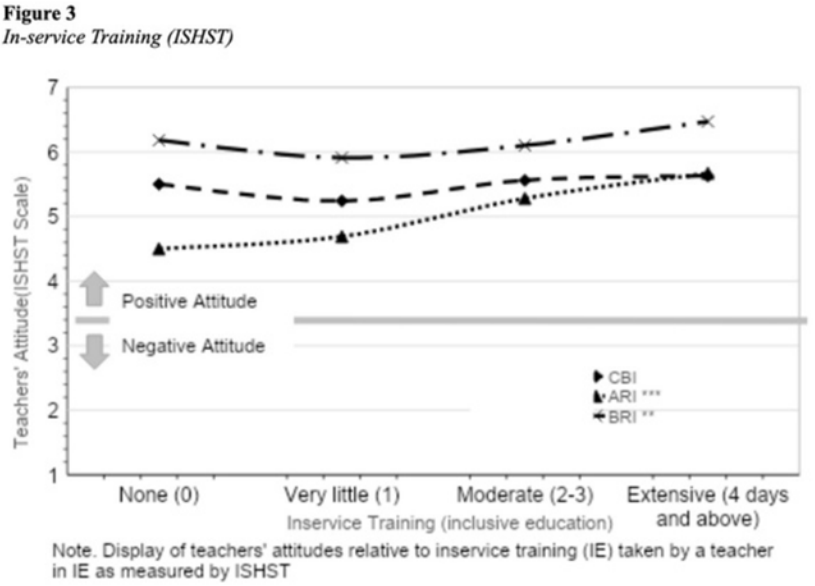
Special Education Courses (ISHST)



The relationship between teachers who had received special education courses and behavioral responses to inclusion, the means for the four special education courses groups were examined. The means for all four subgroups of teachers who had received special education courses were on the positive end of the score scale. However, teachers who received extensive special education courses indicated positive attitudes toward behavioral responses to inclusion than teachers who received moderate courses or very little courses, or no courses as shown in figure 2.

The teachers that received inclusive education was a significant predictor for the behavioral responses to inclusion subscale of the ISHST. The means for all the four groups of the teachers were on the positive end of the score scale. However, teachers who had received extensive inclusive education were more positive to behavioral responses to inclusion than teachers who had received moderate training, or very little training, or none. Teachers who had not received inclusive education training were more positive about behavioral responses to inclusion than teachers who had received moderate inclusive education training or very little training as shown in Figure 3.

Figure 3
In-service Training (ISHST)

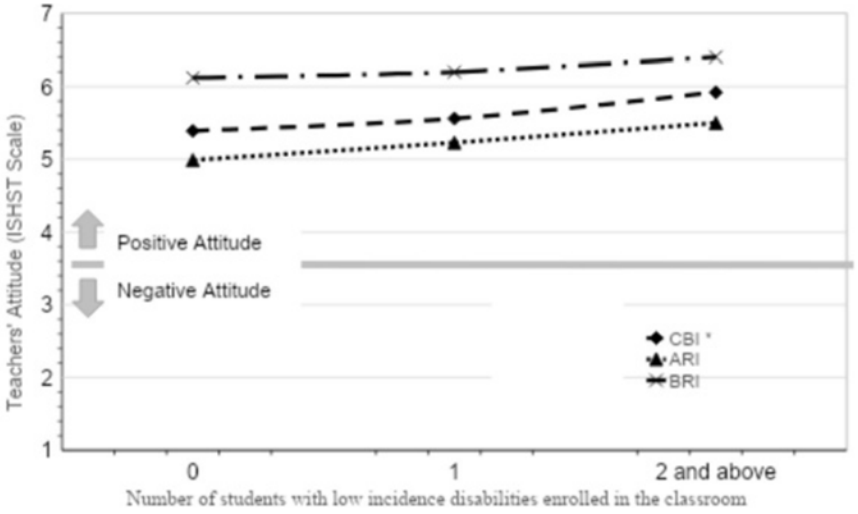


Note. Display of teachers' attitudes relative to inservice training (IE) taken by a teacher in IE as measured by ISHST

Research Question 3 (a)

Does the student's incidence disability (high incidence vs. low incidence disability) in the classroom affect teachers' attitudes towards including students with disabilities in the general education classroom?
Low incidence was a significant predictor for only one subscale of the ISHST scale. The LID subgroup was a significant predictor for the cognitive belief about the inclusion subscale as measured by ISHST as shown in Figure 4.

Figure 4
Low Incidence Disabilities (ISHST)



Note. Display of teachers' attitudes relative to number of students in the classroom with low incidence disabilities (LID) as measured by ISHST

Research Question 3 (b)

Does student disability type affect teachers' attitudes towards including students with disabilities in the general education classroom?

Intellectual disability was a significant predictor for the affective responses to the inclusion subscale of the ISHST. To understand the relationship between intellectual disability and the affective responses to inclusion (e.g., feelings, emotions), the means for the two-class groups with students with intellectual disability (0 and 1) were examined, as displayed on Table 1. The means for all intellectual disability subgroups indicated positive attitudes. However, teachers with no student with intellectual disability in the classroom indicated more positive attitudes to affective responses to inclusion than teachers with at least one student.

Future Research

Through qualitative and quantitative measures, future research would focus on doing studies different counties in Kenya to determine the specific factors influencing primary special education and general education teachers' attitudes towards including students with disabilities in general education classrooms, among high school general education teachers and special education teachers in Kenya to determine the specific factors influencing their attitudes towards including students with disabilities in the general education classrooms. Research should also be undertaken among students without disabilities to determine factors that influence their attitudes towards including students with disabilities in the general education classrooms. Additionally, research should include parents of students with disabilities to determine factors that influence their attitudes towards letting students with disabilities attend inclusive education schools. Investigating pre-service teachers to determine factors that influence their attitudes towards including students with disabilities in the general education classroom would also be relevant (Kihura, 2020).

Summary

The results from this study indicate that there is a positive influence on primary school teachers' attitudes towards including students with disabilities in the general education classroom in Embu County. The factors that indicate influence are small classroom size, special education teachers, teachers with extensive special education courses teacher training, teachers with extensive inclusive training, teachers with 2 and above students in the classroom with low incidence disability and teachers with students with visual disabilities.

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Fostering Inclusion: Evidence-Based Strategies to Support Foster Youth with Disabilities in Schools and Communities

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Abstract

Youth in care (YIC), including those with disabilities, face significant barriers to inclusion and belonging in schools and communities. These barriers span behavioral, academic, and social-emotional challenges and are compounded by risks of homelessness, criminal justice involvement, and health disparities. This project explores these barriers through a multidisciplinary lens, integrating perspectives from education, social work, mental health, and juvenile justice. Through a comprehensive literature review and thematic analysis, key evidence-based practices are identified, focusing on youth-centered and trauma-informed transition planning, addressing punishment and incarceration, and mitigating placement and service instability. Findings emphasize the importance of interagency collaboration and trauma-informed practices to support the holistic well-being of YIC. Policy recommendations are offered to guide practitioners in addressing the unique needs of this vulnerable population, with the goal of promoting long-term health, educational success, and quality of life.

Keywords: youth in care, foster care, youth with disabilities, youth-centered transition, trauma-informed care, special education, social work, juvenile justice, inclusion, collaboration

Youth who are involved in foster care systems, often referred to as youth in care (YIC), with and without identified disabilities face myriad obstacles to true inclusion and belonging in school and community settings (Palmieri & La Salle, 2017). These obstacles include increased risks of behavioral and academic difficulties, deficits in social-emotional learning (Scherr, 2015; Palmieri & La Salle, 2017), and heightened risks for homelessness, unplanned pregnancy, and involvement with the criminal justice system (Courtney et al., 2011; Reilly & Schlinkert, 2024). Further, YIC who also have disabilities face compounding barriers to access and inclusion in their schools, families, and communities. This project explores some of these barriers and presents practitioners who work with YIC in a variety of roles with specific evidence-based practices and policy recommendations that can help meet the specific needs of this vulnerable population.

Definitions of Key Terms

It is important that we take the time to define some of the terms we use throughout this project to help ensure clarity and to help readers understand who we are discussing, and in what contexts. This is especially important given the complex or specialized vocabulary that is often used when discussing youth with disabilities and foster care systems, and given the international nature of this project. Clear definitions help to minimize ambiguity and ensure that terms with multiple meanings are interpreted appropriately within the context of the project It also helps set the scope of the project by clarifying boundaries (e.g., what age range is considered "youth") and to make the discussion of these issues more accessible to a diverse audience, including readers from different disciplines or levels of expertise. Ultimately, it prevents misinterpretation and ensures that the research is understood as intended.

Youth

This project uses the term “youth” to mean individuals who are approximately 14-22 years old. We use youth as opposed to “children”, because the interventions that are the focus of this project have the strongest evidence base for people who are older than early childhood or elementary, or “students”, because this encompasses minors who are both in school and those who are school-aged but not currently in school.

In Care

“In care” for our purposes means involvement in a formalized and structured system that has resulted in the removal of a minor from their biological and/or legal guardian, without the requirement of their consent, and placed them in a temporary living arrangement. While there is almost infinite variation and nuance, this often includes the court involvement of local or tribal governments, and is often (but not always) the result of accusations of a misdeed by the guardian, like neglect or abuse. It differs from adoption or mutually-agreed-upon familial placements because of the lack of consent required and by the (relatively) temporary nature of the placement arrangements. In the United States, the median time spent in foster care is about 18 months, with 35% exiting in less than a year, 48% staying for 1-3 years, 12% staying in care 3+ years, and 5% spending 5+ years in care (HHS, 2025).

Disability

In this project “disability” refers to individuals who have been identified by the medical establishment as having a disabling condition, those whose school system has identified as qualifying to receive special education supports and services, those who have not been identified but would qualify if assessed, and those who self-identify as disabled.

Barriers

In addition to the negative outcomes related to health, inclusion, independence, and quality of life that were outlined at the beginning of this paper, YIC are further disadvantaged when the professionals who serve them are themselves put at disadvantage. For example, a major challenge that exists for professionals who serve YIC with disabilities is related to the multidisciplinary nature of the problems that they face, and the variety of life domains and systems that are impacted (e.g., legal, behavioral, school-based, community-based, mental health, academics, family services, law enforcement, etc.). These barriers are reinforced when these individual systems (e.g., social services, mental health, law enforcement, special education) operate independently from each other. Special education teachers are trained in education policies and practices, social workers are trained and licensed in social services, parole and police officers are trained in juvenile justice and law enforcement, counselors trained and licensed in mental health disciplines, and so on. While practitioners cannot know all and be all to the youth they serve, we can endeavor to familiarize ourselves with some of the evidence-based practices from multiple disciplines that have the potential to support the youth we work with.

Methods

Key evidence-based practices were identified through a large-scale review of literature. Peer-reviewed journal articles were identified using the key terms foster youth, foster care, youth in care, disabilities, disabled foster youth, children in foster care, special education, transition, leaving foster care, after foster care, and child welfare in various combinations. Thematic analysis was conducted using ATLAS.ti software to identify relevant articles, and the prominent themes related to education, social work, mental health, and juvenile justice. Researchers then conferred and chose practices to highlight that were determined to be most universally applicable to an international multidisciplinary audience. These identified evidence-based practices and interventions are discussed below.

Practices in Focus

Supporting youth with disabilities in foster care systems requires a multifaceted and multidisciplinary approach. The key evidence-based practices that are the focus of this project include 1) transition planning that is both youth-centered and trauma-informed, 2) reforms in societal punishment, exclusion, and incarceration, 3) addressing placement instability, 4) impact of trauma-informed care. These strategies collectively empower YIC and promote their overall well-being and post-care quality of life.

Youth-centered and Trauma-Informed Transition Planning

YIC with disabilities face unique challenges during their transition to adulthood and often experience a lack of support once they age out of foster care and the public school system. Addressing these challenges is essential for improving their postsecondary outcomes and overall well-being. In the United States YIC with disabilities who qualify to receive special education services under the Individuals with Disabilities Education Act (IDEA) should be part of a formal transition planning process, in the form of an Individual Transition Plan (ITP), no later than their 16th birthday (ED, 2004). When these plans are in place, professionals who work with YIC can leverage them to meet the specific, and often changing, needs of each student they work with. The research literature has identified 16 specific evidence-based practices that schools can utilize to help youth with disabilities find maximum levels of post-school success (Test et al., 2009) during the transition planning process. While some of these evidence-based predictors, like parent involvement, might be difficult to implement successfully for YIC, there are several predictors that can be of especial benefit, like a focus on self-determination and self-advocacy, interagency collaboration, student support networks, paid work experiences, and social skills training.

Youth-centered

Transition planning for YIC should directly and intentionally involve the youth themselves, and representatives from the different systems that have influence over their lives. Person-centered planning has become a hallmark of transition planning in many schools and communities, and expanding this framework to intentionally include the nuanced needs of YIC provides excellent opportunities for the youth themselves to self-advocate and self-direct their futures. Greeno et al. (2023) highlight how centering the voices of YIC "allows for the authentic engagement of youth in their service and transition planning and allows youth to work with the systems—i.e., housing, mental health, and education—that directly impact their lives" (p. 2). This direct connection, and self-direction, is absolutely essential for YIC to lead self-determined lives.

Trauma-Informed

Traumatic experiences impact so many of the things we think, say, and do. Traumatic events that occur in childhood and adolescence actually change the way our brains develop and function. The implications here for YIC cannot be overstated. It is essential that educators, councilors, social workers, and other service providers recognize that the adversity YIC have experienced has played a pivotal role in their brain's neural development, and that "behaviors that now threaten these children's academic and social mastery were originally adaptions they made to the uncontrollable stress in their lives" (Craig, 2016, p. 32). This means that the fight or flight responses that once aided in their survival could now result in their incarceration or bodily harm and should therefore be viewed as something to heal from and not simply punish. These understandings should be front and center when it comes to transition planning, and services and supports that foster healing and resilience should be a prominent part of YIC's ITPs.

Punishment, Exclusion, and Incarceration

YIC with disabilities are more likely to be the victims of crime, to have contact with law enforcement, and to be incarcerated than their non-disabled peers not in care. In fact, there is evidence that as many as 85% of youth who are incarcerated in the US have a disability (National Council on Disability, 2025). Some factors that contribute to these higher levels of law enforcement contact and incarceration are connected directly to the their disability, characteristics of which can include communication delays, minimal eye contact, repetitive verbal or physical behaviors, sudden movements towards or away from authority figures, a lack of response to verbal communication, and a hypo or hypersensitivity to sound, light, or touch (Abrams, 2020; Mesibov & Sreckovic, 2017; Sreckovic et al., 2022; Yoho & Harrison, 2024). These behaviors can be interpreted as intoxication, defiance, or disrespect (Debbaudt, 2007; Debbaudt & Rothman, 2001; Railey et al., 2020) and increase the likelihood that youth will be injured and/or incarcerated as a result.

Unfortunately, the experiences YIC have while at school also contribute significantly to their higher levels of contact with law enforcement and incarceration, often referred to as the school-to-prison pipeline. As YIC and youth with disabilities are both populations that experience exclusionary discipline and law enforcement contact at disproportionate rates, youth who are both in care and have a disability are at compounded risks. In fact, youth who have had recent contact with child protective services (CPS) had higher odds of school suspension compared to students without CPS contact (Font et al., 2023). What's more, students whose mis/behavior is punished at school with discipline practices that are harsh and exclusionary, like suspension or expulsion, are almost three times as likely to be in contact with the juvenile justice system by the next school year (Horowitz et al., 2017; Yoho, 2023).

Policy makers and practitioners who work with youth in schools and corrective settings have a responsibility to acknowledge these disparate impacts and to take meaningful steps to disrupt these maltreatment-to-school-to-protective services-to-punishment-to-incarceration cycles that far too many YIC with disabilities find themselves in. But the majority of law enforcement and juvenile justice professionals do not have the training or supports to make the needed and meaningful changes. However, there are efforts being taken to change that, as evidenced by new laws requiring law enforcement officers to have disability-specific training, like laws in Illinois, Alabama, and New Jersey that require law enforcement officers to have training in autism spectrum disorders and other invisible disabilities, and training courses like Just Policing, developed by The Arc of the United States and the U.S. Department of Justice's Office of Community Oriented Policing Services. The Just Policing program is designed "to address the high rates of victimization and criminalization this community faces often due to a lack of understanding and support" (The Arc, 2024, p. 1). While laws and programs like these are not specific to YIC, they do have the potential to have a meaningful positive impact on all youth with disabilities, of which YIC are overrepresented.

Placement and Service Instability

YIC face significant barriers to both physical and mental health wellbeing, including lack of consistent medical care, frequent placement changes, familial separation, and exposure to Adverse Childhood Experiences (ACEs; Bell et al., 2021). The impact of those experiences can be measured by utilizing a health-related quality of life (HRQoL) framework, which refers to an individual's perception of their overall quality of life, and how their physical, mental, educational, and social well-being impacts their ability to do so. While there is no way to guarantee that YIC have universally positive HRQoL outcomes, there are identified quality of life indicators for YIC, such as stable placements, better overall mental and physical health, a close relationship with their caregiver, increased familial visitation, and trauma-informed service providers (Maguire et al., 2018). Research conducted by the American Academy of Pediatrics (2024) found that YIC "with intellectual disability, visual/hearing impairment, or emotional disturbance were less likely to achieve a positive outcome" (p.2), highlighting how the intersection of disability and foster care makes finding permanency for YIC increasingly complicated.

One of the largest factors that affect the likelihood of YIC reporting negative HRQoL includes instability in school and residential placements. And while "frequent moves to new homes and schools are common for youth living in poverty, instability for foster youth involves not only changing homes and schools but often also changes in caregivers, thus putting foster youth at risk for disrupted attachment relationships." (Bederian-Gardner et al., 2018, p.1). This type of instability can lead to attachment issues, inconsistent education and educational supports, and erratic medical care. Research shows (Barnert et al., 2020; Committee on Adolescence, Braverman, & Murray, 2011; Deutsch & Fortin, 2015; Owen et al., 2020) that a high proportion of YIC "have lapses in preventive care and unmet physical, developmental, and mental health needs" that are often "the result of frequent changes in living

situations and disruptions in continuity of care and access to health care coverage" (National Academies of Sciences, Engineering, and Medicine, 2024, p.151). These all negatively impact YIC perception of their HQRoL.

Foster care involvement itself is a major factor in disruptions or delays in accessing services that can adversely affect the overall health and education, further exacerbating barriers to accessing services, which can have long-term adverse effects on the quality of life of YIC (Bell et al., 2019; Leo et al., 2023). This includes a lack of psychological resources, lack of trauma-informed service providers, environmental barriers like lack of transportation or out-of-home placements far from available services, and hesitancy to engage in mental health care (Leo et al., 2023). This is further exacerbated when the YIC has a disability, as YIC with behavioral, intellectual, or physical disabilities are more likely to have multiple placements, which in turn lead to disruptions in services, changes in clinicians, access to transportation, and delays in record transfers (Barbel, 2020). Hasour (2011) found that many YIC did not receive routine check-ups and "only a small number received an assessment during the first two months of placement in foster care" (p.1) and "received fewer overall outpatient services than other Medicaid eligible children" (p.11). Further, there is evidence of a "lack of continuous health care in managed care models", where YIC are "more likely to experience diminished continuity in care compared to Medicaid managed care beneficiaries not in foster care" (Hasour, 2011, p.12).

Working with caregivers and YIC directly to address the root causes of placement instability is imperative. While there is no way to guarantee YIC remain in a single placement, the impact of multiple placements and systemic placement instability cannot be underscored, as "placement instability increases the risk for children's behavioral, social, and academic problems, negative self-esteem, psychopathology, and increased distrust in guardians" (Konijin et al., 2019, p.484). Every time YIC are moved, there is likely to be disruption in education, mental and physical health care, a break in treat, further familial separation, loss of outside supports, and increased emotional and psychological distress. It is crucial that practitioners and service providers interacting with YIC recognize this, and work towards mitigating the harm caused by placement instability. Approaching YIC and their caregivers with an understanding of the impact of trauma and its lingering effect can have a positive effect on the likelihood of a placement continuing, thus alleviating some of the difficulties YIC face.

Care Urgencies, Inequalities, and Stigma

YIC often enter the foster care system with a range of medical and social difficulties (Bell et al., 2021), and these issues often continue as YIC remain in the system. Being in care can exacerbate existing systemic obstacles to achieving a positive perception of their HRQoL. Addressing health inequities and stigma are crucial for enhancing the overall well-being of YIC. Trauma exposed children and youth are at higher risk for experiencing a host of long-term difficulties (Bell et al., 2021), and involvement with the foster care system itself is a trauma. Studies show that "more than 90% of foster youth in the child welfare system experience trauma compared to 70% of children and youth nationally" (Bell et al., 2019, p.2). Bell et al. (2021) also found that "children and youth with ACEs who remain untreated are at significant risk of suffering a 20-year difference in lifespan compared to their peers who are unaffected by ACEs, as well as increased risk for unemployment, poverty, homelessness, and more" (p.2). These barriers have a high probability of negatively impacting YIC's continuing HRQoL, and without sufficient support these negative factors can continue to shape the adulthood of YIC (Bell et al., 2021). This demonstrates that events that lead youth to being involved with the foster care system, and becoming a YIC, can have long term, severe ramifications on their lives. While there is no way to erase the past trauma YIC have experienced, using trauma-informed practices can be a tool in mitigating the effect it has on their lives.

Health inequities and barriers to quality mental and physical healthcare are prevalent among vulnerable populations, including youth in foster care, affecting their overall well-being (National Academies of Sciences, Engineering, and Medicine, 2024). Studies have shown that "Roughly 40% of children (ages 3–9) and youth (ages 10–17) in foster care have a serious mental health disorder, including PTSD; alcohol, nicotine, and other drug abuse; depression and anxiety; eating disorders; and social phobia" (Bell et al., 2021, p.1). Between 35% and 60% of YIC have at least one chronic health condition, with 50%-80% of YIC having at least mental health concern, and an estimated 23% having comorbidities (Allen, 2010; Stoltzfuset al., 2014; Szilagyi et al., 2015). YIC use more medical services with higher associated costs when compared to their peers outside of foster care (Hasour, 2011). Yet the most recent Federal Child and Family Services Review found that about 25% of children in foster care have unmet health care needs (U.S. Department of Health and Human Services , 2018). This is due to the persistent issue of access, as "access to behavioral health services is affected by placement instability, waiting lists, lack of pediatric behavioral health providers, lack of parental advocates, lack of providers willing to accept Medicaid, and consent barriers" (Barbel, 2020, p.19).

These concerns are compounded when there is a lack of training/understanding of the trauma YIC have experienced, and "care is often fragmented when children are not seen at a medical home by experts versed in trauma-informed care" (Barbel, 2020, p.19). Successful implementation of trauma-informed care requires understanding the unique needs of youth, caregivers, and staff, emphasizing the importance of relational engagement and individualized approaches in care delivery (Chung et al., 2020). Trauma-informed care significantly benefits foster youth by improving caregiver relationships and mental health outcomes (Chung et al., 2020). Trauma-informed practices involve "understanding the impact of trauma on young people's current functioning and recognizing the ways systems are capable of adding to young people's trauma" and provide "supports and opportunities to promote healthy recovery and optimal brain development throughout adolescence and emerging adulthood" (Jim Casey Youth Opportunities Initiative, 2012, p.1). This leads to a more holistic approach towards providing services for YIC, in order to work towards positive permanency. As YIC have higher rates of disability than those not in care, a collaborative and trauma-informed approach by child welfare workers, the healthcare system, caregivers, and families of origin is vital to meeting the particular needs of these youth (American Association of Pediatrics, 2024). By meeting YIC where they are at, the probability of more positive experiences while in care increases.

Conclusion

The convergence of disability and being is foster care can lead to increased barriers in education, mental and physical health, and long-term emotional wellbeing. YIC interact with a diverse group of service providers in varied and sometimes conflicting fields. This is a barrier to YIC with disabilities gaining and maintaining positive community inclusion. However, by practitioners unifying to understand and support these youth, that can change. Collaboration between the different systems YIC interact with-the courts, schools, healthcare, foster care-can only lead to a better understanding of the needs of these youth, and increase the positive application of the necessary tools YIC with disabilities need to thrive within their communities.

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COPING STRATEGIES FOR QUALITY INCLUSION OF LEARNERS WITH LOW VISION IN EARLY CHILDHOOD DEVELOPMENT PROGRAMS IN KENYA

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Abstract

Learners with special needs are supposed to be included in regular schools. A baseline survey across of Kakamega, Vihiga, Bungoma and Kisumu counties revealed there were 1357 learners with low vision, 267 hard of hearing and 109 physical disabilities were placed in regular Early Childhood Development (ECD) programs. The disproportionately high number of learners with low vision highlighted the need to investigate the challenges and coping strategies employed in supporting their inclusion. This paper explores barriers to inclusive education for learners with low vision in ECD and identifies effective coping strategies used by educators, caregivers, and administrators in western Kenya to enhance quality inclusion.

Keywords: coping strategies, learners with low vision, inclusive education, disability, early childhood

Background

Inclusion in the context of education is the practice, in which learners with special educational needs spend most or all of their time with regular learners (Wanjohi, 2013). Inclusive education means that all children attend and are welcomed by their neighborhood schools in age-appropriate, regular classes and are supported to learn, contribute and participate in all aspects of the life of the school. Inclusive education is about how we develop and design our schools, classrooms, programs and activities so that all students learn and participate together (Leornard Cheshire International, 2012). Inclusion for early childhood programs supports the right of all children, regardless of abilities, to participate actively in natural settings within their communities. Natural settings include, but are not limited to: home, preschool, nursery school, Head Start program, kindergarten, neighborhood/community, school classroom, child care center, place of worship, recreational space, and other settings that young children and families enjoy.

Inclusive education is a globally endorsed policy, guided by instruments such as the UN Convention on the Rights of Persons with Disabilities (UNCRPD) and the Salamanca Statement (UNESCO, 1994). Kenya's Basic Education Act (2013) emphasizes the right to quality education for all children, including those with disabilities. Despite these frameworks, learners with visual impairments continue to face exclusion or inadequate support in regular classrooms, particularly at the ECD level. Early childhood is a critical period for cognitive, emotional, and social development. Learners with low vision, defined as visual impairment not fully correctable with glasses or medical intervention (WHO, 2013), often experience challenges in visual learning environments. This study focuses on identifying effective coping strategies used in ECD settings to support the meaningful participation of learners with low vision in western Kenya.

Prospects and Policy Framework

Various policies support inclusion of learners with disabilities in regular schools. Every child in the world has the right to a primary education: this lies at the heart of the Millennium Development Goals (MDGs) agreed by every country in 2000. Although disability was not originally included in the MDGs, this was rectified in September 2010 when disability was officially acknowledged with regard to the MDGs. MDG 2 — universal primary education (UPE) — was reinforced by the world's most recent human rights treaty, the United Nations Convention on the Rights of Persons with Disabilities (CRPD), when it came into force in 2008. The CRPD recognizes that children with disabilities have the right to the full range of educational opportunities (UNESCO, 2007). Key policy framework that has advocated for the education of children with disabilities in regular ECD programs includes: The universal declaration of human rights (1948), advocated for children right to education and to special care and entitlement.

United Nations convention on the rights of the child (1989), the child's best interest is key. Thus, if a child with disability best interest is to learn in regular ECD program should be given the right. In addition, the child with physical or other disabilities must be provide for and educated. Kenya ratified the UNCRC in 1990, it

emphasized on non-discrimination, best interest of the child, respect of views of the child. These have been used in advocating for education of ECD children with special needs in regular schools. Salamanca conference (1994) emphasized education for all, specifically children with special needs. It called for education of children without discrimination. It emphasized education of learners with special needs in regular schools, which should accommodate them with a child- centered pedagogy capable of meeting their needs. Inclusive education was born from the Salamanca conference.

The Kenyan children act (2001) emphasizes right of the child to free and compulsory primary education provided by the government. Thus, it is appropriate for the Kenyan government to fund education of children with disabilities in regular schools from ECD level upwards to class eight.

Kenyan Special Needs Education Policy (2009) advocated for education of all learners in their neighborhood schools. ECD learners being part and parcel, they too need to be included in the neighbourhood ECD programs for them to learn effectively. The Kenyan new constitution (2010) emphasized on free and compulsory primary education for all children. Children with disabilities in ECD have a right to education. In Kenya, the new constitution devolved the early childhood education as a devolved function to county governments (Kenyan new constitution, 2010). The forty seven county governments are funding early childhood education programs in regular schools. This has enhanced provision of resources and staff-employment in all the counties.

Challenges

Toreno (2012) noted the following challenges to inclusive education; it was expensive to hire staff to support learners with disabilities in regular classrooms. Coordinating services and offering individual supports to children requires additional money that many school districts do not have, particularly in a tight economy. Inadequate funding can hinder ongoing professional development that keeps both specialists and classroom teachers updated on the best practices of inclusion. Negative attitude was a key barrier to inclusive education, these attitudes and stereotypes are often caused by a lack of knowledge and understanding. The attitudes and abilities of general education teachers and paraeducators in particular can be major limitations in inclusive education. Training teachers and paraeducators to understand and work with children with disabilities is often inadequate, or it may be fragmented and uncoordinated. If educators have negative attitudes toward students with special needs or have low expectations of them, children will unlikely receive a satisfactory, inclusive education.

UNESCO (2010) Outlined various challenges facing implementation of inclusive education in sub-saharan africa. Such included; negative attitude from the society and school towards learners with disabilities; physical barriers such as inaccessible environment such as narrow doors, narrow pathways, staircases on building. This creates a barrier for some learners to enter school buildings or classrooms. inadequate funds to funds to prvide resources and facilities needed; a rigid curriculum that does not allow for experimentation or use of different teaching-learning strategies; teachers who are not trained in special and inclusive education and whoare unwilling or unenthusiastic about working with different able children are a major barrier to inclusion; inadequate training of teachers in special and inclusive education. UNESCO further argue that policy challenges such as rigid examination systems in schools, rigid timetables do affect inclusion of learners with disabilities in schools. Lastly, negative attitude of stakeholders is a major barrier to inclusive education. Davis and Lani (2004) observed lack of accessibility was a problem to children with physical challenges in regular schools. A student with a disability cannot learn in an inclusive classroom if he cannot enter the room, let alone the school building. Some schools were still inaccessible to students in wheelchairs or to those other mobility aides and need elevators, ramps, paved pathways and lifts to get in and around buildings.

Lack of communication among administrators, teachers, specialists, staff, parents, and students. Most schools with inclusive program do not have open communication system among stakeholders. This has resulted to lack of cooperation in enhancing the quality of education among the ECD learners with disabilities (Surgiharto, 2008). Leonard Cheshire Disability (2008) survey in two districts of Uganda (Budaka and Mukono), found that, despite the Uganda Primary Education Policy, specific issues kept many girls and boys with disabilities out of school. These included physically inaccessible schools, poor teacher training around disability, and a lack of assistive devices and appliances adapted to support learning, mobility and communication. These are key challenges which must be addressed for any ECD centre to be inclusive and offer effective quality education for children with disabilities.

In Kenya, various researchers have identified five key barriers that hinder effective and quality inclusion of learners in the ECD programs: resource, negative attitude, poor practices, poor policy implementations with regard to inclusion and environmental barriers. For instance, Wanjohi (2013), noted that while inclusive education has various benefits, it has numerous challenges such as inadequate educational facilities, poor teacher training and poor policy implementation.

Statement of the Problem

Despite policy support for inclusive education, many ECD centers in Kenya are ill-equipped to accommodate learners with low vision. Teachers often lack specialized training, instructional materials are not adapted, and physical infrastructure remains inaccessible. This results in marginalization, reduced learning outcomes, and poor school readiness among learners with visual impairement. With over 1,357 learners with low vision already in regular ECD centers in the sampled counties, there is an urgent need to understand the coping mechanisms in place and how they affect the quality of inclusion.

Objectives of the Study

The objectives of the study were:

- To identify the challenges faced by learners with low vision in ECD programs in Western Kenya.
- To examine the coping strategies used by teachers and caregivers to support these learners.
- To evaluate the effectiveness of these strategies in promoting quality inclusion.
- To recommend practical strategies for enhancing inclusion of learners with low vision in ECD programs.

Theoretical Framework

This study is guided by Vygotsky's Sociocultural Theory of Development (1978), which emphasizes the role of social interaction and cultural tools in learning. According to Vygotsky, learning is a socially mediated process, and inclusive classrooms can provide the scaffolding necessary for learners with disabilities to thrive. The Zone of Proximal Development (ZPD) supports the idea that with appropriate support, learners with low vision can achieve developmental milestones comparable to their peers.

Research Design

A qualitative descriptive survey design was adopted to collect in-depth data from ECD teachers, caregivers, and education officers across the four counties.

Target Population and Sample

The study targeted 50 ECD centers with enrolled learners with low vision in Kakamega, Vihiga, Bungoma, and Kisumu. Purposive sampling was used to select 45 headteachers, 90 ECD teachers, 10 special needs education officers, and 20 parents.

Data Collection Methods

Data were collected through:

- Semi-structured interviews with teachers and education officers
- Focus group discussions with parents
- Observation checklists for classroom environments

Data Analysis

Thematic content analysis was used to identify recurring patterns and themes related to challenges and coping strategies.

Study Results and Discussion

Challenges Identified

1. Inadequate teacher training: Most teachers lacked basic knowledge in visual impairment support strategies.
2. Lack of adapted learning materials: Few centers had braille, large print books, or tactile aids.
3. Poor infrastructure: Classrooms were poorly lit, and seating arrangements were not learner-friendly.
4. Negative attitudes: Some teachers and parents expressed low expectations for learners with low vision.

Coping Strategies

From thematic and content analysis, the study found out that key coping strategies were:

- Improvisation of teaching materials: Teachers created tactile charts, used contrasting colors, and adapted fonts.
- Peer tutoring: Sighted learners were paired with visually impaired peers to aid participation.
- Parental involvement: Active engagement by parents in learning activities at home helped bridge instructional gaps.
- Environmental modification: Teachers adjusted seating to maximize lighting and visibility.

Educational Modifications

Just as the environment must be accessible to students with disabilities, the curriculum must facilitate inclusive education, too. General educators must be willing to work with inclusion specialists to make modifications and accommodations in both teaching methods and classroom and homework assignments. Teachers should be flexible in how students learn and demonstrate knowledge and understanding. Written work, for example, should be limited if a student cannot write and can accomplish the same or similar learning objective through a different method.

Sensitization of stakeholders: there is need for teachers trained in inclusive education, to carry out a sensitization programme to regular teachers, parents, regular learners, school administration, and county government officials on how to accommodate learners with disabilities in ECD centers, what is inclusive education and what to be done to build an effective inclusive ECD programs in regular schools. This will help in reducing stigma towards learners with disabilities. It will also assist in seeking support from the stakeholders with easy.

Collaboration of stakeholders: Open communication and coordinated planning between general education teachers and special education staff are essential for inclusion to work. Time is needed for teachers and specialists to meet and create well-constructed plans to identify and implement modifications the, accommodations, and specific goals for individual students. Collaboration must also exist among teachers, staff, and parents to meet a student's needs and facilitate learning at home.

Teacher-training: the respective county governments in-serviced the ECD teachers in special needs education in order for the them to handle learners with special needs in their classes with easy. One teacher observed that, (There is need for the Kenya institute of curriculum development to make special needs education an integral part of the ECD teacher curriculum). This will enhance pre-service and in-service training of teachers with inclusive skills on how to handle children with disabilities in schools by the trained teachers.

Use of varied teaching strategies: ECD teachers varied teaching-learning strategies in order to reach a variety of learners with learning needs. Child-centered pedagogical techniques were used while teaching learners with disabilities in an ECD program. In some schools, the teacher ensured a learner with disability is accommodated and given enough time in participating in class.

Reduced class size: some schools had reduced number of learners in ECDE per class. These enabled teacher to have enough time on one to one with the child with disabilities. A class with a learner with disability needs to have a few learners compared to the other classes.

Environmental adaptability: the teachers and the school administration ensured learners with disabilities were provided with an accessible environment. The playground in most regular ECDs need be leveled in order for the wheelchair to move with ease.

Use of assistive technology: assistive technology need to be used to make learning easy for learners with special needs. For example, Learners with low vision were provided with low vision optical and non-optical devices for enhancing the print. Teachers provided large print for those with low vision.

Effectiveness of Strategies

The study found that while these coping strategies facilitated participation, they were often inconsistent and unsystematic. Centers with trained teachers showed better inclusion outcomes.

Conclusion

Inclusion of learners with low vision in ECD programs in western Kenya is a promising but under-resourced endeavor. Teachers and caregivers are making commendable efforts through various coping strategies. However, these efforts are constrained by systemic challenges, especially in training and resources. For quality inclusion to be achieved, these informal strategies must be formalized and supported through targeted policy and investment.

Recommendations

Based on the findings of the qualitative study, the study recommends:

- **Capacity building:** there is need for regular in-service training for ECDE teachers on visual impairment and inclusive practices.
- **Provision of assistive materials:** The government of Kenya and NGOs/CBOs need to support schools practicing inclusive education through provision of of low optical devices, talking calculators, large print books, and low vision aids to assist learners with low vision access printed learning materials.
- **Parental empowerment:** there is need for county governments to collaborate with NGOs and CBOs dealing with learners with low vision included in regular schools to train parents on how to support learners with low vision at home through home-based learning strategies.
- **Policy enforcement:** Stronger monitoring mechanisms to ensure inclusive education policies are implemented at the ECD level. The Kenyan 2025 disability act be enforced to ensure learners with low vision in regular schools are fully supported.
- **Community sensitization:** need to create awareness at community and family level through Campaigns to reduce stigma and promote inclusive attitudes.

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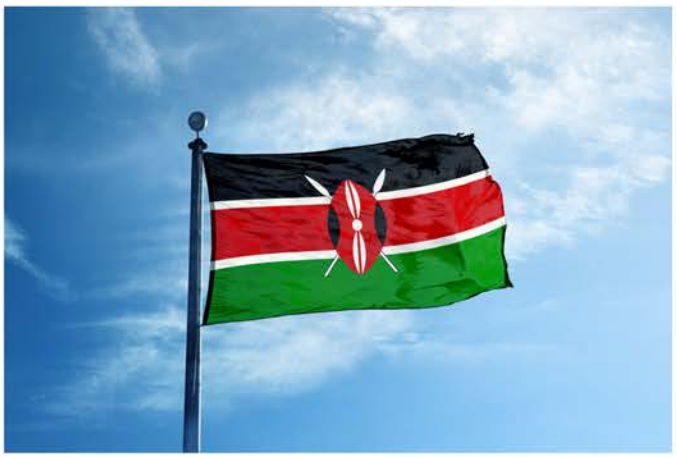

A Final Word from our Conference Chairs

In summary, The DISES 2025 Conference Proceedings reflect a powerful spirit of global collaboration, inspired by Kenya's cultural value of Harambee, which emphasizes unity and collective responsibility in uplifting all members of society—particularly youth with disabilities. At the core of the DISES mission is not only the promotion of inclusive practices worldwide, but also a commitment to honoring the tireless efforts of educators, advocates, and practitioners, those often engaged in difficult and underappreciated work on the front lines. The 2025 proceedings exemplify this dual mission by showcasing inclusive education strategies that are culturally responsive and context specific.

Here are four key takeaways from the proceedings:

Empowerment and Inclusion Across Contexts: The papers reflect the spirit of Harambe, collective effort by presenting inclusive education practices that support children with disabilities, educators, and families both locally and internationally. These practices are rooted in local successes but hold potential for global application.

Educator Development and Leadership: Several papers emphasize the importance of preparing girls for leadership roles and the need for contextually relevant, collaborative professional development for teachers to enhance inclusive education practices.

Innovations in Teaching and Technology: The integration of Universal Design for Learning (UDL) with co-teaching improves student outcomes and teacher self-efficacy. Technological innovations such as AI tools are explored for screening dyslexia and supporting Kenyan Sign Language users in higher education.

Addressing Systemic and Social-Emotional Needs: Other contributions examine the challenges of Kenya's competency-based curriculum in the context of special needs education the role of culturally responsive leadership during crises, trauma-informed practices, and the importance of educator attitudes toward disability.

Once again, we extend our sincere gratitude to all the authors who contributed to these diverse and thought-provoking topics. Collectively, their work not only captures the spirit and theme of the DISES 2025 Conference but also support the broader mission of DISES—to promote inclusive education practices and champion equity for individuals with disabilities around the world.

Robai Warunga, Ph.D.

Conference Co-Chair

"HARAMBEE: BUILDING BRIDGES TO SUPPORT INCLUSIVE EDUCATION AROUND THE WORLD"

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